amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

VOL. 46, No. 1 JANUARY 1978

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GENERAL

DEPARTMENTS

COVER PHOTO

Meet the Edmonds family from Frankston, Victoria — all radio amateurs. From left to right: John VK3AFU, Brenda VK3KT, Brenda Jnr. VK3NFB, Vicki VK3ZTC, Alex VK3NEU, Charles VK3ZXZ. The WIA believes this could be a world record. John and Brenda (Snr.) have been licensed for 17 years; the children all obtained their licences during 1977. We wonder what subjects are talked about over the dinner table!

HAM RADIO SUPPLIERS

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Our Disposals Store at 104 HIGHETT ST., RICHMOND (Phone 42-8136) is open Mondays to Fridays, 9.00 a.m. to 5.00 p.m., and on Saturdays to midday.

FM LEAD ANTENNALESS MICROPHONE

MODEL FIRST-101 (Uni-directional Condenser Microphone)

A new professional quality uni-directional condenser microphone featuring superb sensitivity and excellent frequency characteristics. Very easy handling because of cordless microphone. Operates on just one UM-3 battery for 100 hours of continuous use. Very economical. The transmitting frequency freely adjustable within FM radio band. If using without lead antenna, sound is caught within about 50 metres, when using with reinforced antenna to jack at the bottom, range is extended up to about 100 metres. **Accessories:** Battery UM-3, Wind screen, Adjusting screwdriver, reinforced antenna line, microphone stand.

NETT PRICE $33.90
Postage $1.40

MODEL YWI

STANDING WAVE BRIDGE, FIELD STRENGTH AND POWER INDICATOR

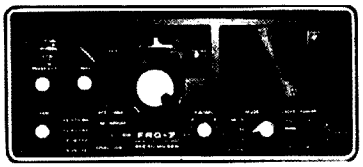
YW-1 is a handy, compact device for the amateur radio station in checking transmitters operation. For measurements, it uses the bridge method of comparing the power supplied to and reflected from the antenna system. Continuous monitoring of the transmitter output is possible by having the instrument in the circuit at all times. The model can be used as a simple field strength meter by disconnecting it from the feedline and attaching a small pickup antenna.

Meter Sensitivity: 200 uA on DC current (at full scale; **VSWR Meter Range:** 1 : 1 — 1 : 3; **Power Meter Range:** 0 — 10W; **Impedance:** 50; **FS Meter Range:** 0 — 10 dB; **Accuracy:** 1.5 MHz — 50 MHz 10 per cent; **Dimensions:** 5¾ (h) x 2-3/8 (w) x 3 (d) in.; **Weight:** 16.58 ozs.

NETT PRICE $22.00
Postage $1.50

YAESU FRG-7

THE RADIO FOR WORLD-WIDE LISTENING AT ITS BEST — 0.5-29.9 MHz COVERAGE SYNTHESIZED COMMUNICATION RECEIVER



The model FRG-7 is a precision built high performance communication receiver designed to cover the band from 0.5-29.9 MHz. Its state of the art technology offers an unprecedented level of versatility. The Wadley Loop System (drift cancellation circuit) coupled with a triple conversion super heterodyne system guarantees an extremely high sensitivity and excellent stability. It provides complete satisfaction to amateurs as well as BCLs with superb performance and many features such as RF attenuator, selectable tone, and automatic noise suppression circuit.

$338

MODEL OL64 D/P MULTIMETER. Very ruggedly constructed this model is particularly suitable for workshops. It features special scales for measurement of capacitance and inductance. Diode protested movement: **Specifications:** 20,000 ohm/volt DC. 8,000 ohm/volt AC. DC volts — 0.25; 1; 2.5V; 10; 50; 250; 1,000; 5,000. AC volts — 10; 50; 250; 1,000. DC amps: 50 uA; 1 mA; 50 mA; 500 mA; 10 A. Ohms — 4 K ohm; 400 K ohm; 4 M ohm; 40 M ohm. Centre scale — 40 ohm; 4,000 ohm; 40,000 ohm; 400,000 ohm. Decibel: —20 to +62 dB, Dimensions: 6" x 4-1/5" x 2"; 152 x 107 x 51 mm. Inductance — 0/5000H. Carrying case available, Model C $6.90.

$32.50 Postage $2.20

E.E.I. SOLID STATE CAR RADIO

MW BAND
PUSH-BUTTON TUNING
SPECIFICATIONS:
Power Supply: 12 V DC
Receiving Frequency: MW 520KC (580M) — 1640KC (183M)
Intermediate Frequency: 455KC
Audio Output: 4.5W
Transistors: 8, diode 4
Speaker: 5" Permanent Dynamic 4 ohm
Sensitivity: Less than 20 uV at 20 N/S
Selectivity: More than 25 dB at + 10 kHz detuning
A.G.C.: More than 45 dB at 1,000 kHz
IF Rejection: More than 40 dB at 600 kHz
IM Rejection: More than 50 dB at 1,400 kHz
Cabinet Dimension: 1-7/8" (H) x 6-1/5" (W) x 4-1/8" (D)

$32.90 — Free Post

E.E.I. PORTABLE RADIO

AM/AIR VHF
SPECIFICATIONS:
Freq. Range: AM530-1600 kHz, AIR (VHF) 108-174 MHz. **Intermed. Freq.:** AM 465 kHz, FM 10.7 MHz. **Output:** 450 mW max. **Speaker:** 2½" permanent—magnetic dynamic type, 8 ohm. **Power Source:** DC — 6V (4 x UM3 Penlite) or equivalent. **Semiconductor:** 10 trans., 7 diode. **Dimensions:** 8½" (W) x 4½" (H) x 1-7/8" (D)

$18.90 — Postage $1.40

MODEL AS100 D/P MULTIMETER

This meter features double zener diode meter protection and 3½" full view easy to read 2 colour scale. It is fitted with polarity reversing switch and housed in a strong moulded case with carrying handle.
SPECIFICATION: 1000,000 ohm/volt DC. 10,0000 ohm/volt AC. **DC Volts:** 0.3, 3, 12, 60, 120, 300, 600, 1,200. **AC Volts:** 6, 30, 120, 300, 600, 1,200. **DC Amps:** 12 uA, 6 mA, 60 mA, 300 mA, 12A. **Ohms:** 2k, 200k, 2m, 20m, 200m ohm. **Centre Scale:** 20 ohm, 2,000 ohm, 20,000 ohm, 200,000 ohm, 20m ohm. **Decibel** —20 to +57 db. **Dimensions:** 7-3/5 x 5-2/5 x 2-3/5 ins. Carrying case for model I — $7.90.
Price: $52.50 — Postage $2.20.

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with screw driver adjustment, available in 9-17 and 25 pF. While they last at

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0-1 mA moemvent calibrated, 0-5 ounces. Brand new in boxes.

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All extremely high quality.

2 **CORE SHIELDED** .... 30c yard
4 **CORE SHIELDED** .... 40c yard
6 **CORE SHIELD,** ideal for rotators 45c yard

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WE STOCK CB GEAR AS WELL AT VERY COMPETITIVE PRICES, INCLUDING ANTENNAS AND ACCESSORIES.

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amateur radio

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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 any reason.

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QSP —
NOW TO THE FUTURE

To all members of the WIA, Greetings for the New Year.

Your support throughout the past year has been of great value and particularly appreciated by all those volunteers who work for the furtherance of Amateur Radio through the WIA.

It is pleasing to note that the WIA throughout Australia, has been able to minimise subscription rises this year, where any increase was unavoidable. This has been helped to some extent by our steady rise in membership.

At this stage, I would like especially to greet all those new novice amateurs, who have so recently joined our fraternity, you are all most welcome, and I hope that this is only your first step in amateur radio as was intended in the original concept of the novice licence.

The next two years leading up to WARC 79 are going to be of the utmost importance to the amateur service world wide.

Preparation for WARC throughout the world is swinging into gear. Some countries such as the U.S.A. and Australia are fairly well advanced in their preparation, others have not proceeded nearly as far, even more have done very little preparation whatsoever.

As WARC 79, like all ITU conferences, is one country, one vote, you will see the importance of as much IARU assistance as possible being given to the smaller countries in order that they may be able to place their case in the amateur service before their own administrations.

Much has been done already, much more has yet to be done.

Nationally, the WIA and internationally the IARU are leaving no stone unturned to further tha cause of the amateur service in these critical times.

Good hick for 1978
DAVID WARDLAW VK3ADW
Federal President ■

WIRELESS INSTITUTE OF AUSTRALIA

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Federal Council:
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VK2 Mr. T. I. Mills VK2ZTM
VK3 Mr. J. Payne VK3AED
VK4 Mr. N. F. Wilson VK4NP
VK5 Mr. I. J. Hunt VK5QX
VK6 Mr. N. R. Penfold VK6NE
VK7 Mr. P. D. Frith VK7PF

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Part-time: Col. C. W. Perry, Mrs. J. M. Seddon and Mr. T. Cook (AR advertising).

Executive Office: P.O. Box 150, Toorak, Vic., 3142. 2/517 Toorak Rd., Toorak. Ph. (03) 24 8652.

Divisional information (all broadcasts are on Sundays unless otherwise stated):

ACT:
President — Mr. E. W. Howell VK1TH
Secretary — Mr. D. J. Farquharson VK1ZDF
Broadcasts— 3570 kHz & 146.5 MHz: 10.00Z.

NSW:
President — Mr. T. I. Mills VK2ZTM
Secretary — Mr. I. A. Mackenzie VK2ZIM
Broadcasts— 1825, 3595, 7146 kHz, 28.5, 52.1, 52.525, 144.1, Ch. 6 and other relay stations: 01.00Z. (Also Sunday evenings 09.30Z and Hunter Branch, Mondays 09.30Z on 3570 kHz and ch. 3 and 6).

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Secretary — Mr. J. A. Adcock VK3ACA
Broadcasts— 1825, 3600, 7135 kHz — also on 6m, 2m SSB and 2m Ch. 2 repeater: 00.30Z (Also on Radio 3HA).

QLD.:
President — Mr. D. T. Laurie VK4DT
Secretary — Mr. P. Brown VK4PJ.
Broadcasts— 1825, 3580, 7146, 14342 kHz: 09.00 EST.

SA:
President — Mr. C. J. Hurst VK5HI
Secretary — Mr. C. M. Pearson VK5PE
Broadcasts— 1820, 3550, 7125, 14175 kHz; 28.5 and 53.1 MHz, 2m (Ch. 6): 09.00 S.A.T.

WA:
President — Mr. R. Greenaway VK6DA
Secretary — Mr. N. R. Penfold VK6NE
Broadcasts— 3600, 7080, 14100, 14175 kHz, 52.656 and 2m (Ch. 2): 01.30Z.

TAS.:
President — Mr. R. K. Emmett VK7KK
Secretary — Mr. H. E. Hewens VK7HE
Broadcasts— 3570, 7130 kHz: 09.30 EST.

NT:
President — Mr. Doug Haig VK8JD.
Secretary — Mr. Henry Anderson VK8HA.
Broadcasts— Relay of VK5WI on 3.55 MHz and on 146.5 MHz at 2330Z. Slow morse transmission by VK8HA on 3.555 MHz at 1000Z almost every day.

Postal information:
VK1 — P.O. Box 1173, Canberra, 2601
VK2 — 14 Atchison St., Crows Nest, 2065 (Ph. (02) 43 5795 Tues & Thurs (10.00-14.00h).
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 3535 Sat 10.00-12.00h).
VK4 — G.P.O. Box 636, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton (Ph. (08) 254 7442).
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (incl. with VK5), Darwin AR Club, P.O. Box 1418, Darwin, 5794.

Slow morse transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

VICOM

139 AUBURN ROAD, AUBURN, Vic.
Telephone: (03) 82.5398, (03) 813.2355
TLX 30566
Adelaide: 43.7981 Brisbane: 38 • 4480
Canberra: 82.3581 Gold Coast: 32.2644
Perth: 446.3232

Sunspot Cycle 21 Coming up

Sunspot 21 is now on the up & up! Share in some of the fun on 6 metres with the ICOM IC502 ssb portable transceiver. The IC502 covers 52-53MHz with VFO control, RIT, effective noise blanker, provision for external power and antenna and comes complete with carrystrap, mic and English Manual. Backed by VICOM 90 day warranty. Price $219.

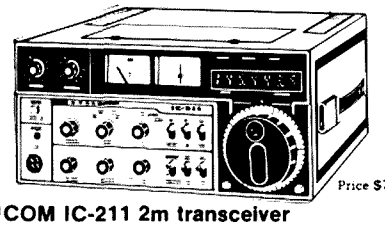
HELLO 6M DX

2M SSB PORTABLE

The IC202 is the ideal 2m exciter for those long-haul DX contacts or to work OSCAR. 3 watts ssb and cw. VXO control, quality manufacture and comes complete with English manual, carry-strap, mic and VICOM 90 day warranty. Price $219.

ACCESSORIES FOR THE PORTABLES:

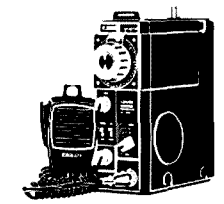
Rubber Ducky 2m antennas	$13
Mobile bracket for portables	$18
BC 20 nicad battery pack and reg	$57
IC3PS power supply stand	$115
IC50L 6m linear, 10w out	$98
IC20L 2m linear, 10w out	$98



Price $785.

ICOM IC-211 2m transceiver

• 144 to 148 MHz coverage • Modes: SSB, CW, FM • LSI synthesizer PLL • 4-digit LED readout • Pulse-type noise blanker • VOX w/adjustable gain • SWR bridge • CW monitor • Automatic power control • AC/DC power supplies • Antenna impedance 50 ohms unbalanced • TX output: 10W PEP



ICOM IC-215 2m FM transceiver

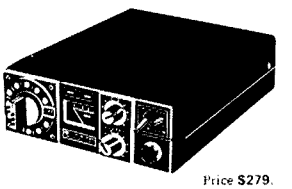
• 2 meter FM • 3 W PEP • 15 channels, 12 by selector, 3 by function switch • Dual power level, 3 W HI for long distance, 0.5 W LOW for local • Dial illumination for night use • Power pilot lamp • Frequency range 146 to 148 MHz.

summer is icom portable time.

QUALITY HANDY PORTABLES

ICOM IC-245 2m transceiver

• LSI synthesizer PLL • 4-digit LED readout • Transmit & receive frequencies are independently programable on any separation • Receiver front-end is a balance of low noise, high-gain MOS FET & 5 section filter • TX output: 10 W PEP • Frequency step size: 5 KHz for FM, 100 Hz (with adapter) or 5 KHz for SSB.



Price $279.

ICOM IC-22S FM transceiver

ICOM

WRITE FOR THE ICOM CATALOG

MORE OF THE TEAM!

THE THREE WISE MEN FROM ELITE!
Elite Electronics are the VICOM Brisbane distributors. Graham Harper and the boys are part of the friendly VICOM team able to give personalised service to the serious Radio Amateur. Give Graham a call today!

MORSE KEYS

HK702 deluxe, marble base	$35
HK708 economy model	$19
HK706 operator's model	$20
MK701 manipulator	$38
ED103W electronic keyer	$159

YAESU

FT101E HF transceiver 160m thru 10m	$859
FL2100B HF linear amplifier	$578
FRG 7 Receiver	$338
FT301D HF solid state transceiver	$1149

KENWOOD

TS820S HF digital transceiver	$1105
TS520S HF 160-10m transceiver	$705
VFO820 vfo for TS820S	$115
TV502 2m transverter	$260
TV506 6m transverter	$229
TR7400 2m fm digital transceiver	$450
MC50 desk mic, dynamic	$54

SPEECH PROCESSORS

MC330 audio mic compressor, ac/dc	$71
RF550 rf speech processor	$112
RF440 rf speech processor	$149

ROTATORS

ART3000C heavy duty with control box	$199
ART8000 super heavy duty	$478
AR22XL light duty for small beams	$109

Direction: Russell J. Kelly
Peter D. Williams

The fabulous ICOM IC701 HF solid state transceiver. Initial shipments expected around March.

QM70

2m/432 fm transverter	$125
2m linear, 70w pep	$119
28/144 "SCORPION", high pwr	$225
432/28 converter	$50
144/28 converter	$45
1296/28 converter	$59

HAL

KSR 3000 RTTY terminal with monitor	$1499
ST 6000 FSK/demodulator with cro	$1031

MICROPHONES

VM 1 ptt lowZ, noise-cancelling	$8.90
VM 2 base with preamp, low Z	$29.80

NOISE BRIDGES

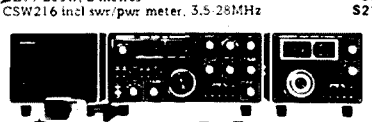
TE7-01 Omega, up to 100MHz	$40
TE7-02 Omega, up to 300MHz	$55

BALUNS

AS-BL (Asahi) for beams	$31
BN86 (HyGain) for beams	$30
BL50A (Rak) 50 ohm, 4Kw, dipole	$25
BL70A (RAK) 70 ohm, 4Kw, dipole	$28

couplers

CL65 500w, 2.5 thru 20MHz	$134
CL99 200w, 2 metres	$61
CSW216 incl swr/pwr meter, 3.5-28MHz	$219



$849 uniden

The fabulous Uniden 2020 phase-locked-loop transceiver offers separate usb/lsb/cw 8-pole crystal filters as standard and 6146B's in the final with screen voltage stabilisation for minimum distortion products. Features plug-in pcb's and even the front panel can be swung out for easy servicing. A full spares catalogue is available together with change-over pcb's. Compare the Uniden 2020 with other HF transceivers and you'll be quickly convinced that it offers the best value!

MORSE KEYS

HK702 deluxe, marble base	$35
HK708 economy model	$19
HK706 operator's model	$20
MK701 manipulator	$38
ED103W electronic keyer	$159

MICROPHONES

VM 1 ptt lowZ, noise cancelling	$8.90
VM 2 base with preamp, low Z	$29.80

JAYBEAM

MBM48/70cm 48el 15.7dBd	$64

PARABOLIC DISH

PBA1200 432 & 1.2GHz	$349

L.P. FILTERS

FD30M 32MHz cut-off, 1KWpep max	$35
FD30LS 32MHz cut-off, 200w max	$20

Antennas!

You know you can count on

hy-gain

TH6DXX 6el 10/15/20m Thunderbird	$320
TH3MK3 3el tribander 8dB gain	$249
TH3Jr 3el tribander, 12' boom	$199

TRAP VERTICALS

V5Jr 6.7m high, 80 thru 10m, no guys	$109
V4Jr 4.25m high, 40 thru 10m, no guys	$89

TRAP DIPOLES

MidyVN 80 thru 10m	$87
AL48DXN 40 & 80 metres, 2Kw	$54

TWO METRES

ARX-2 Ringo Ranger base antenna	$49
Lindenow wave mobile whip	$26
42S ¼ wave mobile whip with cable	$14
82D wave mobile whip with cable	$28

Prices and specifications subject to change without notice.

WIANEWS

Members will have noted, and hopefully acted upon, the contents of the Federal insert into December AR relating to radio amateurs' concern about the illegal use of the frequency spectrum and the uncontrolled availability of transmitting equipment.

Pressures were also brought to bear upon the Department for some answers to the many outstanding questions of detail affecting us.

NOVICE THEORY EXAM

In addition a protest was lodged with the Secretary of the P. and T. Department concerning the standard of the October Novice theory examination. The Department was requested to re-examine the percentage marking of the papers to admit passes at levels lower than 70 per cent, having regard to the questions which were deemed to be closer to AOCP than Novice standards.

The Federal Education Officer, Graeme Scott VK3ZR, had called a special meeting of properly qualified expert instructors from various States on 7th December to discuss various examination questions, especially the continued lack of any syllabuses or study guides.

2m REPEATER CHANNELS

during October a letter was addressed to the Department advising the changes to the WIA 2m band plan relating to repeaters. Please see WIANEWS in October AR. No decision has been made yet concerning the 2m repeater numbering system to be adopted.

EDP

Further discussions with the commercial operator have been held. Subscription notices will be sent out in the same format this year as in the past. The new programme will not be ready in time before the notices are posted to members in the first or second week or December.

WARC 79 FUND

The Executive wishes to express grateful thanks for early donations received during 1977 towards the WARC 79 Fund from —

VK4ZSB	*$2.00*
VK4XZ	*1.50*
Moorabbin and District RC	*100.00*
Mr. Eric Trebilcock	*20.00*
Hornsby and District ARC	*15.00*

The efforts being made by the St. George ARS (Aug. AR, p. 33) and the Illawarra ARS (Oct. 77, p. 23) are greatly appreciated.

In addition to the individual donations for WARC 79, an amount of $750 was received from the VK6 Division and placed in interest-bearing deposits. This was the estimated per capita amount of levy tor this Division as agreed at the 1977 Federal Convention.

In letter RB4/4/32 of 23/11/1977 the Radio Frequency Management Branch advises that approval has been obtained from the Minister for any existing Novice Amateur radio station licensee who was disadvantaged (as a result of the withdrawal of the 26.96 to 27.23 MHz band resulting in the need to purchase new equipment — or, where practicable, to have existing units modified — for the transference of operations to 28.1 to 28.6 MHz) and who desires to participate in the Citizens' Radio Service (CRS) may be granted a special licence to cover participation in both the Novice Amateur Service and the CRS. The annual fee for this will be $25 — i.e., the normal rate for a CRS station licence. Applications should be made to the offices of the State Superintendent's Radio Branch.

The Executive wishes to thank those members who donated past issues of amateur and electronic magazines and publications. Most of these will be forwarded to selected Amateur Societies in Region 3 when transport opportunities present themselves.

The members of the Executive and staff in the Executive office wish to convey Season's Greetings to all members and best wishes for a Happy and Prosperous 1978. ■

DIGITAL READOUT FOR THE FT101

Keith Gooley VK2BGZ
2/38 Waters Road, Cremorne, NSW 2090

The aim of this project was to design and build a digital readout of the transceiver's frequency. The requirements are as follows:—

- ☐ **accuracy to be ± 100 hertz,**
- ☐ **unit to be small enough to sit conveniently on top of transceiver,**
- ☐ **power to be drawn from transceiver hence consumption to be as low as possible,**
- ☐ **use readily available devices.**

The photographs show the readout to be quite small, measuring approximately 40 mm high by 170 mm square.

Power consumption is fairly low at 300 mA maximum from the FT101 13 volt supply. This figure could have been reduced by using liquid crystal displays but these are about three times the price of red LED's and require exterior illumination. Power consumption is kept to a minimum by using the CMOS family of digital logic IC's. These are quite suitable operating from a 13 volt supply as switching at speeds in excess of 10 MHz is not required.

No modifications whatever are required to the transceiver as the VFO signal and the +13 volt supply are available on the external VFO socket. The display is stable and produces no audible interference, birdies, etc., in the receiver.

OPERATION

The device measures the transceiver's operating frequency in the following way. In the FT101 (although the principal can be applied to any transmitter, receiver or transceiver) the VFO tunes backwards from 9.2 MHz at the bottom of each band to 8.7 MHz at the top (highest frequency).

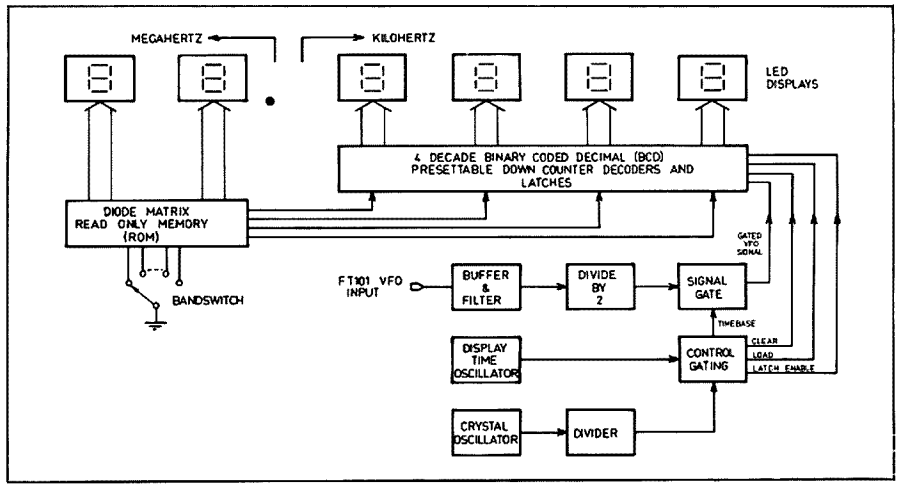


FIG. 1: Block Diagram.

Because of the backwards tuning, a down counter must be used so that as the VFO frequency is decreased the frequency displayed increases.

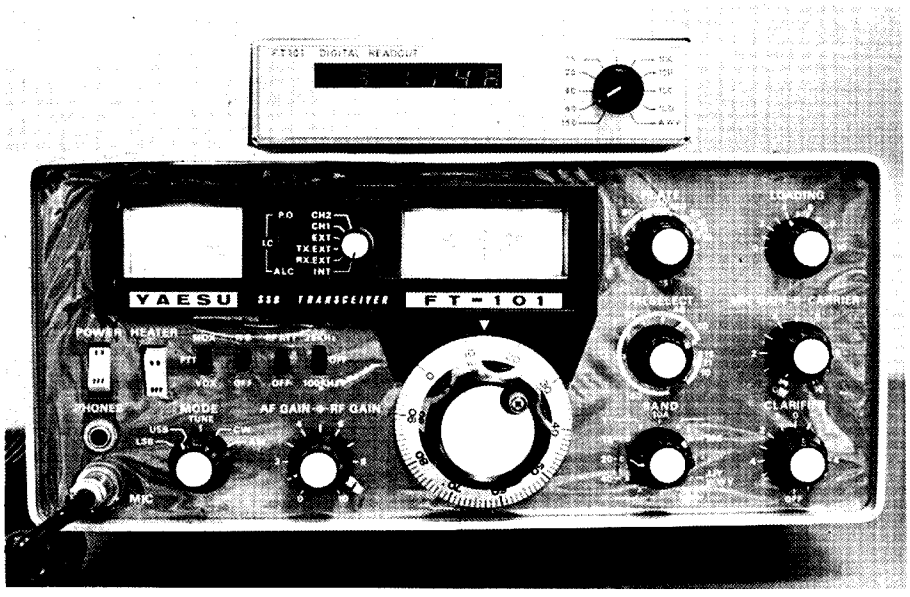
The VFO signal is gated through to the counters and as the megahertz digit of the VFO frequency is not required; it has no bearing on the transceiver's operating frequency anyway, the most significant digit is allowed to flow nine times such that the megahertz digit is lost and only the kilohertz digits are retained in the counter.

The two megahertz digits, tens and units are supplied to the LED's direct from one section of the diode matrix read only memory (ROM), controlled by the bandswitch such that when on 20 metres the two digits 1 and 4 are displayed and so for the other 10 bands of the FT101.

Since the frequency is required to a resolution of 100 hertz, the counter must be enabled for a period equal to the reciprocal of this frequency, that is 10 milliseconds. In this design the VFO signal after buffering is divided by 2 in a D-type flip-flop because the 74C192 counters will not operate from an 11 volt rail (the design lowest value) at 9 MHz but will count reliably at 4.5 MHz. To make up for this division, the counters are enabled for 20 milliseconds instead of 10.

Readers will realise that feeding 4.6 MHz (9.2 ÷ 2) into a counter for 20 milliseconds will not give a readout of zero, the bottom of some bands, or 500, the bottom of others. To overcome this problem, the counters are preset before each millisecond count period with a number determined by the band in use. This number is derived from the second part of the diode matrix ROM. Another problem solved by presetting the counters is the fact that the bottom of each band does not correspond exactly with 9.2 MHz VFO frequency and the difference varies from band to band, depending on the exact frequency of the local oscillator crystal in the transceiver. For example on 80 metres LSB in the writer's FT101, 3.5000 MHz results in a VFO frequency of 9.20088 and the counter is preset to 7009 (i.e., 9.2009 minus .7009 gives .5000, the megahertz digit being ignored). Similarly on WWV band and AM mode setting 10.0000 MHz corresponds to 9.19983 and the counter is preset to 1998.

Each band, therefore, has such a number stored in the ROM in binary coded decimal form; that is 4 binary digits for each decimal digit. 1998 is stored and presented to the counters as: 0001, 1001, 1001, 1000.
1 9 9 8



The FT101 with Digital Readout Displayed.

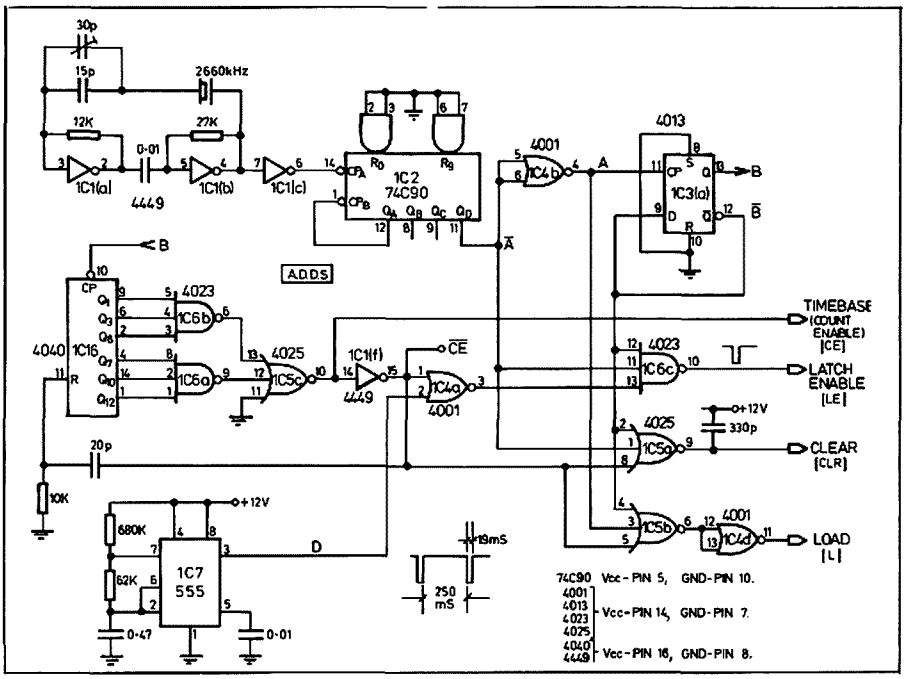


FIG. 2: Crystal Oscillator Control — Gating and Display Oscillator.

Referring to Fig. 1, the remainder of the circuitry is required to generate the time-base; the standard 20 mSec period for counting, the pulses to clear and reload the counters, the pulse causing the latches to store the frequency recorded in the counters and a display time oscillator which allows only about one in 10 latch enable pulses to go through to the latches resulting in each displayed count being displayed for long enough to be readable, about 250 milliseconds.

CRYSTAL OSCILLATOR, DIVIDER AND GATING

Referring to Fig. 2, inverting buffers IC1 (a) and (b) are connected to form a high gain non-inverting amplifier with the crystal in the feedback path. The crystal therefore oscillates In its series mode and the frequency is finely adjusted with the series trimmer. The oscillator output is buffered by IC1 (c) and then divided in frequency by 10 in IC2 giving a symmetrical square wave at 266 kHz (see waveform A in Fig. 5). Since both this waveform and its complement are required for the gating circuitry, a 2 input NOR gate IC4 (b) is included to accomplish the inversion. The A signal is divided by 2 in IC3 (a), a D-type flip-flop, giving the B signal of Fig. 5 and its complement B.

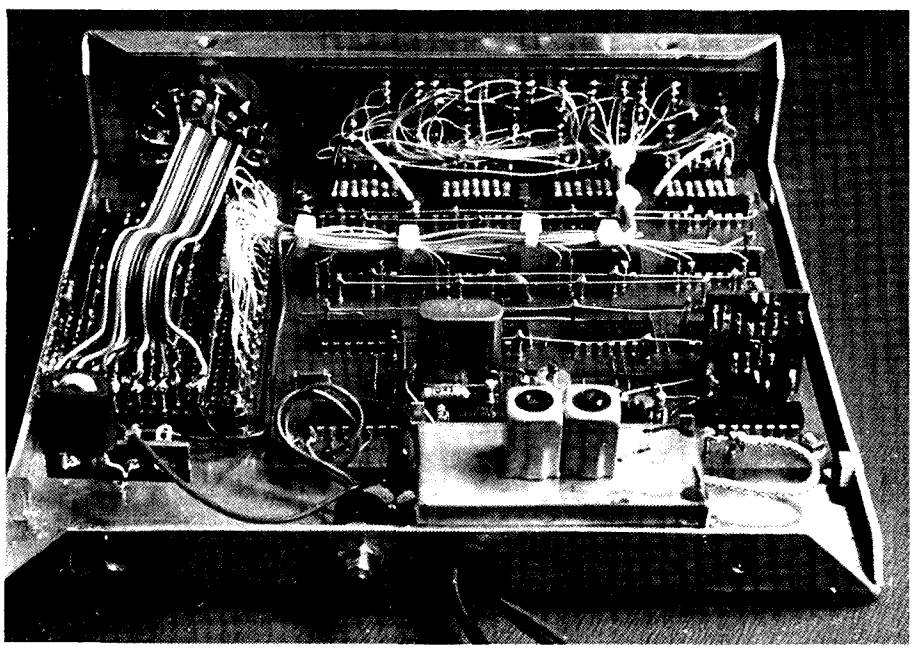
IC16 is a 12 stage divider with all 12 outputs being available to select the division required. A positive spike on pin 11 (Reset) sets all outputs to 0 and the 133 kHz wave on pin 10 (Clock) starts the divider counting. When the count reaches the value required to set Q1, Q3, Q6, Q7, Q10 and Q12 outputs to 1, all others being 0, the outputs of IC6 (a) and IC6 (b) go low and IC5 (c) goes high. This marks the end of the 20 millisecond counting period and after one further negative transition of the clock (waveform B) IC5 is reset to zero by IC1 (f) output going positive. The division in this design is 2661, the number one gets by adding 2^0, 2^2, 2^4, 2^9 and 2^{11} since Q1, Q3, Q6, Q7, Q10 and Q12 are gated to generate the divider reset pulse. This divisor is of course governed by the crystal frequency used and provided certain conditions are met, any crystal frequency may be used up to the value determined by the highest divisor available in IC5, which is 4096. The condition is that 20 times the crystal's period of oscillation must be an integral multiple of 20 milliseconds. That is any crystal from 2 kHz to 4095 kHz may be used provided it is a whole number of kilohertz.

Therefore if an intending constructor has a crystal on a frequency less than 4096 kHz and the frequency satisfies the above condition then the appropriate outputs of the divider are gated together to give the desired divisor.

The display time oscillator, IC7, a 555 timer IC, generates a waveform which is low for 19 milliseconds and high for 250 milliseconds. The latch enable pulses are only generated if the counter enable CE pulse is high while IC7 output is low that is the 19 millisecond period. This time is selected to be slightly shorter than the count period to ensure that every displayed count remains displayed for 250 milliseconds. In the 7.52 uSec period between counts three things must occur. Firstly if it is 250 milliseconds since the previous occasion a count was displayed and the display timing signal (D on Fig. 2) is low, the latches are enabled transferring the 4 digit BCD number in the main counter to latches or storage buffers. This occurs on the positive transition of the LE waveform of Fig. 5.

Secondly and a few nanoseconds later the data in the counters is cleared to zero by the positive transition of the CLR waveform. This very short delay is due to the fact that it takes a finite time for the counters to be reset after the CLR transition is applied. This is fortunate because it ensures that the data in the counters gets put in the latches before the counters are cleared.

The third operation in this period, when the main counters are not counting the



View showing the Inside Components.

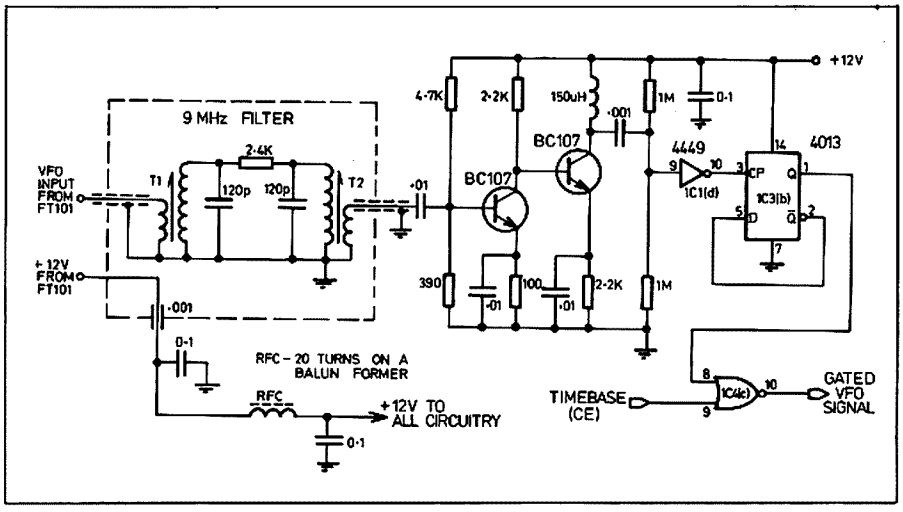


FIG. 3: VFO Filter, Buffer Amplifier, Divider and Signal Gate.

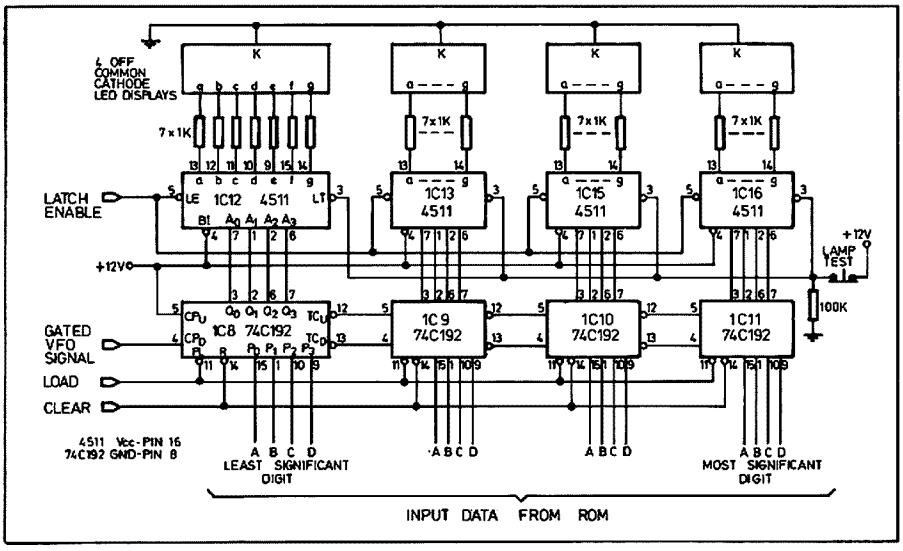


FIG. 4: Counters, Latches and Decoders.

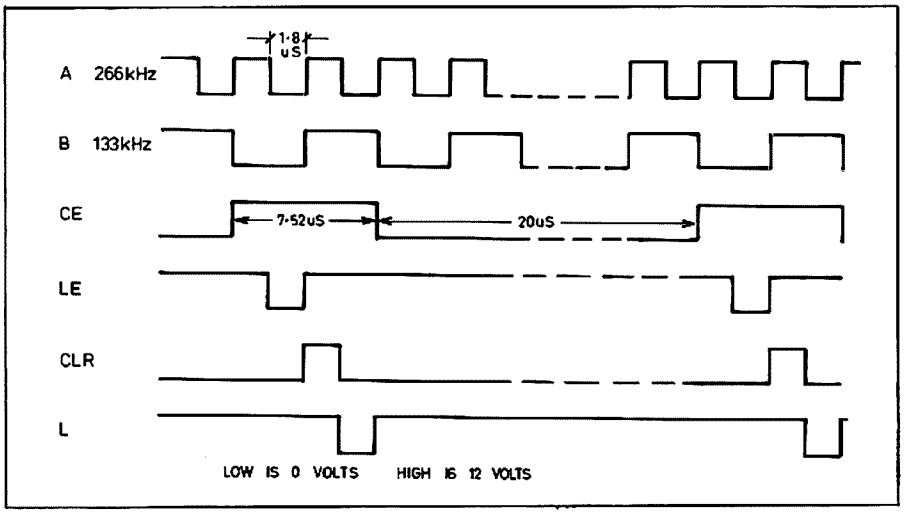


FIG. 5: Waveforms of Fig. 2.

VFO frequency, is the loading of the 4 digit BCD number from the ROOM Into the counters, giving them the number at which to commence counting. This occurs at the negative transition of the Load (L) waveform.

As can be seen from Fig. 2, these waveforms are generated by 3 gates IC6 (c), IC5 (a) and IC5 (b). The purpose of the 330 pF capacitor on the output of IC5 (a) is to remove a very short unwanted pulse (known as a "glitch") caused by nanosecond delays in the divider IC16. The capacitor is taken to + ve rail and not to chassis as it was more convenient to do this on the printed circuit board.

VFO SIGNAL BUFFER, DIVIDER AND GATE (Refer to Fig. 3)

The transceiver VFO signal, at a level of about 100 millivolts RMS, is applied to a filter composed of two top coupled tuned circuits adjusted to give a sufficient transfer signal over the band 8.7 to 9.2 MHz. The filter is completely shielded in a brass box, mainly to prevent spurious signals from the counter getting back into the transceiver. The filter output at about 20 millivolts is amplified by the two stage transistor buffer and further amplified by the inverting buffer, IC1 (d). The input of this inverter is biased to half of the supply to utilise the device's high gain in its active region.

As mentioned earlier the VFO signal frequency must be halved as the main counters will not operate at 9 MHz. This division is accomplished by IC3 (b), a D-type flip-flop. Most 4013 flip-flops will operate satisfactorily at 9.2 MHz on a 12 volt supply rail but difficulty could be encountered if the supply voltage is reduced significantly.

IC4 (c) is the main signal gate allowing the half frequency VFO signal through to the counters for precisely 20 milliseconds at a time.

COUNTERS, LATCHES AND DECODERS (Refer to Fig. 4)

IC8, IC9, IC10 and IC11 are synchronous, up-down presettable BCD counters with the gated VFO signal applied to the count down input of the least significant digit (100's of hertz) counter. The counters are cascaded by connecting the carry output of each counter with the count up Input of the following one and connecting the borrow output to the count down input.

The load and clear pulses are applied to the appropriate inputs of all four counters and the 4 BCD digits from the read only memory are applied to the data Inputs of the counters. The counter output Is a BCD number representing the value of the count reached by the counter at that time. This BCD number is applied to IC12, 13, 14 and IC15 respectively which contain latches or memories which store the BCD number at the end of a 20 millisecond count period. Storage of the data is effected only when a positive transition occurs on the latch enable line. This transition must occur sufficiently infrequently to enable one to see the number displayed before the next count is displayed.

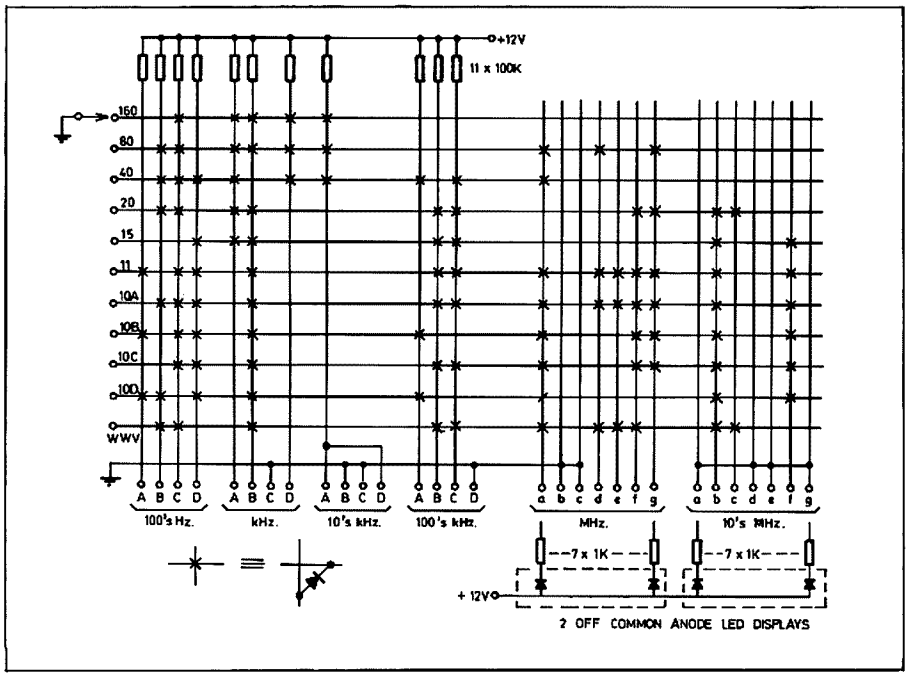


FIG. 6: FT101 Digital Readout ROM.

The 4511 IC's also contain BCD to 7 segment decoders and circuitry to provide sufficient drive current for the 7 segment common cathode displays. The decoders convert the BCD digit on 4 lines to 7 lines to give the required decimal digit. A lamp test facility is provided to check that all segments of the displays are working. When a logical low is applied to the lamp test input a figure 8 is displayed on all four digits Independent of the data inputs. This is accomplished by the normally closed push-button connected to the positive supply.

DIODE MATRIX ROM

The matrix consists of 11 horizontal rows, one for each band on the FT101, and 30 vertical columns, 16 for the 4 BCD numbers loaded into the counters and 14 for the two 7 segment megahertz digits. In the first part of the ROM giving the BCD numbers, referring to Fig. 6, at each intersection of a row and a column where a logical O (Low voltage) is required on that data line on that band, a diode is included between the row and column.

In the second section of the ROM where a particular segment is required to be illuminated on a particular band a diode is included at that matrix intersection.

CONSTRUCTION

Most of the components are mounted on two printed circuit boards, one carrying the 6 LED displays, mounted vertically on the other larger board. This latter takes most of the circuitry and is single sided but with numerous links and rails above the component side. The display time oscillator IC7 is wired on an outboard piece of veroboard mounted vertically on the main board.

The VFO filter is mounted in a small brass box at the rear. The positive supply from the transceiver also enters the filter box leaving it through a 1000 pF feed-through capacitor.

Intending constructors should make sure to carefully shield the VFO signal line, earthing the braid at one point on the read-out chassis and at the etxernal VFO socket on the FT101. If the shielding is not done carefully spurious signals will get into the receiver. Solid S9 birdies were noted at various stages during development but these were eliminated by careful shielding.

The read only memory is constructed on Veroboard with the columns formed by tracks on the board and the rows formed by wires supported by matrix board pins. The diodes and the 100K resistors are mounted vertically while the IK resistors limiting current to the LED megahertz displays lie flat.

Great detail of the construction will not be included here as the writer would not expect readers to duplicate the readout device exactly. However, if a demand exists sets of printed circuit boards with much improved layout could be made available. Cost of the IC's and LED displays is $40-$50 for this project, going on prices current at the time of writing. ■

80 CHANNELS FOR THE ICOM IC22S

Reprinted from APC, July 1977.

G. Percy VK3ZQP
22 Cotswold Cres., Springvale South, 3172

Most of you will have seen or heard the new Icom IC22S rig which is the latest version of the popular IC22.

Whereas earlier IC22's used crystals, two for each channel required, the IC22S uses a Phase Locked Loop Synthesizer. Unlike other synthesized rigs, the IC22S uses a conventional 22 position switch wired up to a diode matrix inside the unit. Up to eight diodes are used for each channel that you require, In a combination unique to that channel.

An IC22S was purchased and fitted to the car and many contacts were made on the various channels fitted, namely seven repeater and three simplex. Other operators were then heard QSYing to various "private" channels and other channels which were not programmed into the IC22S.

The thought occurred that this could be done on the IC22S by using an external programming unit to select the required channel in addition to those already programmed into the rig.

Thus facilities similar to other switch programmable rigs could be obtained. In the case of the IC22S, all 25 kHz channels in the WIA band plan can be "dialled up".

After examination of the IC22S circuit, and a couple of hours of thought and doodling, it was apparent that three switches, to dial up the frequency required, would have to be decoded with logic circuits to set up the required diode pattern in the rig.

To select any 25 kHz channel from 146 to 148 MHz, it is apparent that 80 combinations of the 8 diodes in the IC22S must be manipulated by the logic circuit. Since the rig already uses CMOS chips in the synthesizer, it was decided to also use CMOS in the external programmer unit.

No attempt will be made to explain exactly how the circuit works, step by step, as this is beyond the scope of this article.

In use, to use the programmer, position 22 on the IC22S channel switch is selected, which makes available the eight diode positions in the matrix to the 9 pin socket at the rear of the IC22S. The +9V supply via channel 22 position is also wired to the socket. Earth is obtained through the ground return of the car. The programmer may be left plugged in at all times since it is only activated when the channel switch is set to position 22. Current drain is about 5 mA.

The three switches on the programmer are used to select the required channel. Frequency is read directly from the switch positions.

IC22S with Home Brew Channel Synthesiser.

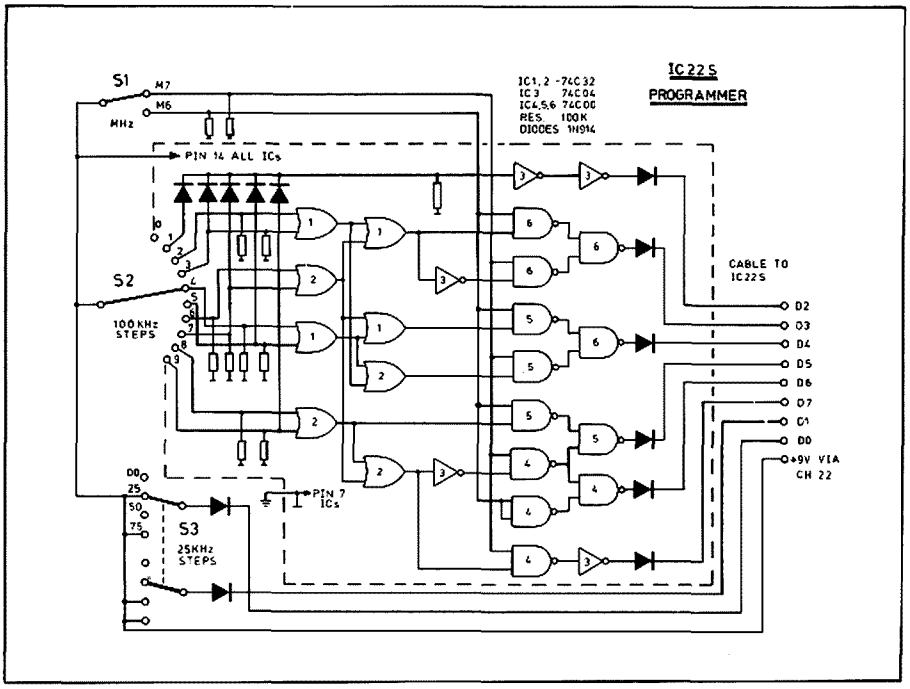
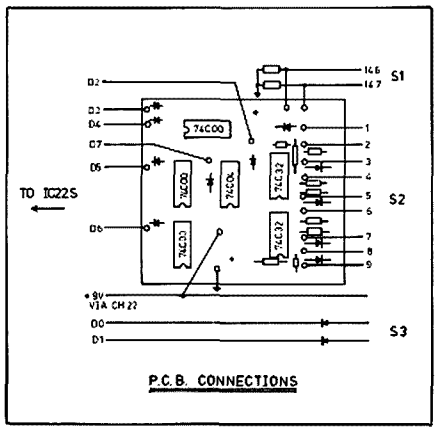


FIG. 1: Above.

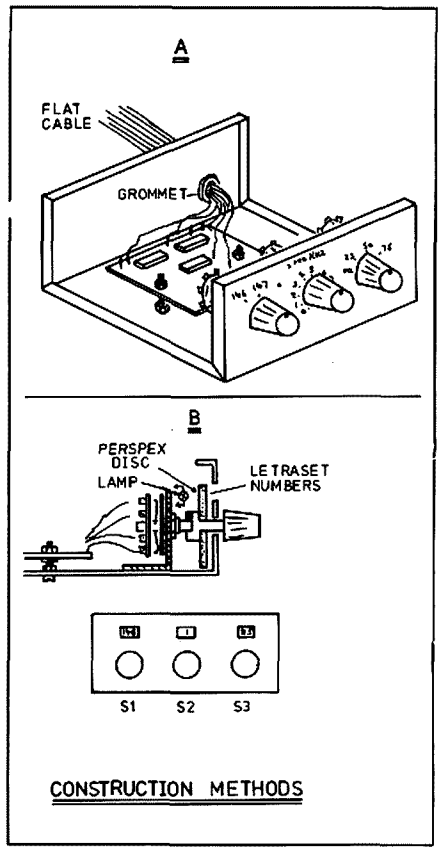
Fig. 2: Right.

The whole logic circuit is built up on a double sided printed board approximately 3 in. x 2.5 in. and is mounted in a small aluminium case with the three switches on the front panel. This box can then be mounted in any convenient position in the car. A suggested position would be under the IC22S attached to the cradle support bracket.

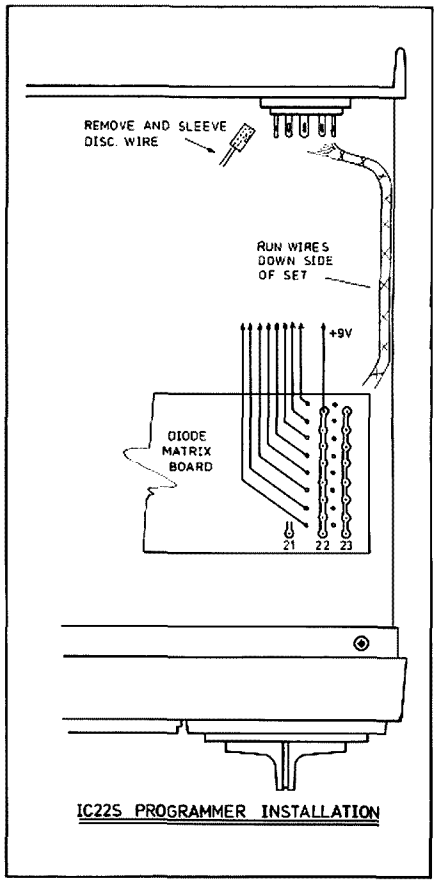
A digital readout of the frequency selected could also be made but this was rejected on the grounds of cost and the doubtful advantage to be gained.



P.C.B. CONNECTIONS



CONSTRUCTION METHODS



IC22S PROGRAMMER INSTALLATION

All of the CMOS chips are readily available and cost about 40c each. The switches are standard Oak types, or similar, and are, in fact, the most expensive parts in this project. Thumbwheel switches could be used but are expensive and difficult to manipulate whilst mobile.

Total cost of the unit should be less than $15, according to the state of the "junk-box".

After constructing this unit, it was found that a similar unit is available in the US (N.B.: 15 kHz steps though) and retails for US$75. Its' easy to see the advantages of home brewing!

Construction is simply a matter of soldering the appropriate bits into the board, connecting the switches, mounting in a box and plugging into the IC22S. Ten way flat ribbon wire can be used to connect to the IC22S. NORMAL HANDLING PRECAUTIONS WITH CMOS SHOULD BE TAKEN AS A SAFEGUARD, although no damage to any chips was made when constructing the prototype.

The IC22S Is modified slightly by removing and taping the discriminator wire from the accessory socket and wiring the eight diode positions to the socket along with the +9V rail from position 22 on the channel switch. This point is also made from the diode matrix. That's it. These mods can be easily removed later if you wish.

Actual coverage of the unit, as presented, is all 25 kHz steps from 146.000 to 147.975 MHz inclusive.

PLEASE NOTE:
THIS UNIT CAN ONLY BE USED ON THE IC22*S* AND NOT ON THE EARLIER VERSIONS OF THE IC22. Sorry.

If sufficient people are interested, a printed circuit board will be made available, at cost. Probably about $5, depending on quantity made. ■

NCRA CONVENTION ADDRESS — SENATOR KNIGHT

Address by Senator J. W. Knight, Senator for the ACT, to the first National Convention of the National Citizens Radio Association, Canberra, 3 September 1977.

Mr. Chairman, Ladies and Gentlemen:

It gives me great pleasure to have been invited on behalf of the Government to address your first national conference.

The Minister for Post and Telecommunications, Mr. Robinson, is unable to be present today and has asked me to convey his apologies.

I am especially pleased that you have chosen Canberra as the convention venue.

This is not only because Canberra is the National Capital but also because in Canberra, I understand, the use of CB radio is not only well established but well controlled.

I have been told by officers of the Minister's department that they are very satisfied with the way that the local group organisations run their affairs and the way in which regulations are complied with.

There is another reason for my having some satisfaction in addressing you.

In Canberra the amateur radio operators, through the Wireless Institute of Australia, are working very closely with Citizens' Band Clubs.

This is particularly pleasing to me as some of you may also be aware that my father is a keen amateur radio operator.

This co-operation is gratifying and it is hoped that it will spread to other areas of Australia.

There have been many significant social, economic and related changes in Australia over the past twenty years.

Many of these changes have resulted from advances in technology.

Probably one of the most dramatic technological developments has been in the field of electronics.

This has allowed inexpensive portable two-way radio equipment to come within the reach of the ordinary citizen.

Not surprisingly these developments led to pressure on the Government to introduce a CB service.

While to many the issues were very clear and simple, the introduction of a radio service is very complex and not without its difficulties.

To preserve the radio frequency spectrum allocated to Australia it has always been necessary to carefully restrict radio communication services to meet needs which could be demonstrated as essential and which are generally in accordance with the philosophies of the International Telecommunications Union.

Australia is a major user of the radio frequency spectrum because of our widely spread cities which are vast distances apart.

Another particular concern of any administration is the possibility of interference caused by transmissions in the high frequency part of the spectrum.

This was, of course, very significant in considering the introduction of a CB service in Australia.

In reaching its decision to introduce a CB service the Government was anxious that Australian manufacturers be given an opportunity to compete in the CB market.

The Government also believed that because of the significant technological advantages that it offers, the UHF band was most suited to CB radio.

The Government is hopeful that CB operators will change over to UHF as quickly as possible.

One of the considerations in the introduction of any new service and something which still has to be resolved in relation to CB is that of maintaining discipline within the ranks of CB operators.

Governments can Introduce legislation of one kind or another to achieve discipline or supervision.

Our approach to the question of supervision starts at a different point.

A scheme of self-regulation may be possible.

It has the advantage of minimising the Government's involvement and allowing citizens more freedom and choice in their activities.

I am sure everyone will appreciate it is extremely difficult for governments to consult with all members of the community. For this reason we would encourage the development of organisations to represent the view of particular groups.

This enables government to have a clear point of contact with groups in the community in order to consult with them on matters of mutual interest or concern.

This is essential in any scheme of self-regulation.

A fully representative organisation is seen as a definite need in the field of CB radio; it is something to which I hope this conference will address itself with a view to furthering that objective.

It is indeed unfortunate that the introduction of the CB service in Australia has to some degree been frustrated by recent events. The Minister has instructed his department that no one wishing to obtain a licence is to be disadvantaged because of the current industrial dispute within his department; this dispute is now before the Public Service Arbitrator and it is hoped that it will be resolved shortly.

I would like to talk briefly about the Citizens' Radio service and how it compares with other radio communications services.

Radio communication services in Australia generally operate with a discrete frequency for a specific purpose.

The Citizens' Radio service varies because in fact it has a number of frequencies and operates for the purpose of personal short range communications.

Protection is given to radio communication services by regulations which set technical specifications to ensure that equipment does not have inherent faults which will cause interference to other services.

Regulations are also employed to avoid interference to the operations of a particular radio communication service.

However, governments do not generally involve themselves in the actual operations within the service. The confusion arises because some people expect this.

It is not the intention to intervene in the use of the frequencies allocated to the Citizens' Radio service except in two areas.

To ensure all operators are properly licensed and that the few regulations provided, such as prohibition on obscene language, hoax calls, etc., are complied with.

In effect, it is expected that the Citizens' Radio service, like other radio communication services, will be self-regulated.

Given these few constraints upon the service it is still apparent that there will be

areas for discussion between the Government and the user.

As mentioned earlier, some discussions have already taken place.

The results of those discussions are reflected in a new draft specification (I believe it is called RB 14) which I understand is to be made available at this convention.

The Government is giving notice of its intention to change rules and regulations affecting the service, release the document for public discussion, allow time for submissions to be received, and only then finalising the formal document.

I would now like to make some further comments about the regulations governing the CRS.

The regulations are few in number; they largely deal with technical specifications.

Every other radio communication service has many more restrictions placed upon it.

It is not considered difficult for people to comply with the conditions and this includes both the operators *and* the retailers of equipment.

There is concern about advertisements now appearing in specialised CB publications which advertise the sale and availability of equipment designed to be used in the amateur service only.

The same applies to the advertisement for power amplifiers.

The Minister wishes it to be made quite clear to everyone concerned that the Government will not stand by and allow pirating activities into other authorised services. Nor will we stand by and allow power amplifiers designed for another frequency to be sold for and used within the Citizens' Radio service.

It is the Government's view that strong action should be taken to ensure that other authorised services are protected and that licensed operators in the CRS comply with the regulations.

The Government is presently preparing a new Radio Communication Act to replace the existing Wireless Telegraphy Act.

It is expected to be introduced in the 1978 autumn session of Parliament. The present Wireless Telegraphy Act was introduced in 1905 and some of its provisions are now outdated and do not fully cover the advances made in technology in the last 70 years.

The new Act will rectify those faults. The Act will also make provision to strengthen the Government's control over regulation of services.

Drafting of the new Act is now taking place and the Government is willing to accept submissions from interested bodies in the community who are involved in radio technology.

In a short time it is hoped the UHF CB service will commence.

It is understood that manufacturers will have the equipment available for sale early in the new year.

I note that one of your speakers is a representative from a manufacturing firm engaged in producing this equipment.

No doubt he will be speaking to you about what lies ahead in using this technology.

There are two final matters I would like to raise.

It has been suggested that the Government's decision in relation to the acceptance of the interim HF service transfers an illegal operator situation of 1977 to 1982.

This is not the case.

In 1982 operators of HF equipment will only be allowed to continue using that equipment under the auspices of the Amateur Radio service.

Five years is sufficient time for people to obtain qualifications as amateur operators.

It may well be that modifications to the existing examination procedures and restrictions will take place in this five year period.

The Wireless Institute of Australia has already lodged a submission seeking changes to some of their operating restrictions.

These are now being studied.

Finally, I turn to the present licensing system.

The Citizens' Radio service is the first new radio communication service introduced in Australia for many years.

From the licence applications received to date it appears to be the second largest service to be administered by the department.

The Government is encouraged by the operating practices of most of the people involved, particularly those who are members of the Citizens' Radio service clubs.

It is to be hoped that this will continue and that all operators will comply with the regulations laid down.

It is a service for all citizens in the community.

The way *is* clear for its users to make it a valued means of communication.

I trust that here at your first national convention you will set the scene for conduct and regulation of the service for the future.

Accordingly, Mr. Chairman, I now have pleasure in formally opening the convention and wishing you well in your deliberations. ■

DO AMATEURS SUFFER FROM THEIR IMAGE?

From Westlakes Radio Club — Monthly Newsletter, October 1977.

Recently, whilst talking to a member of an electronics organisation who had been engaged in interviewing prospective candidates for a research post, he mentioned one such applicant who met the requirements and continued — "the only thing I have against him is that he is a 'ham'."

This was quite a serious statement, and when I asked the reason for this, his reply was that "most of the 'hams' he had met were rather talkative, fanatical fellows who never knew when to stop 'hamming' and start working." Compared with the American electronics companies who are proud to publish lists of licensed amateur employees with their advertisements (see QST for example), this attitude was somewhat startling and to find out what people in the vicinity thought about us, a survey was taken among twenty average members of the public and asking them: "What do you think of radio amateurs?"

(a) Nine blamed us for all the TVI and BCT.

(b) Three thought we were "nut cases".

(c) Five thought were were "odd fellows" but harmless.

(d) Three did not know we existed.

On soliciting the opinions of five leading members of the electronics engineering world, e.g., Ph.Ds., company heads, research leaders, etc.:—

(a) Two would not employ radio amateurs in their organisation (no reason was given).

(b) One had listened on his shortwave set and had the opinion we talked a lot of tripe. He had doubts about *offering* technical employment.

(c) One said he thought most technical blokes talked a lot of tripe anyway, so he would not risk employing an amateur.

(d) One said it would depend entirely on his qualifications.

Since this survey covered people in a 50 km radius of club premises, and couldn't be called local opinion, it is indeed food for thought — perhaps the time has come for us to take a good look at ourselves and our activities.

Obviously, since the time spent on the air is in effect our "shop window", we must give some thought to our topics of conversation if we are to dispel this somewhat weird opinion of our activities. We know we are not *all* nut cases, and have other things to talk about apart from the weather. However, taking a listen around 80/40 and 20 recently did raise a problem of how to dispel criticism! We *do* hear a lot of tripe, you know, aid whilst it would be wrong to wish that every station would start being frightfully technical, there's an awful lot of cleaning up to be done.

To sum up the situation, we do not present a very good picture to the eavesdropping layman. It is, one agrees, just a hobby, just as woodwork or bowls is to others, but one *can* perfect even a hobby, and be proud of the way it is presented.

So there you are — whether we know it or not, we have a large audience of laymen who on performance or behaviour of one amateur, form an opinion of us all as a group. Who cares? Well, we do, for one. One would like to hear of an amateur being employed because he is a "ham" and not being dismissed from mind for that very reason. ■

1K MEMORY FOR 8 BIT BAUDOT CODE

H. G. Kociemski VK4ZAP

This article complements a previous article "Teletype Message and Keyboard Generator" (AR Dec. 1976). You will need to refer to this previous article.

The circuit is simple and is based on the National Semi-conductors 5058 integrated circuit, which is a most incredible device. The 5058 is a 1024 bit shift register (S/R) in an 8 pin package. A few years ago one would have been staggered at the thought. A look through the National MOS Data Book will reveal many fascinating applications of MOS technology. This static shift register can store 1024 eight bit words (characters).

Considering 72 characters can be printed on a teleprinter page and allowing for a few more locations in the shift register for carriage return (C/R), line feed (L/F), letter shift (L/S), figure shift (F/S) then up to 1½ lines of Baudot (RTTY) code can be stored.

Hence the S/R is used as a "Linear Memory" serial memory — Ed.), unlike the parallel memory where the 5 units of code are fed to 5 separate memories simultaneously. The latter circuit would have greater capacity but would be more complex, and anyway the 128 characters capacity is entirely satisfactory for my applications.

As an example, the following message can be stored, fed out to the transmitter when required and even recirculated over and over again.

THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK F/S 0123456789 C/R L/F.

THIS IS VK F/S 4 L/S XXZ TESTING ON F/S 146.60 L/S MHZ C/R L/F.

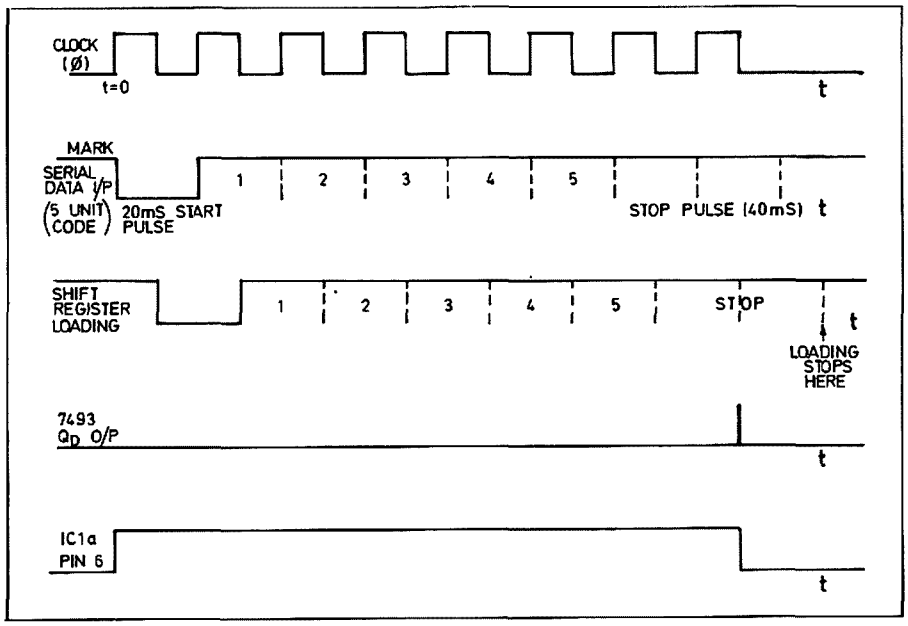


FIG. 2.

This message employs about 109 characters including spaces. The rest of the memory is filled with spaces.

OPERATION

With the READ/WRITE switch in the WRITE position the first trailing edge of the serial Baudot (start pulse) appears at pin 4 of the nand gate (IC1a), the output of which goes high. The step response of the following RC circuit produces a high at pin 3 of the nor gate followed by a fast exponential decay.

Hence for an instance the output of the NOR gate activates the flip-flop 7473, pin 12 of which goes from low to high thereby causing the clock-inhibiting NAND gate to open. At the same time pin 13 of the 7473 goes from high to low thereby deactivating IC1a, preventing unwanted toggles of the flip-flop.

The 7493 counter counts the clock trailing edges and resets after the eighth transition. The D output, pin 11 of the 7493, also resets the 7473 flip-flop, thereby inhibiting the clock pulses and activating IC1a.

So the previous process has allowed 8 clock pulses to reach the clock input of the 5058 memory, initiated by the start pulse of the serial Baudot. Now each of the 8 bits of Baudot (start pulse, 5 data bits, 2 stop pulses) are addressed to their sequential positions by the 8 clock pulses. The next character may follow instantaneously. The output of the 5058 doesn't have enough swing to drive the recirculate input (pin 5) so the 2 NOR gates are used as amplifiers.

Reading is entirely a matter of clocking pin 6 of the 5058 continuously.

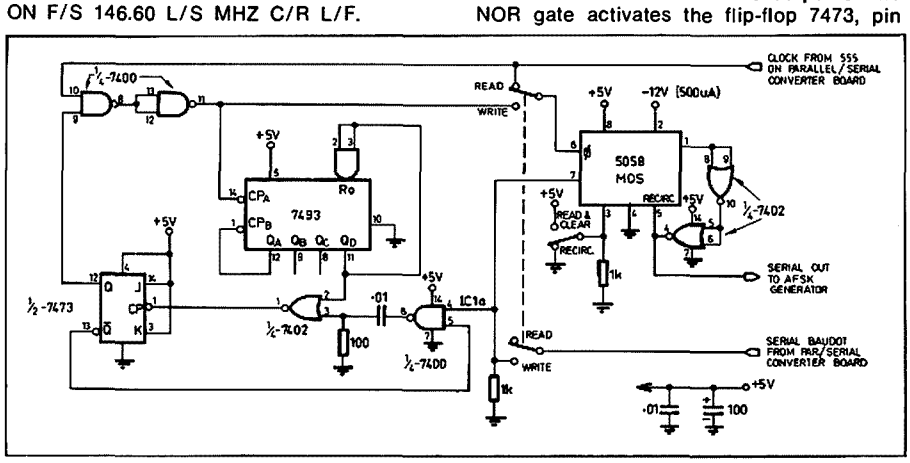


FIG. 1.

POSTSCRIPT

Norm VK4NP has developed a VDU and keyboard system that I recommend. A complete and comprehensive description is available from his QTHR for $50.00. This includes the circuit board layout. On air it gives a credible professional performance. ■

COMMONWEALTH CONTEST 1977 RESULTS

The following is extracted from the RSGB results of the 1977 contest:

1. ZL3GQ — 4777 points.
2. VE7CC — 4606 points.
3. VE7UZ — 3856 points.
4. ZL2BR — 3658 points.
5. VE3AKG — 3656 points.
6. G3FXB — 3583 points.

Receiving Section:

1. Eric Trebilcock BCRS195 2195 points.

Australian Scores:

8.	VK5NO	3431	61.	VK7RY	1000
10.	VK2BPN	3293	78.	AX4XJ	711
15.	VK2GW	2925	80.	VK2NS	690
19.	VK7BC	2455	84.	AX7HE	641
23.	AX3XB	2250	87.	VK4KX	610
26.	VK3ZC	2128	87.	VK6VK	610
27.	VK3XU	1990	91.	VK2XQ	575
35.	VK5DL	1600	92.	VK2HC	545
36.	VK7CH	1575	93.	VK6SM	530
37.	VK7RO	1565	96.	AX3KS	425
39.	VK3YK	1536	98.	VK3CG	376
44.	VK6AQ	1325	100.	VK3RJ	345
47.	VK5KL	1270	103.	VK5FG	300
53.	AX4XA	1211	104.	VK3YL	225
59.	VK7JB	1075	104.	VK7ZO	225

Single band entries among the above were: 21 mc VK3RJ. 14 mc AX4XA, AX4XJ, VK6VK, VK6SM, VK3YL.

A check log was received from VK3PT.

A log from K7OB claimed score 2475; was not accepted as it did not contain signal reports.

The total Australian entry at 30 was marginally down on last year's 34. ZL did well with first and fourth out of a total seven entries.

Many exotic calls appear in the results, of which ZD8DO, ZB2CJ, VP8ON, ZE3JO and VU2GO are not known to have been worked from this area.

Scoring details, QSOs/Bonus areas per band, 80 to 10 metres are shown for the leaders:

ZL3GQ	33/28	94/38	165/49	45/34	10/9
VE7CC	36/28	48/35	155/54	62/39	7/7
VE7UZ	34/29	39/31	89/47	44/32	3/3

AUSTRALIAN AWARDS

Jack Batchler VK7JB takes out the Bronze Medallion for the middle placing.

RSGB COMMENTS

The 1977 event seems to have been conducted under very similar conditions to the previous year. Conditions for stations in Europe were rather indifferent while trans-Pacific paths for Australia, New Zealand and western Canada were very active. The HF Contests Committee was delighted to find a 10 per cent increase in the number of logs for the transmitting section. This must be partly due to the excellent publicity for the event in Australia organised by John Tutton VK3ZC, and Eric Trebilcock BCRS195. We regret the poor publicity in New Zealand and Canada but are taking steps to improve this for next year.

The overall winner this year is Peter Watson ZL3GQ, whose excellent signals on all bands gave him a total of 347 QSOs. Last year's winner, Lee Sawkins VE7CC, is in second place. For the fifth year in succession, Al Slater G3FXB, wins the Col Thomas Rose Bowl as the leading UK station.

In the single-band sections, 14 MHz is the only band to attract many entries. The leader here is Stuart Jesson G4CNY, who made 108 QSOs. In second place Is Chris Page G4BUE. The overseas leader on 14 MHz is R. Coleston AX4XA, who had 91 contacts. G4NCY used a T4XC/R4C combination with a 2-el quad and AX4XA used a FL200/AR88 with a 3-el Yagi.

As last year, the number of entries in the listening section is disappointing. Last year's winner, Eric Trebilcock BCRS195, again wins the Receiving Rose Bowl and deserves congratulations on his 36th "BERU" entry.

All the comments included with the logs were read with interest by the committee. There would appear to be no great dissatisfaction with the rules. The only area of debate is on the duration of the contest, with a few entrants preferring a resumption of the 48-hour period or similar with rest periods. There is some comment on the continuing clash with the WSEM contest. Unfortunately, although RSF (the USSR National Radio Society) is a member of IARU and has the facility of advertising its contest calendar in the IARU journals, it continues to be impossible to find out in advance the dates of these contests. In addition, given the very full contest calendar at this time of the year, unless the contest were to be moved to a completely different period it would be difficult to find an alternative date.

BERU 1978 is 11/12 March. Rules unchanged, but further notification in February Amateur Radio.

The Silver Medallion for the leading VK entrant was won by the late "Tubby" Vale VK5NO. ■

BOOK REVIEW

RADIO DATA REFERENCE BOOK
Fourth Edition. T. G. Giles G4CDY and G. R. Jessop, GGJP. Published by the Radio Society of Great Britain.

This book is one of the musts for any amateur radio operator. It is packed full of all that useful data and tables that are in continual use.

The new edition has been revised and new sections added with the data grouped into sections.

New sections dealing with transistors and heat sinks and modern filter design have been aded. They are full of easily used data.

The section on band usage and allocations, whilst not directly applicable in Australia, has a lot of useful information.

A very comprehensive and useful book which has a place in every shack. It may be obtained from Magpubs or from your favourite technical bookshop.

VK3AUI. ■

QSP

1978 SUBSCRIPTIONS

The following are subscription rates approved by Divisions for members in the 1978 year.

Members are reminded to send the amounts due direct to the Executive Office, P.O. Box 150, Toorak, Vic. 3142 as early as possible so as to avoid the automatic stoppage of AR through becoming "unfinancial".

Please do not wait until a Final Notice reaches you because this can be a costly matter for the Institute.

1978 Rates	$	Grade
VK1	21.00	all grades
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	18.00	AT
	15.00	Students (on proof)
	10.00	Pensioners (proven)
	10.00	Family (no AR)
VK3	23.00 + 2.00	FC
	20.00 + 2.00	AT
	14.00 + 2.00	Students (on proof)
	13.00 + 2.00	Pensioners (proven)
	17.80	F or C family (no AR)
	14.80	A or T family (no AR)
VK4	20.00	FA
	18.50	CT
	13.00	Pensioners & Clubs with AR
	7.50	Students (on proof)
	5.00	Clubs (no AR)
VK5	20.50	F
	19.00	ACT
	9.00	Pensioners
	9.00	Students (on proof)
	2.00	Junior Students (no AR)
VK6	20.50	FC
	19.50	AT
	12.50	Pensioners
	12.50	Students (on proof)

		$	
VK7	Post Codes 7000-7205	19.00	FACT
	Post Codes 7212-7304	18.00	FACT
	Post Codes 7307-7467	17.00	FACT
		10.00	Pensioners
		10.00	Students (on proof)

New members — joining fees VK2 — $2.00, VK7 — $1.00

Federal dues are included in the above rates as appropriate — these are Exec. — $7.50, IARU — $0.30, AR — $7.20

Explanation of symbols: (city = metropolitan capital)
F — Full member, city
A — Associate member, city
C — Full member, country
T — Associate member, country
G — Pensioners (proven)
S — Students (on proof)

NOTE: If a student in 1977 is no longer a student for the 1978 year the rate payable will be F or C if in possession of a call sign, A or T if not in possession of a call sign. ■

HF INTERNATIONAL

HF International is a group of worldwide pirates on the HF bands. They generally operate in the original 11 metre segment, more recently in the area now used by the expanded 40 channel system (and by the recent monitoring of this 40 channel region it looks like there are plenty of sets on sale so the CRS is not confined to the 23 or 18 intended channels). HFI overseas have moved into the lower portion of 10 metres as well as other spots of the HF spectrum. Their presence has been noted on the 14 and 21 MHz amateur bands as well as the commercial and other services space ad acent to these bands. In Australia there are between 600 to 1000 such operators and there was recently an international conference of HFI in America. It is the American end which controls the issue of "their" callsigns. The Australian end has reportedly asked for a block of a further 1000 "callsigns". Their world numbers are unknown but are believed to exceed 100,000 . . . we would do ourselves a favour by monitoring and reporting these pirates to the appropriate authority.

—Information VK2AWJ
From "The Lyrebird", Oct. 77

ELECTRONIC ENTHUSIASTS EMPORIUM

POPULAR INTEGRATED CIRCUITS IN STOCK

CA3012	CD4026	CD4724	LM380N	MC1496K	UAA180
CA3013	CD4027	CD40097	LM381N	MC1590G	UA723C LM723
CA3018	CD4028	CD40098	LM382N	MC14553	UA757
CA3023	CD4029	CD40174	LM387N	MC1648P	ULN2208
CA3028A	CD4030	CD40175	LM395K	MC4044P	ULN2209
CA3035	CD4031	CD40192	LM555CN	OM802	ULN2111
CA3039	CD4035	CD40194	LM555H	SAJ110	74C00
CA3046 LM3046	CD4040	CD40195	LM556N	SAK140	74C02
CA3053	CD4041	DM8097 1.90	LM562B	SD305DE	74C04
CA3059	CD4042	HEF see "CD"	LM565N	SD306DE	74C10
CA3060	CD4043	LH0070	LM566CN	SL415A	74C14
CA3079	CD4044	LM114H	LM567CN	SD425A	74C20
CA3080	CD4045	LM301AN	LM709N	SL437D	74C85
CA3081	CD4046	LM301CN	LM710CN	SL440	74C86
CA3082	CD4047	LM304H	LM710CH	SL442	74C90
CA3083	CD4049	LM305AH	LM723H	SL447	74C154
CA3086 LM3086	CD4050	LM307N	LM723N	SL449	74C160
CA3089E	CD4051	LM308V	LM725N	SL610C	74C162
CA3090Q	CD4052	LM309K	LM733CH	SL612C	74C174
CA3091	CD4053	LM310N	LM733N	SL613C	74C192
CA3120E	CD4066	LM311A	LM741CH	SL620C	74C901
CA3127E	CD4068	LM311H	LM741CN	SL621C	74C925
CA3128E	CD4069	LM312H	LM747CH	SL623C	80C95
CA3130T	CD4070	LM317K	LM747CN	SL622C	**MISC**
CA3140T	CC4071	LM318N	LM748CN	SL624C	AL5352
CA3600	CD4072	LM319H	LM1303N	SL630C	GL4484
CD4000	CD4075	LM319N	LM1310N	SL640C	GL5253
CD4001	CD4076	LM320K	LM1458N	SL641C	OL31
CD4002	CD4078	LM320T	LM1488N	SL645C	RL4484
CD4006	CD4081	LM322N	LM1489N	SL901B	RL5023
CD4007	CD4082	LM323K	LM1496N	SL917B	FND357
CD4008	CD4085	LM324N	LM1808N	SL1310	FND500
CD4009	CD4086	LM325N	LM3028 CA3028	SL3046	9001
CD4010	CD4093	LM326H	LM3046	SP8505	9368
CD4011	CD4502	LM339N	LM3086	SP8515	9601
CD4012	CD4503	LM340K	LM3900	TAA300	NSN71
CD4013	CD4510	LM340T	LM3905	TBA570	NSN74
CD4014	CD4511	LM349N	LM3909	TBA700	TIL306A
CD4015	CD4514	LM358N	MC1035P	TBA810A	11C90
CD4016	CD4515	LM370H	MC1312P	TB1750A	95H90
CD4017	CD4516	LM371N	MC1314P	TCA220	2102-2
CD4018	CD4518	LM372H	MC1315P	TCA290A	2513N
CD4019	CD4519	LM372N	MC1350P	TCA420A	S1883
CD4020	CD4520	LM373N	MC1351P	TCA580	S50242
CD4021	CD4528	LM374N	MC1454G	TCA730	MA1002
CD4022	CD4539	LM375N	MC1458 LM1458	TCA740	7805CP
CD4023	CD4555	LM377N	MC1468L	TDA1005	7824CP
CD4024	CD4556	LM379	MC1488 LM1488	UAA170	
CD4025	CD4720		In some cases pin for pin substitutes will be supplied.		

POPULAR SEMI-CONDUCTORS STOCKED

7400	7483	74S258	74LS174	BD238	2N3566
7401	7485	74S196	74LS175	BD437	2N3568
7402	7486	82S23	74LS181	BD438	2N3569
7403	7489	8281A	74LS191	BF173	2N3638
7404	7490	82S90	74LS192	BF180	2N3638A
7405	7491	74LS00	74LS193	BF194	2N3642
7406	7492	74LS01	74LS194	BF200	2N3643
7407	7493	74LS02	74LS195	BFY50	2N3694
7408	7494	74LS03	74LS196	BFY51	2N3731
7409	7495	74LS04	74LS221	BPX25	2N3819
7410	7496	74LS08	74LS253	BSX19	2N3866
7411	74100	74LS09	**SEMICONDS**	BU126	2N4037
7413	74107	74LS10	AC125	MFE131	2N4249
7414	74121	74LS11	AC126	MJ802	2N4250
7416	74122	74LS13	AC127	MJ2955	2N4355
7417	74123	74LS14	AC128	MJ4502	2N4356
7420	74132	74LS20	AC132	MPF102	2N4360
7422	74141	74LS21	AC187	MPF103	2N5245
7425	74145	74LS22	AC188	MPF104	2N5457 MPF103
7426	74150	74LS27	AD149	MPF105	2N5458 MPF104
7427	74151	74LS28	AD161/62	MPF106	2N5459 MPF105
7430	74153	74LS30	AS322	MPF121	2N5485 MPF106
7432	74154	74LS32	AT1138 2N301	MPF603	2N5590 MPF603
7437	74157	74LS37	ASY17	TIP31C	2N5591
7438	74160	74LS38	BC107	TIP32C	2N6027
7440	74164	74LS40	BC108	TIP120	2N6084
7441	74165	74LS42	BC109	TIP125	BA102
7442	74174	74LS73	BC177	TIP141	OA47
7445	74180	74LS74	BC178	TIP2955	OA90
7446	74181	74LS75	BC179	TIP3055	OA91
7447	74185	74LS78	BC182	TT800 2N4037	5082-2800
7448	74190	74LS86	BC212	TT801	40440 2N3731
7450	74177	74LS90	BC327	2N301 2N2869	40637A
7451	74191	74LS92	BC337	2N706A	40673
7453	74192	74LS93	BC547	2N918	40822
7454	74193	74LS95	BC548	2N2222A	40841
7460	74194	74LS109	BC549C	2N2646	BZX61
7470	74195	74LS113	BC559	2N2869	BZX79
7472	74196	74LS114	BC639	2N2904A	BZX70
7473	74S00	74LS151	BC640	2N2905	BZY93
7474	74S10	74LS153	BD131	2N3053	BZY91
7475	74S20	74LS157	BD132	2N3054	PA40
7476	74S74	74LS163	BD139	2N3055	PB60
7480	74S112	74LS163	BD140	2N3564	MEL12
7482	74S251	75LS164	BD237	2N3565	FCD820

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T-37 T-94
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SIMPLE QRP UPDATES

Dave Jeanes VK2BSJ,
822 Old Northern Road, Dural, 2158

After finding that I was missing good QSOs by being crystal locked on only two CW frequencies, my interest grew in some form of external VFO. The Radio Officer of a Japanese ship I visited in Darwin had given me a copy of CQ Ham Radio for November 1976. This tome, of 550 pages, had a section on home brew QRP rigs. It was here that I found a suitable circuit for an FET oscillator and buffer amp.

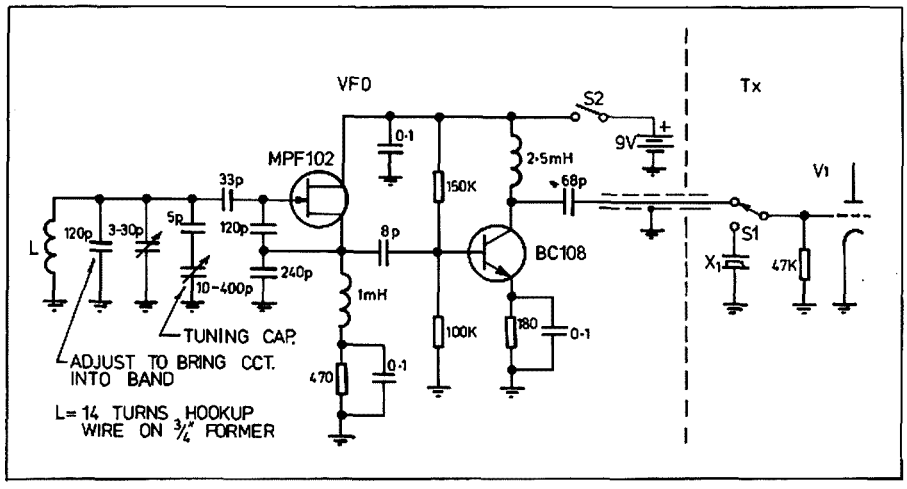


FIG. 1. VFO circuit.

Once again having limited parts on hand on board the Darwin Trader, I resorted to construction using copper clab fibre board and tag strips. This system again proved a simple and quick method of circuit wiring. A ¾ inch diameter plastic pill box was used as a coil former. Fourteen turns of hookup wire was all that I could comfortably wind. Araldite was spread all over the turns to give mechanical stability. A miniature single section broadcast gang was used for tuning capacitor, suitably reduced in value by a small series fixed capacitor. If variation in tuning range is desired the series capacitor can be an air spaced trimmer.

The oscillator circuit is fairly common, and uses a capacitance impedance divider, C5 and C6, to obtain feedback from the output circuit. Increasing the value of C6 reduces feedback. The MPF102 is a good device in this case, its use avoids loading the tuned circuit as would a bipolar transistor. Any input capacitance changes in the FET are swamped by C5 and C6. The original circuit showed an FET buffer following the oscillator, but as I had only bipolars on hand, I used an NPN buffer.

On switch on, no oscillation was apparent. I figured that this might be due to excessive feedback, and added an additional 120 pF across C6 which was originally 120 pF. Immediately I had healthy oscillation and found the signal at about 6.7 MHz on the receiver. Then by juggling the value of C1 and adjusting the trimmer C, I was able to get the circuit working from 7.0 MHz to 7.04 MHz. C1 actually consists in my case of an 82, 33 and 8 pF in parallel. At first opportunity ashore I purchased a miniature plug and socket, two DPDT switches and an Eddystone box measuring 4½ x 3½ x 2 inches. Trimming off surplus fibre board, I mounted the circuit board just off the bottom of the box with spacers. The 9V battery switch S2 and the tuning knob protrude from the front of the box and the output coax with plug from the rear. The transmitter was modified by fitting a switch S1, and the miniature socket. On completion of this wiring, I switched the transmitter on and looked hopefully for adequate drive from the VFO. Transmitter output dropped off by about one third compared with the crystal oscillator, however on air reports show no noticeable signal strength change at the receiving end. Some trace of chirp is apparent on 40 metres but stability is good. Chirp is non-existent on 20 metres. As the main role of this VFO was to QSO stations and then invite them to QSY to my crystal frequency, this role is met with satisfaction. On arriving home on leave, I was keen to use the QRP rig from my 40/20 metre trap dipole. I was not sure whether the simple antenna coupling would feed satisfactorily into the low input impedance of my low in height dipole. I need not have worried. Connecting the antenna lead to the centre conductor of the coax and the transmitter earth to the braid, tune-up was simple and on-air reports gave me excellent signal strengths. However, lack of a transmit/receive changeover relay meant that I was not getting the benefit of the tuned antenna for reception. The circuit, Fig. 2, was incorporated into the transmitter and the VFO/freq. doubler HT switch spare contacts were used to energise the relay and swing the antenna from receive to transmit. The relay is a miniature sealed DPDT unit designed for 28V operation, but works quite well on the 15V developed by the voltage doubler circuit.

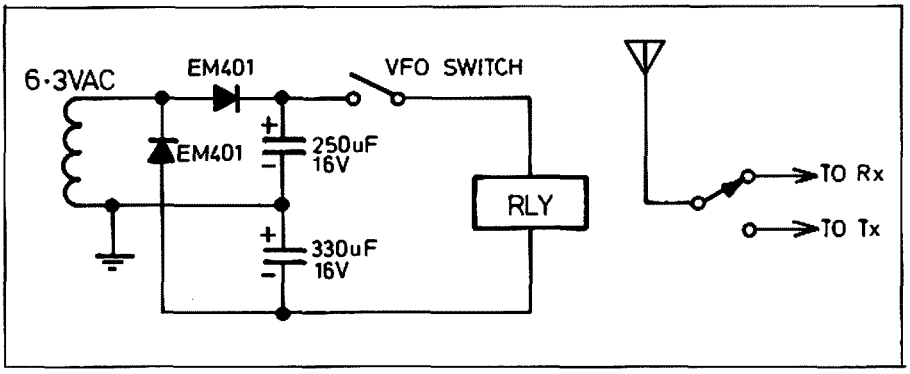


FIG. 2. T/R relay and power supply.

What started as the conversion of a four valve mantel radio into a Colditz type CW transmitter has now turned into a monster, but an enjoyable monster that has given delight in its construction and soothed the innate homebrewer's itch from which we all suffer to some degree.

Footnote: The VFO today (16/3/77) enabled me to zero in on AX2BHH/AM operating from a Qantas Boeing 747 enroute to the South Pole, and steal a QSO from under the noses of the sideband boys, on 40 metres. ■

JOHN MOYLE MEMORIAL FIELD DAY CONTEST

RULES — 1978

Amateur operators and Short Wave Listeners are invited to make this contest, held in the memory of the late John Moyle, a huge success. Contestants may participate either as individuals or as part of a group. There are two divisions in this contest. The first is for 24 hours continuous operation, and the second for any continuous period of 6 hours. Either period must be within the 26 hours available.

CONTEST PERIOD
From 0600 GMT February 11 to 0800 GMT February 12, 1978.

OBJECTS
The operators of portable field stations or mobile stations within the VK and P29 call areas will endeavour to contact other portable, mobile or fixed stations in VK, P29, ZL and foreign call areas on all bands.

RULES

1. In each division there are 8 sections.
(a) Portable field station, transmitting phone.
(b) Portable field station, transmitting CW.
(c) Portable field station, transmitting open.
(d) Portable field station, transmitting phone, multi-operator.
(e) Portable field station, transmitting open, multi-operator.
(f) VHF portable field, or mobile station, transmitting.
(g) "Home" transmitting stations.
(h) Receiving portable and mobile stations.

2. In each division, 24 or 6 hour, the operating period must be continuous.

3. Contestants must operate within the terms of their licence.

4. A portable field station must operate from a power supply which is independent of any permanent installation. The power source must be fully portable; i.e., batteries, motor generators, solar panels, etc.

5. No apparatus may be set up on site more than 24 hours before the contest.

6. All amateur bands may be used, but cross band operation is not permitted.

7. Cross mode is permitted, but note Rule 21.

8. All operators of a multi-operator station must be located within approximately an 800 metre diameter circle.

9. Each multi-op. transmitter should maintain a separate log for each band. A 2 FM rig may be separate from 2 AM or SSB rig, but note Rule 11. A separate QSO number series is required for each band.

10. All multi-op. logs should be submitted under one call sign.

11. Only one multi-op. transmitter may operate on a band at any one time.

12. RS or RST reports should be followed by serial numbers beginning at 001 and increasing by one for each successive contact.

13. **SCORING FOR PORTABLE FIELD STATIONS AND MOBILES.** Portable field stations and mobiles, outside entrant's call area — 15 points. Portable field stations and mobiles within entrant's call area — 10 points. Home stations outside entrant's call area — 5 points. Home stations within entrant's call area — 2 points.

14. **SCORING FOR HOME STATIONS.** Portable field stations and mobiles outside entrant's call area — 15 points. Portable field stations and mobiles within entrant's call area— 10 points.

15. Portable field stations may contact any other portable field station twice on each band and mode (10-160) during the period of the contest provided that at least 4 hours elapse after the previous contact with that station on that band and mode.

1. Stations may be worked repeatedly on 52 MHz and above providing 2 hours have elapsed since the previous contact on that band and mode. Note that FM, AM, SSB and any other voice modes are grouped together as PHONE.

17. Operation via active repeaters or translators is not acceptable for scoring.

18. All logs shall be set out under headings of date-time in GMT, band, emission, call sign, RST sent, RST received, and points claimed. List contacts in correct sequence. There must be a front sheet to show — name, address, division, section, call sign, call signs of other operators, location, points claimed, equipment used and power supply. You must also certify that you have operated in accordance with the rules and spirit of the contest.

19. Certificates will be awarded to the highest scorer of each section of the 6 hour and 24 hour divisions. The 6 hour certificates cannot be won by the 24 hour entrants. Additional certificates will be awarded for excellent performance.

20. Entrants in sections a, b, c, d, e and f must state how power for transmitting is derived.

21. All CW-CW contacts count double. Cross mode contacts count single.

22. Entries must be forwarded in time to reach the Contest Manager by 17th March, 1978. The address is — Federal Contest Manager, Box 7, East Melbourne, 3002.

RECEIVING SECTION

This section is open to all short wave listeners in VK and P29 call areas. Rules are as for transmitting stations, but logs do not have to show report and serial number of the second station. Logs must show the call sign of the portable or mobile station heard, the report and serial number sent by that station, and the call sign of the station called. Scoring is as shown in Rule 14 for home stations. A station calling CQ does not count. Portable and mobile stations, which must be listed in the left hand call sign column of your log, alone count for scoring. Stations in the right hand column may be any station contacted. A certificate will be awarded to the highest scorer of each of the 6 and 24 hour divisions, individual or multi-operator entries. Certificates will be issued for excellent performance. ■

ATV NEWS

KEVIN CALLAGHAN VK3ZVJ
PETER COSSINS VK3BFG

ERRATA — October issue: The eighth data bus from each prom should come from pin 9.

This month I have some further news of activity in Lismore, N.S.W.

VK2ZLD and VK2BBR are currently active with the following equipment. Rob VK2BBR uses a PJ4LB exciter with a pair of 2C39 linears, driving a 6 element beam. The video source is a Thorn 1 in. vidicon camera. VK2ZLD uses a home brew all valve transmitter with a 4CX250B final, driving a 48 element phased array. Video equipment includes a Phillips 3 vidicon colour camera and a 1 in. band W vidicon camera. Ancillary equipment includes an Ampex colour VTR, vision switcher and effects generator, phase equaliser, techtronix wave form monitor and two colour monitors.

Some linking is performed on 6 GHz although I am not aware of the purpose of this translation. I hope that either of the two Lismore boys may be able to provide more information and photographs for AR in the future.

Back in the Melbourne scene, Ron Harrison VK3AHJ has written to the BATC regarding the number of transmitting stations here in the south. We suspect the density is higher than anywhere else in the southern hemisphere and may be comparable on a world-wide basis. More news on this when Ron gets an answer from the UK.

Included in this issue is a rather novel video modulator designed by Ian VK3ALZ (Fig. 1, 2). It uses three pairs of differential amplifiers for improved signal to noise and is suitable for cathode modulating a 3/20 or 6/40.

The video signal is AC coupled to the first differential pair where it is clamped and direct coupled to the remaining amplifier.

A novel RF decoupling system uses a quarter wave open circuit co-axial stub (mount as close to the cathode as possible) and a small RFC for additional protection. The heaters of the 6/40 should be bypassed for UHF RF.

The output transistors Q5, Q6 and Q7 should be mounted on a heatsink. Although poorly located in Ian's direction I was able to take a copy of this circuit off-air from a strength 2 picture. ■

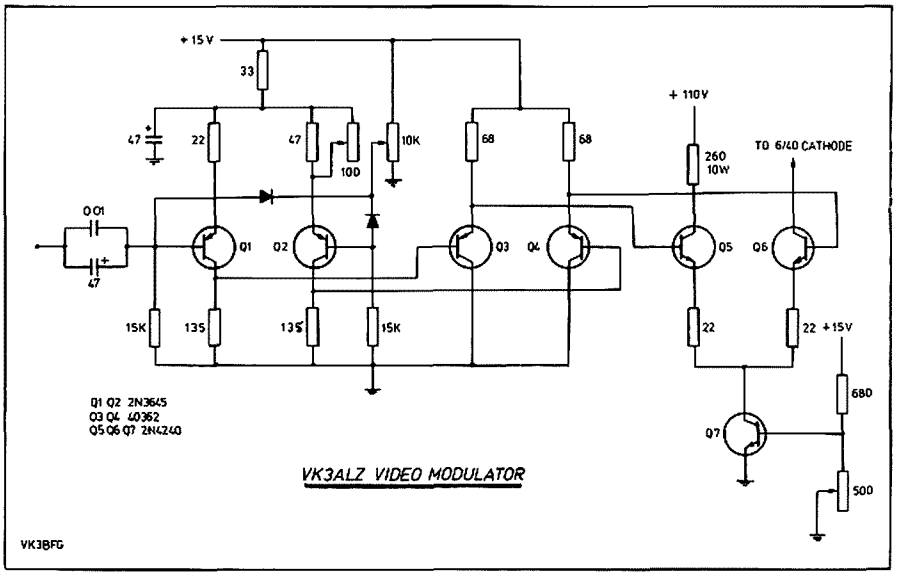


FIG. 1.

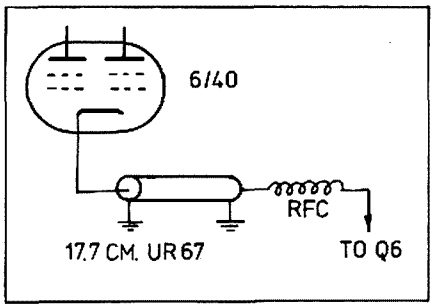


FIG. 2.

A MONKEY'S VIEWPOINT

Three monkeys sat on a coconut tree
Discussing things as they're said to be;
Said one to the other — "Now listen, you two —
There's a certain rumour that can't be true:
That man descended from our noble race,
Why! The very idea! It's a dire disgrace.

No monkey ever deserted his wife —
Starved her baby — or ruined her life.

And you've never known a mother monk
To leave her young with others to bunk —
Till they scarcely knew their mother,
And another thing you'll never see —
A monk build a fence round a coconut tree,
And let the coconuts go to waste,
Forbidding all other monks a taste.

Why, if I built a fence around this tree —
Starvation would force you to steal from me.

Here's a thing another monk won't do —
Go out at night and get on a stew.

Or use a gun, or a club, or a knife
To take some other monkey's life.

Yes, man descended, the ornery cuss,
But brother — he didn't descend from us!"

Anon. ■

VHF-UHF
AN EXPANDING WORLD

Eric Jamieson, VK5LP
Forreston. 5233

AMATEUR BAND BEACONS

VK0	VK0MA, Mawson	53.100
VK1	VK1RTA, Canberra	144.475
VK2	VK2WI, Sydney	52.450
	VK2WI, Sydney	144.010
	VK2RHR, Mittagong	144.120
VK3	VK3RTG, Vermont	144.700
VK4	VK4RTT, Mt. Mowbullan	144 400
	VK4RBB, Briabana	432.400
VK5	VK5VF, Mt. Lofty	53.000
	VK5VF, ML Lofty	144.800
VK8	VK6RTV, Perth	52.300
	VK6RTU, Kalgoorlie	52.350
	VK6RTW, Albany	52.050
	VK8RTW, Albany	144.500
	VK8RTV, Perth	145.000
VK7	VK7RNT, Launceston	52.400
	VK7RTX, Lonah	144.900
	VK7RTW, Lonah	432.475
VK8	VK8VF, Darwin	52.200
JA	JA2IGY, Nagoya *	52 500
KG6	KG8JDX, Guam	50.110
KH6	KH6EQI, Hawaii	50.104
ZL1	ZL1VHF, Auckland	145.100
	ZL1VHW, Waikato	145.150
ZL2	ZL2MHF, Upper Hutt	28.170
	ZL2VHP, Palmerston North	52.250
	ZL2VHF, Wellington	145.200
	ZL2VHP, Palmerston North	145.250
	ZL2VHP, Palmerston North	433 250
ZL3	ZL3VHF, Chriatchurch	145.300
ZL4	ZL4VHF, Dunedin	145.400

* Note: the location of the beacon has been amended from Japan as shown previously to Nagoya, being the city nearest to Mt. Asama from where the beacon operates. The output power is 10 watts, ground plane antenna and Ident "V V V DE JA2IGY". This news came to me from Graham VK8ZCJ who in turn received it from JA2TTO by letter, who is editor of the 6 metre column in the monthly magazine "The Mobile Ham". Kunihiro uses Yaesu equipment and runs about 100 watts input into a 7 element yagi 17m high.

Graham also enclosed a copy of another letter from Japan, this time from Kikuo JH1USR from Tokyo, who works for an electric company and operates on 6 metres with CW and SSB, and can run either 80 or 150 watts to a 6 element yagi 20m high. Kikuo adds a list of stations he has either heard or worked as the case may be between 2-4-77 and 26-977 and totals 236 stations outside of Japan, comprising 26 different call areas in 12 countries, which included openings to W on 4-6, 11-6, 12-6, 26-6 and 11-7. It seems we are living in the wrong place on the globe, although I am certain we miss many a contact of this type due to being 2 MHz removed from the main centre of the world activity on six metres!

Another letter arrived from Graham VK8ZCJ at the end of October which outlined a further opening to Japan on six metres on 27-10 when on walking into the shack at 1050Z Graham noted a number of JA stations calling CQ on 52.050. He worked JA1, JA2, JA4, JA7, JH1, JH4, JH6, JE1, JE2, JI1, JR1 and JR2, not bad for 84 minutes work! Signals were not as strong as usual, peaking to S7 at times. JA7MIT is mentioned because it is apparently rare for JA7 to be heard in Darwin, the last about 6 or 7 years ago.

Graham continues: "The last contact was with JH4YJI, after which there was a dogpile on George P29HV on 52.003. No other areas were heard.

"At about 1230Z I switched to two metres to check, nothing heard up to 144.2 then "Bang" FM signals starting at about 144.3 and continuing up to 145 at least. I quickly retuned to 144.1 and called CO but no reply. Still no signals to 144.2. I went up to 144.34 and sat right on top of a strong FM station and called CO, but again no response. At this stage I realised tuneable FM was required which I don't have — I called Brian VK8VV but he wasn't home.

"On coming back into the shack with the XYL signals were still there but not as strong, but there was a CW station on 144.090, called him, no reply. On 144.140 heard a station on SSB (the first and only one) calling CQ in Japanese, I believe the call was JE2EQN. I called but no reply, then the band went quiet.

"I called CO on Ch. 50 FM and Doug VK8JD answered and came to the shack at about 1255Z in time to verily a weak FM station with TEP flutter on 144.34 approx. Called again, no reply. Six metres was very quiet when I went back to rustle up some activity, and it appeared the 2 metre opening was in longer than the 6 metre opening. Only 2 strengths were peaking to S7 on FM. The CW and SSB were about S1.

"The 49.75 TV was solid with birdies to 50.2 but not as strong as I have heard it on occasions. The 49.305 FM station was audible but 53.75 from Malaysia did'nt appear. No KG6, DU or P29 signals heard on six metres.

"Some observations: (1) I believe the FM signals, because of their number and constant strength between stations, were only running about 10 watts to non-directional antennae. At least 30 to 40 stations were heard. (2) I believe the CW and SSB stations were using beams that weren't pointed at Darwin. (3) I believe Brian VK6VV could have broken into the JA FM stations had he been on the air. (4) My receiving set up is not fancy — home-brew 10 element yagi fed with 60 feet of UR67 to a FTV250 with an Ipswich Radio Club 3N210 pre-amp. My 60/40 linear is not set up for 10 watts input so it's not in use. My output power is about 20 watts PEP only so that might explain why I got no replies. The antenna is only 6 feet above the roof approx., about 24 feet above ground.

"It's all very exciting, and the frustration and disappointment of not being able to make it was extreme. It was fantastic to be within a hairs breadth of a world record. I really thought I had it for a moment when the JE2 called CQ on SSB. Such is life!

"I am certain within 12 months the world terrestrial record for two metres will be held by a Darwin station. The distance from Darwin to Tokyo is 3370 miles, and to Fukuoka 3170 miles, so the JE2 signal would have been about 3250 miles!"

Thank you, Graham, for first telephoning the information to me at the time of the happening, and later putting it in writing. Your account of this 144 MHz opening between Darwin and Japan will certainly stir up interest all across the top of Australia, and probably other Pacific areas too. Good luck to you, I hope you are the first to make it over such a long path, as you are certainly helping to keep VHF very much alive in Australia's north, which in turn keeps other countries looking for us, with the chance the signals may one day penetrate further south. At least this time we do have compatibility of frequency coverage instead of being removed by 2 MHz as on 6 metres.

I note in the letter from Yoshiteru JA2BZY there are many stations working on 2 metres in Japan, but haven't given much thought to the possibility of 2 metre DX across the water. Possibly now when news of the opening to Darwin gets around, some of the better stations will be looking to the south.

Graham also forwards a copy of a letter from Hiro JA1LZK which is of interest to us. He writes: "Happy to know the 2 metre band opened on 27th October. I believe there are many possibilities for JAs to work VKs on 2 metres. I am now equipped for 2m SSB, with 10 watts and a 7 element beam. I think this is not enough, so will soon have 100 watts and two stacked 11 elements.

"In Japan there are many stations working FM and SSB, it is the most popular band for VHF, but mainly FM. The band is allocated between 144 and 146 MHz. SSB can be used above 144.1 MHz. Most JA SSB stations concentrate between 144.1 and 144.4 MHz. So your 144.1 calling frequency will be useful for both ends.

"The possibility of 144 MHz TEP have been long considered in Japan, and your report from Darwin makes our idea sure. We are going to run our beacon on 2 metres soon". So that looks like confirmation that the other end of the operation has now been activated.

Tony VK6BV writes from Kalgoorlie to advise there is to be 144 and 432 MHz activity from there this year. Both Lewis VK6ZGQ and himself will be active on these bands. On 432 they both run Microwave modules to 13 element yagis. Both are also active on six metres.

Tony also mentions he agrees with the formation of an HF net for VHF consultations. He also wholeheartedly agrees with my thoughts on extending the six metre band coverage, so that's another one.

For those of you who might be interested in obtaining a SMIRK Certificate which gives membership to the Six Metre International Radio Klub (SMIRK) 6-6 Net, the following are the qualifications: For Australian Stations, applicants must verify two-way contact by any normal mode of emission with net members on six metres only, three being required. Provide a listing to the Secretary, Ray Clarke, K5ZMS, 7158 Stone Fence Drive, San Antonio, Texas 78227, USA, of dates, time, call sign (yours and member station worked), and 6-6 number of SMIRK member worked, accompanied by the $2.00 one-time membership fee. A certificate will be issued with your SMIRK 6-6 number on it, after verification of the information received.

The above is included again because with the overall increase in six metre activity across the equator etc. there soon will be operators becoming eligible for the award. Peter VK6ZDY is one member I know.

Still on letters received, we now shift the scene to Guam by hearing from Mac KG6APP who advises he has been on Guam since July 1965, and active in amateur radio since 1966, and since 1970 on 6 metres. From his letter "I have heard VK8VF on 6 metres several times but have never been able to have a VK QSO. Finally I did get a contact with VK8ZCJ on 11-10-77. During that QSO I was surprised to hear that KG6APP had worked another VK station and KH6IAA. Well, quite frankly, it would delight me if true. My six metre operation was out of service from 1976 until September 1977. I bear no animosity, just want the right person to get credit for the first QSO.

"Locally, we have worked a number of countries with low power and irregular listening schedules. I have worked HL9WI, KX6HK, Nauru, KC6PO (Japanese DXpedition to Ponape), VK8ZCJ, as well as a few hundred JA stations all on 6 metres. Some have also worked KH6, DU and VS6. Most of us use the FTV 650 transverter, and monitor 6 metres almost every day during expected hours". Nice to hear from you Mac and for setting the record straight.

Gareth VK2ANF writes supporting the move to get more of six metres, and his letter will be filed away in my growing list. He also mentions having some fantastic contacts into VK5 and VK3 on 6 metres using an IC502 fed into a mobile 2 metre 5/8 whip! He is currently only on two metres FM with a new IC215. Well Gareth, at least you are on VHF and that's something, we hope to hear you again on six metres one day. Thanks for writing anyway.

Wayne VK6AM writes to support expansion of the six metre allocation, particularly the 50.0 to 50.5 segment on a non-interference basis as compensation for the loss of 27 MHz. He also supports the idea of an HF net, suggests 80 metres at night and 10 metres daytime. He also reports VHF activity in Busselton, 250 km south of Perth is picking up a little with both VK6ZAU and himself active on 6 and 2 metres. Take off from Busselton is good to the north and north west and over water, but the east has a clear run to a range of hills 12 km away. He is keenly waiting for a 2 metre SSB opening. Good luck, thanks for writing Wayne.

Geoff VK3AMK writes to advise the current 6 metre "season" on 6-11 to VK4 and VK2. Signals weak. The same day he worked JA2BZY, JA1VOK and JA1WPH, all weak and unstable. On 7-11 again open to VK4 plus worked JA2BZY, JE1HYR, and heard JR3KRK, signals not good. Also reported ZL1TJ and ZL1QI worked into VK6 and to VK4RO on 6-11. Thanks, Geoff.

Hooray! At last a letter from a VK5 station indicating support for expansion of six metres. Pleased to hear from you, Col VK5DX in Mt. Gambier, at least you apparently care! He also supports the idea of an HF net, possibly 80 metres, and certainly is in favour of establishing some memorial to Ron VK3AKC. Thanks, Col.

Mike VK3ASQ is the next letter, and fully supports the 6 metre expansion idea, and sets out quite a few ideas which will be filed for the moment. His considerable testing for TVI makes interesting reading and shows how some people experiment to prove a point or two. It also is interesting to note Channel 0 in Melbourne suffers

QRM from several sources, SEC, co-channel, and CB radio!

Mike adds support for the HF net as well. Included is a list of VHF SSB operators in Geelong comprising 12 call signs, most of whom operate on both 6 and 2 metres, and three on 432 MHz. He mentions how pleased he is to see Arch VK3BW back on 6 metres again. Arch was one of the original 6 metre operators after the War until the change from 50 to 52 MHz when he gave it away. He has now been coaxed back and operates on AM mainly on Saturdays and Sundays, but has worked a lot of DX and with no TVI.

Mike expects to be operational again this year from Mount Cowley in SW Victoria over the Christmas-New Year period, this being his sixth year in a row. They will be taking a Honda 1500W alternator, Toyota van, FT221 and FT620B and linears to give 400 watts PEP on both 6 and 2 metres, 20 element phased array on 2, 5 el. yagi on 6, plus 10 watts PEP on 432 MHz. Good luck with the expedition, Mike.

Frank VK4FU has written from Rockhampton and also supports the six metre expansion and whilst writing has passed on the following: "I now have full coverage 144 to 148 MHz SSB with 6/40 final feeding 10 over 10 yagis horizontally polarised at 30 feet, and have been carrying out skeds with Harry VK4LE at Springsure and Gordon VK4ZBE at Rubyvale. We are having a good deal of success, particularly around 0630 local. Path is approx. 170 miles. Harry and Gordon both used stacked 5 over 5 yagis. I can hear the Mt. Mowbullan beacon on 144.4 most mornings but this circuit is very dependent on sustenance layers between 10-20K feet".

Thank you, Frank, we are pleased to know we have another keen 2 metre operator in Queensland, together with Harry and Gordon.

Steve VK3OT sends along some notes, mentioning working 9 stations from 0552 on 11-10, and noting many Russian stations on 10 metres at the time. On 13-10 at 0301Z hearing perfectly sent CW signal on 50.035, S1 to S2. Contacted Geoff VK3AMK and together tried to decipher signal, which peaked at about 45 degrees from Hamilton.

VK9JD is now VK9NI with an FTV650 and a 5 el. yagi. YJ8KM is on 6 metres again (yes, I worked him on 22-11 . . . 5LP) obtain your QSL via Steve VK3OT, PO Box 414, Hamilton, Vic. 3300. C21KM/MM has 6 metres on board, and the Kermadec Islands DXpedition will not be taking 6 metres!

Steve mentions Albert VK2ZFB caused a stir when he claimed the first Zone 29 Award from VK6 Division! Requirements: 25 contacts with Zone 29 stations, i.e. VK6, VK8 and VK9 plus Christmas and Cocos Is. Send to Secretary, Neil Penfold, VK6NE with SASE and $1.00.

Steve at last has received his QSL card from 3D2AZ after three years. Eugene is ex-VK2ZSZ and uses FT101 into HB transverter plus after-burner to 5 el. yagi on 6 metres. He also operates Oscar 7 using a solid state transverter and linear into a quad. The 3D3 beacon is still not operational, and has been taken over by the University of South Pacific who are constructing a new antenna. The local population were complaining the beacon caused TVI from the Australian and New Zealand TV DX stations they were trying to receive, someone worked the turnstile antenna and put it off the air! New antenna is to be on top of the Uni. building and omni-directional gain type.

Finally, Steve lends his support to expansion of 6 metres. He also has generously offered $100 towards a fund for a State of the Art Contest as a memorial to Ron VK3AKC. Many thanks, Steve, for your offer.

Gordon VK4ZBI writes from Rubyvale supporting the 6 metre expansion, and mentions he first worked 6 metre DX back in 1958, when he worked several hundred JA stations and collected VHFCC No. 18.

Gordon left amateur radio in 1961 and returned earlier this year to be active on 2 metres using an IC202 and 6 watt linear. For his present 6 metre activity he transverts from the IC202 to 52 MHz! That might be considered doing it the hard way Gordon, but at least you are on! Gordon's nearest amateur neighbour is VK4LE at Springsure, 85 miles away to the SE and they keep morning skeds on 144.1 SSB at 0615 local time, with signals mostly Q5 and variable between S0 and S9. He has also worked VK4FU in Rockhampton. Thanks for writing, Gordon.

Daniel VK7DA phoned me to say the VK7 boys had a ball on 14-11 with an opening to Japan on 6 metres. All districts JA0 to 9 (except 8) were worked. Daniel worked 37 stations, Joe VK7JG 31, John VK7JV 6. Signals mostly were S4 to 5 with occasional signals up to S9. It is understood Ian VK7ZIF in Hobart also worked some. Daniel heard the beacons on 50.104 and 50.110 between 0400 and 0800Z, otherwise nothing. Apparently the band also opened on 13-11 0500 to 0535Z with John VK7JV working 8 JAs. JAs were also heard working ZLs. Thanks, Daniel.

John VK7JV also phoned re the JA openings, and he also added Kevin VK7ZAH amongst those making contacts. Kevin and Joe VK7JG apparently have started their six metre season well by working ZL3QK too!

Pleased also to get a short letter from Martin VK4ZIL who supports the 6 metre expansion plan. He points out he has a 60 dB hill to the south of him which rather spoils his take-off, and also attenuates TV signals from Brisbane sufficiently so that 6 metre working is a real problem there. Well, at last I have found someone with a hill of greater attenuation than mine to the west of me, which I claim as my 30 dB hill! So perhaps I am not so badly off after all . . . 5LP.

That seems to be the end of the letters, quite a mailbag this time, but the notes for the December issue closed over a week earlier than the usual closing date, so there were some carried over. They are also closing 5 days earlier this time, so there may be another carry-over.

By the time you read this the better part of the summer DX "season" will have passed, but I remind those who were able to take part in the Field Day operation to send in the copies of your logs by 31-1-78, see November AR for details. And talking of logs, what about sending in some logs for the Ross Hull Contest. Very few people take the trouble to enter for the Contest, but many stations are on the air. I am quite sure we would all have less VHF contacts in any one season if the Ross Hull was not running, so let's try and keep it going by showing a bit mora interest. I know a lot of people are not haopy about the new rules last year, and I'm not either, that's why I suggested the rules for the Field Day Contest should be patterned along the rules of the previous Ross Hull Contests. If you are not happy why not send in a log to the Contest Manager, and set out on paper why you don't like the rules, and what your suggestions would be for improvement. If we can hit the Contest Manager with a whole heap of complaints then we might get somewhere, but on the air complaints won't get many changes. Get to it and write down your ideas, and send them in with a Ross Hull log in January.

I suppose I had better end now, I seem to have been typing for a long time. Thought for the month: Computers spare men from making a lot of unnecessary conjectures. So do bikinis!

Happy New Year.

The Voice in the Hills ■

QSP

THE WHERE AND WHEN OF RTTY IN VK6

Information from G. Hufner VK6IQ.

VHF — 2m 146.600 MHz:
Sunday 10.30 a.m. WAST.
Monday 8.00 p.m. WAST.
Thursday 8.00 p.m. WAST.

HF — 80m 3585 kHz:
Sunday 10.30 a.m. WAST.
Thursday 8.00 p.m. WAST.

HF — 40m 7030 kHz:
Sunday, after WIA news broadcast.
Stations can also be heard on 146.600 at various times during the evening and at week-ends.

For those interested in VHF DX the WIA band plan call for following:—
6m operation between 52.050 and 52.100, calling frequency 52.075.
2m operation between 144.050 to 144.100, calling frequency 144.075.

N.B.: Calling frequencies should be used for calling only — once contact has been established it is desirable to QSY away from the calling frequency. ■

INDEX TO AMATEUR RADIO — VOLUME 45

JANUARY — DECEMBER 1977

QSP

VICTORIAN DIVISION COMPONENTS

The component trading of the Victorian Division has now ceased and all existing stock is being cleared.

Many orders were not sent out between July 1977 and October 1977 by the then components officer. These orders have been processed. However some orders may have been lost.

If you have not received your order you should contact the Victorian Division immediately giving full details so that action can be taken.

During the past years many credit notes were issued. Those that are still current should be sent immediately to the Victorian Division. They will be refunded.

The Victorian Division regrets the inconvenience caused to their former customers for components.

C.A.R.E.

(Community Amateur Radio Events)

AMATEUR RADIO TO HELP AT SCENE OF SEMI-TRAILER CRASH — STUART HIGHWAY, SOUTH AUSTRALIA

Soon after lunch, 1.15 p.m. central time on Wednesday, 13th July, a few kilometres south of Maria Bore on a badly corrugated section of the notorious Stuart Highway, we came across a horrifying sight. It was a semi-trailer and prime mover straddling the road between the red sandy banks and spread around in bizarre attitudes were three smashed cars. How many people were injured and how many were killed, were the first questions which came to our minds. Ron, the driver of the semi, had only moments earlier crawled out of the smashed rear window of his prime mover. First on the scene a few minutes ahead of us was a party of surveyors working near the crash site. They allayed our fears that no-one had been injured or killed and that the cars were originally on the semi, bound for Alice Springs.

Ron was obviously in shock — who wouldn't be? But, apart from a sore back he said he was OK. He was the owner-driver of the $50K combination, was still paying it off, and was uninsured because his insurance company would not cover him on the Stuart Highway. Two other second-hand cars and a brand new Land Rover were mangled up on the other deck of the trailer. A few minutes earlier he had stopped to check that his tyres and fuel tanks were in order before continuing the journey. Without warning his RHS oil tank of 100 gallons had crystallised its mountings and fell under the rear wheels, then jammed under the trailer thereby skewing the outfit onto its side and into the right hand side sandbank.

Maria Bore is 165 km from the Northern Territory border plus another 300 km to Alice Springs. To the south, Coober Pedy is 300 km away. Well, what to do? Best let the Police know — how else — but through the RFDS. First up, the surveyors tried their mobile unit on Port Augusta RFDS, the only frequency that they had — no joy, either poor propagation or just not on watch!

Months ago before starting our "Round Australia" journey I had checked the RFDS frequencies for all bases that we would be touching and had checked which frequencies the Somerkamp TS288A transceiver and whips would access into — just in case! Well, it looked like RFDS Alice Springs with Peter VK8AX the operator to help with a QSP. I had already worked Peter during the tour from Western Australia on 80 Mx and met him at Alice, so, much to his surprise he heard my call sign coming out of his commercial rig on 6.950 MHz for a QSP to the local Police and thence Coober Pedy. A request also was made for a QSP to Ron's consignees and XYL back in Adelaide to say that he was OK. Almost an hour later and still listening on standby to Alice Springs, Peter was asked to check what action Coober Pedy Police wished to take. After some more QSPs the answer came back "no action, as nobody had been injured"I dit dit dit dah dit dah.

By this time a great collection of camera-clicking travellers and semis had accumulated on either side of the crash. After clearing a sandy bypass through the mulga scrub, one car going north was despatched to a quarry site 50 kms near "Granite Downs" where a quarrying firm was getting organised to supply the re-routing of the Port Augusta-Alice Springs railway line. They had a 30-ton mobile crane which they promptly despatched and this arrived two hours later at the crash scene to clear the Highway. Such was the helpfulness of the fellows that they suggested to Ron that if he could get his prime mover mobile they would back-load it to Adelaide for a token fee.

By 6 p.m. the road was clear, the spectators had melted up and down the track and the bent and twisted bodies of cars, prime mover and trailer littered the sandy banks of the road like children's broken toys. Knowing that such unattended vehicles would lose their vitals in double quick time and take the form of the countless other cars lying like dead flies on their backs along the 3000 km stretch of the Stuart Highway, Ron was convinced that he had better camp in the Land Rovar overnight. For moral support we decided that we would camp beside the road as well. At teatime in the van Ron was anxious about the message his XYL might have received. What else but to look for some VK5 in Adelaide! Ken VK5IM was found on 80 Mx and a QSP reassured Ron's XYL that although a lot of damage had been sustained to the vehicles, he himself was OK.

To cut a long story short (which extended into all day Thursday and until the morning of Friday when we headed south again ourselves) we managed to get the prime mover mobile with a combination of car batteries and one patched original battery. The Land Rover was refuelled from residues in car tanks and spare oil cans and its battery topped up from the wrecked car batteries. Though rather bent it got Ron mobile. The prime mover was driven to the quarry and the trailer and cars subsequently taken to Alice by another co-operating prime mover driver. Such was the story of Amateur Radio at Maria Bore and of the camaraderie of the "Track". Ron is still working on his problems.

By Arthur VK2IK ■

Semi-Trailer Crash, Maria Bore, Stuart Highway, S.A. — 15.7.77.

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 publishers.

The Editor,

21st November, 1977

Dear Sir,

Mark-Space ratio in the Morse Code.

In 1949 I set up an oscillator, recorder and oscilloscope in the Department of Civil Aviation workshop in Darwin at which time I was acting Supervisor. With the assistance of a sample of top-flight Air Radio Officers we demonstrated the requirements of a change in "weighting" or mark-space ratio in slower Morse Code particularly between 5-8 w.p.m.

The present observation was confirmed 28 years ago.

What's new?

John W. Emmel, VK4CGB (Publicity Officer)

OPEN LETTER

The Editor,

Dear Sir,

We would like to draw your attention to the following items advertised in the magazine, CB Action, No. 6.

		Product
Page	16	100 watt linear amplifier 100FR
Page	46	100 watt linear amplifier HF-3-100L2
Page	88	100 watt linear amplifier Pride 100A
Page	94	100 watt linear amplifier HF-150
Page	110	"Yapper" CB Set

The advertising of the above items must represent some sort of record for cynical irresponsibility.

The first four items are amplifiers which can boost the output of a CB set from its legal 4 watt level to 100 watts plus.

The last item is an ultra cheap CB set which we have reason to believe employs a super regenerative receiver and if so, could radiate a broad interfering signal throughout and beyond the Citizens Radio Service (CRS) and would be absolutely unticenceable.

All of the above equipment reflects a total disregard on the part of the manufacturer and seller for all users of the radio spectrum in Australia. CRS interference with home electronic entertainment equipment has become a major problem of recent times, and if a sprinkling of linear amplifiers is to be added to the current scene the interference and resulting community pressure on all parties, CBers, Amateurs, P&T Dept, and the Government would not be hard to imagine, (legitimate CB and Amateur operators have already suffered from this misdirected backlash in this regard).

We do not see legislation as a universal panacea, but feel that urgent action is required to prevent the sale of such equipment to persons who cannot show proof that they are authorised to operate it.

The situation with respect to "Yapper" type equipment is more complex and we can only hope that responsible action by "CB Action" and others will help to stem the flood of pre-Christmas sales of such sets and the resulting interference to CRS and ad acent channels.

We look forward to your early response.

Yours faithfully,

Signed R. Wilkins VK3AUR/VAF069
R. Roper VK3YFF

Copies of this letter also sent to:
Mr. Fraser, Mr. Whitlam, Mr. Robinson, Mr. Hamer, Mr. Crowe. Editor CB Action, Editor Electronics Australia, Editor Electronics Today International, Federal Executive Wireless Institute of Australia, National Citizens Radio Association.

CB ACTION'S REPLY

250 Spencer St., Melbourne, 3000
Tel. 60 0421
Telex 30331, 30376, 30449
Corresp.: P.O. Box 628E, G.P.O.
Melbourne 3001

Messrs Wilkins & Roper,
Stawell Electronics,
179 Main Street,
Stawell.

November 15, 1977

Dear Sirs,

It has happened in the past and will doubtless happen again where obviously well meaning gentlemen such as yourselves rush into letter writing without having any true knowledge of the facts.

You roundly castigate CB ACTION for containing advertisements for linear amplifiers but possibly something you are unaware of is the fact that we cannot legally refuse such an advertisement

Regardless of our own thoughts on the advertisement and providing the relevant advertisement meets legislative requirements our refusal to run constitutes a breach of the current trade practices act in terms of restriction of trade.

We can advise an advertiser that we are not in agreeance with the contents of the advertisement and, in fact, you will note that of the instances you quote, several of them carry a line indicating that these amplifiers are suitable, or suggested, for amateur use only — this was done at our request.

Possibly you can now see that while we might well agree with your statements it is not our role to act as censors — nor could we legally do it anyway.

This is the job of the Commonwealth Government — not the media.

If it wishes to introduce the necessary legislation then we will obviously be required to fall into line and surely, when all is taken into account, laws are made by Governments, not papers and/or magazines.

We also share your obvious concern about what is taking place right across the spectrum but I wonder if you, as licensed amateurs, have taken any firm steps to ensure that retailers of FT101E's, Kenwoods, etc. sell strictly to amateurs or merely to anyone with the money in hand?

I note that you have forwarded a copy of your letter to the magazine Amateur Radio and I wonder whether you have asked them to only carry advertising from retailers who will guarantee to sell only to amateurs?

All radio operators, be it an unskilled CBer or full call amateur, are facing tremendous problems and the answers can only come from the Commonwealth Government — not the press.

We all fear for the future of radio and while I appreciate your thoughts I'm afraid that, now knowing our own problems, you might care to direct your attention to Canberra — that's where the answers must come from.

Copies to:
Messrs. Whitlam, Fraser, Robinson, Hamer, Crowe, WIA, NCRA, Amateur Radio Magazine, EA, ETI.

Yours faithfully,
Leonard J. Shaw,
Managing Editor, Newspress

The Editor,
Dear Sir,

Reference: The Citizens' Band operations on 11 metres.

There is an old saying "If you give a person a yard, they will try to take a mile". This seems to be the outlook of the CB people, who now that they have their operations legalised on 11 metres until June 1982 have no intention whatsoever of vacating this band and it being returned to the amateur service — and I don't speak with "pirate operations". I mean retaining the segment allotted temporarily for their operations for posterity and even bringing up the number of channels now in use to 40 as in the United States. If the WIA doesn't know it — and they probably do, there is a real concerted move to try and force the Government to accede to their wishes by the now hairy old chestnut of "If a law or regulation doesn't suit your particular 'Set' it must be a bad law so we will just ignore it or break it at will".

This is just what is being advocated at organised meetings of the various "CB Clubs" all up and down the country at the present moment.

From what I could ascertain the main argument given out for the benefit of a long suffering public is over the regulations governing the CB service as covered by form RB14. I attended a rally organised by the local CB clubs as a public protest over the above regulations, and the main points that seem to be hammered was over:

1. That the licence fee of $25 was too much to pay for the use of only one unit of equipment.
2. That the 32 kilometre radius of working should be taken off completely.
3. That the use of parasitic arrays should be allowed.
4. That the use of 11 metres should be allowed with an increase in channels forever.

I attended the rally as a private person and just as an interested observer, so I had no official status to speak on behalf of the local Radio Amateur Club or the WIA. Anyway I don't think my opinions would have been too popular with the organisers or the attending crowd. The rally was well organised with speakers giving, naturally, a very one-sided view, although I must admit one speaker did speak very rationally referred to the CB service; he was the only one voice who put forward the statement that CB people should take the Radio Amateur Novice licence if they wished to really overcome the distance clause, but to the extent of overseas communications, not within the continent of Australia.

Even the local "Pollies" up for the State election were brought up and shown, of course anything for "political mileage" with a State election around the corner. The Federal member did not attend, but it was implied by one speaker to "Give your vote to the man who'll do the most for our cause". Of course the whole thing was really a mystery to the "Pollies" but naturally they always smiled and clapped in the right sequence and had an appearance of not knowing why they were there, except it might be good for the ballot.

To get back to the gripes:

As regards the fee paid by CBers I think they have a legitimate gripe here, but of course it's a cumbersome Government way of limiting the number of licences issued, which of course doesn't work because you can buy a CB rig in any big store without reference to licencing.

The second gripe, and this is a more serious one, is of course the fact that CBers should be allowed to work "DX" with no worry of getting a Novice licence whatsoever and this was implied by certain speakers in no uncertain manner that they couldn't care less about the 32 km regulation.

The third gripe was of a minor nature, as I don't think the crowd really understood what a parasitic array was or what the speaker was getting at, as he didn't elaborate it was to do with beam antennas.

The fourth gripe was of course very serious as regards the wishes of the WIA and Government. This one was really hammered out and of course the old sob story of all the present equipment being made obsolete by the introduction of a CB UHF band and the vacating of 11 metres. The fact of only being able to communicate around a limited area of a city did not appeal at all, but of course for anyone to say this was what the CB service was all about would not have been received too well.

There was a minor gripe about procedures, about giving one call sign at the end of each transmission. This was pooh poohed away, and the use of illegal club calls and odd nom-de-plumes advocated to an extent as thought to "be all right".

To sum up, these rallies seem to me to be the usual stunt of ramming a one-sided view down the public's gullet. Plenty of publicity is used in the local press distorting the facts to a gullible public, a very good "sob sister" propaganda being put out. How the CBers are just standing by to save people's lives, how the awful agent of the Government, the local RI, is always waiting around the corner to impound their rigs and it's not fair that they shouldn't be able to transmit overseas — as, believe it or not, this is bad for Australia's external relations! The whole organised operation — because this is what it is — is to gain public sympathy with a one-sided propaganda; nothing is ever mentioned that any CBer who wants to can take the Amateur Novice licence and carry out all the functions they are griping about.

We want more people to get interested in amateur radio, though not at the expense of bringing down the conditions that are carried out in practically every country in the world. To allow people just to do as they like on already crowded frequencies would do us no good and to let the CB service to get away with what they are trying to obtain by "pressure lobbying" would be completely wrong, there would be no point in taking the Novice licence if this were to happen.

This lobbying is an organised affair now, coming into force through the various CB clubs, and of course they have many members, far more talking power than the Radio Amateurs; it's not localised to this area by any means, it was brought out during the meeting I attended that there had been other bigger meets to drum home the same points organised all down the east coast.

I think the WIA should get each affiliated club to get out more publicity to counteract this movement. The Novice exam, whilst retaining the five words per minute morse, to give the licensee some "Elan" that he can read and send five words per minute, should be made easier as regards the technical and regulations questions, say about 35 questions in all over a reasonable time, and the holding of the exams should be done and marked by responsible persons or committees of local Radio Amateur clubs affiliated with the WIA and under the regulation of the Posts and Telegraph Department. The period of the exams could then be brought to at least every three months and the marking committee could even have the authority to issue the Novice certificate and licence from a block regional call sign register. The full class AOCP should be left as it is, and any aspiring Novice could study for this if he wished in his own time as his interest grew.

Yours faithfully,
R. L. Keogh VK4KU. ■

142 Castle Hill Drive,
Nerang, Qld. 4211

The Editor,

25th October, 1977

Dear Sir,

A Gold Coast Radio Club member held a "novice contest" for ladies at the Brisbane radio convention held on the 22nd and 23rd October.

Forty-eight ladies entered the contest which contained two parts, the first being a humorous multiple choice questionnaire whilst the second part was the ability of the ladies to recognise 25 items of tools and parts found in a radio "shack".

Of a total of 49 questions, two ladies tied with only four errors each so a draw had to be made the lucky winner was Mrs. Brennan, 12 Corr— Street, Kenmore, Queensland. Mrs. Brennan's h.] band's call sign is VK4XJ and her son's is VK4AXJ. Her prize supplied by Dick Smith was a digital alarm clock. Mrs. Brennan said "I spend a great deal of time listening".

The lady who tied in top score is Mrs. Elizabeth Parker, our congratulations for an excellent result. Her husband's call sign is VK4ZLP.

73, John W. Emmel VK4CGB,
P/R Officer, Gold Coast Radio Club.

Karl Henning VK6XW
4 Butler St., Narrogin, W.A. 6312

The Editor,
Amateur Radio,

20.10.1977

Dear Sir,

It has surprised me to find a notice in Sept. AR that the Victorian Division's Disposals Committee urges people to place their orders early, as they are closing down operations after Christmas.

I have put in an order for several members in July with a bank cheque enclosed for over $86.00, and I have not heard anything yet. The cheque was drawn three weeks after it was issued and no components arrived. How soon does one have to place an order with these people? The last order they got from me took 12 months to send and previous reminders in the form of an SASE was

ignored. According to the notice in AR I am likely to be the last one to be served with the sweepings of parts from under the shelves. What a beautiful prospect of receiving $86.00 worth of odd size resistors which nobody wants. All this in return for trying to help the Division in particular, and with it Amateur Radio in general.

However it appears to me from previous experience with the Disposals Committee that among the 2200 odd members of Victoria there is not one who is willing to spend a little of his time to sort and pack components just to help the Division. I suppose that the secretary will get his share of criticism from the Jaw-Bones of the Division for not doing more work.

Little wonder that people who hate Amateur Radio are able to walk all over us.

In closing, may I point out an error in the Vic. Div. advertisement on page 30 AR Oct. 1977. The caption should read: "Unfair Component Trading".

Yours sincerely,
K. Henning, VK6XW

EDITOR'S NOTE: Please refer to Victorian Division Statement, printed elsewhere in this issue.

The Editor,

November 10, 1977

Dear Sir,

As someone with a foot in two camps — i.e. Associate Member of the WIA studying for a full call and the Managing Editor of CB ACTION — I always read with great interest your "letter to the editor" pages and having just completed the November issue of AR it has finally forced me to reply.

Mr. Yates (VK2AGZ) bleats about endless TVI while Mr. Stark (VK3APZ) complains of 80m invasion, among other things.

The question is whether either of these two qualified gentlemen has made any contribution whatsoever, other than complaining, to try and clear up the mess which most (certainly responsible CBers) agree has occurred since the so-called "legislation".

Has either of these gentlemen attempted to speak with CBers or maybe assist them with their problems, often caused by ignorance which an interested Amateur might well be able to advise on, my guess is no-way.

I have always had great respect for the Amateur fraternity and am quite aware that they worked extremely hard for the privilege of going "on-air".

However, like it or not, the CBer also now has that privilege and, in the long run, it is the Amateur movement which will benefit.

Certainly, the CBer is restricted to his own frequency and not for one minute do I advocate or endorse "piracy" elsewhere but please — these "pirates" are the irresponsible and idiots — don't tar all CBers with the same rather tired old brush.

Mr. Yates pontificates about, "they blame everyone and everything except their own ignorance and stupidity; of course with a modicum of technical knowledge the 3rd harmonic could be suppressed".

Great stuff, Mr. Yates, but might I ask you whether you could tell the difference between a 3rd harmonic and E Major when you commenced your initial interest in radio?

I severely doubt it.

Well that is precisely where most CBers are right now — they have an interest but lack the knowledge — but then, whether you like it or not, the Government does not require any knowledge, only $25 per rig!

While speaking of "pests and halfwits" let's not quietly gloss over the fact that, like it or not, the Amateur ranks are not exactly free of them — and they are not CB graduates as they have been around for many years and, although known to other Amateurs, still remain on air.

I am impressed with the spirit of self-protection and fraternity which prohibits other Amateurs reporting them but please gentlemen, get your own house into order before blasting the CBer.

Currently there are many CBers doing novice and full call courses and, in my humble opinion, this is the greatest thing that has happened to amateur radio in the past several decades.

God knows, the movement is badly in need of new members and new ideas and these will come, again like it nor not, from CB ranks.

Of course there is total chaos on the 11 metre band — what else can you expect with the patently absurd regulations which have been laid down and the complete lack of enforcement (of any kind) by the Post & Telecommunications Departments?

But, just as Messrs. Yates and Stark complain of "piracy", how do you think the responsible CBer looks at illegal power, FT101s, filthy language, etc. on the CB band.

No gentlemen, CB is here to stay — it is legal — it is popular and no amount of grizzling from the old reactionaries will alter that fact.

Why not then move into 1978 and offer your assistance to CBers in your own local area — show them over your shack, advise on their problems, demonstrate what can be done as a full call (or novice) amateur.

In short, don't continue to live in the past when you had an almost God-given right to use the airwaves — recognize that times change and there are now some 100,000 paid-up CBers out there who don't have the benefit of your knowledge — but do have the potential to learn.

Get off your respective backsides and help — not hinder.

That way you'll find a great degree of personal satisfaction in assisting other people while at the same time gradually building the Amateur fraternity in numbers, finances and influence.

Thank you for the space in your publication.

Yours faithfully,
Leonard J. Shaw, Managing Editor, Newspress.

IARU NEWS

RECIPROCAL LICENSING

PART 1

Australia is one of the very few countries in the world where a visiting amateur can obtain an amateur licence as a visitor to our shores.

He can have a valid licence anywhere in the world and with it he can obtain an equivalent Australian licence as long as his visit to Australia will not exceed twelve months.

Anyone who can name even five other countries which offer these concessions ought to qualify for something or other.

The situation is different however when an amateur from overseas comes to live in Australia either permanently or longer than a year.

In this case the rules of reciprocity apply. That is to say, the new arrival cannot obtain an Australian licence if his overseas licence was issued in a country with which Australia does not have a reciprocal agreement in force.

If he holds a valid amateur licence issued in the United Kingdom, USA, Canada, New Zealand, Malaysia, Singapore, India or Switzerland, he can normally obtain an equivalent Australian licence. These are the only countries with which Australia has negotiated reciprocal agreements. See AR August 1972.

"Normally" has been used because there are one or two areas of doubt. It is not known if a USA Novice licence holder can qualify for an Australian Novice licence, for example. The criterion is whether or not the conditions of the overseas grade precisely match (or are better than) the Australian equivalent.

Perhaps some work needs to be done in this field when WARC 79 is past history.

Anyway, the situation is not altogether hopeless as the discerning reader might work out for himself.

PART 2

Looking now at the reverse situation: The holder of an Australian amateur licence going overseas, can obtain an equivalent licence in any of the countries previously listed provided he can prove his morse code speed proficiency (if any) is equivalent to or exceeds that specified for the equivalent licence he seeks. For example, an Australian AOCP holder cannot qualify for a UK "A" lincence if his code speed pass is at 10 w.p.m. He would only be able to qualify for the "B" licence (VHF and upwards) since the qualification for the UK "A" licence is 12 w.p.m. as in most other countries.

This situation applies irrespective of whether the Australian amateur intends to visit the UK for a short holiday or intends to live there for some time. The same applies to the other countries listed, as far as is known.

Again, as far as is known, the only country which issues Amateur licences to amateur visitors from anywhere in the world is Belgium. For intending residents the position could be different.

As far as is known Australian amateurs can obtain an overseas licence as a visitor (and in some cases even when transferring either permanently or for some time) in a number of Commonwealth countries without the necessity to obtain a pass in the local amateur examinations. There are likely to be exceptions, as for example Hong Kong.

PART 3

Because of all these complications it is desirable to look into the situation where an amateur holds an overseas licence.

The United Kingdom (a) has reciprocal agreements with 23 foreign governments and (b) a reciprocity situation where 29 Commonwealth countries will accept a UK licence as a qualification for the issue of their amateur licence.

The countries under (a) are — Austria, Belgium, Brazil, Denmark, Dominican Republic, El Salvador, Finland, France, West Germany, Iceland, Eire, Israel, Italy, Luxembourg, Monaco, Netherlands, Norway, Poland, Portugal, South Africa, Sweden, Switzerland and USA.

Under (b) the countries likely to interest Australians include — Bermuda, Botswana, Brunei, Canada, Cyprus, Gibraltar, Hong Kong, India, Jamaica, Kenya, Malaysia, Malta, Mauritius, Nigeria, Rhodesia, Seychelles, Singapore, Sri Lanka and Zambia.

The USA has reciprocal agreements with 47 foreign countries (last list seen). Those countries include most of the Central and South American countries, most of the countries listed for the UK (except, oddly enough, Iceland, Italy, Poland and South Africa) and, in the cases of the UK and France most of the Commonwealth countries for the former and New Caledonia, New Hebrides, Reunion and others in respect of the latter. The USA also has reciprocity with Indonesia and Fiji.

Canada has reciprocity with countries similar to the USA list but there are some omissions (such as Indonesia, Kuwait, Austria, Argentina and Monaco) and one addition (Senegal).

New Zealand has reciprocity with the USA and France (including Cook Islands etc.) plus, of course, most Commonwealth countries of note.

The World being what it is today, it would seem as though an Australian travelling overseas ought to arm himself with amateur licences in several countries to qualify for obtaining a licence in some country not directly recognised by Australia for full reciprocity.

PART 4

Now comes the hard part. Getting an amateur licence given the application of reciprocity.

Firstly, the visitor to Australia applies to the Superintendent of the Radio Branch in the capital city of the State where he arrives (or for the intending resident — where he will live). He will require a copy of his valid overseas amateur licence plus, where applicable, proof concerning operating restrictions affecting his overseas licence. A person whilst still overseas can apply in advance direct to the Regulatory and Licensing Branch, PO Box 5412CC, Melbourne, Victoria, 3001, if he wishes. The applicant must then complete the required application and secrecy forms and pay the annual fee of $12 (Novice $5). Much the same applies for an intending resident holding a valid licence in a country with which Australia has reciprocity. In other cases such a person cannot obtain an Australian licence on the strength of his overseas licence and must obtain a pass in the Australian amateur examinations in the normal way.

Secondly, obtaining a reciprocal licence in other countries. There is normally a considerable waiting period — in other words you should apply well in advance. Some countries do not accept photostat copies of your licence or other papers. In all the countries there is a variable amount of form filling to be done. Licence fees are, of course, normally required.

Applications for a UK licence should be addressed to "Home Office (Radio Regulatory Department), Waterloo Bridge House, Waterloo Road, London, SE18UA, England" at least 30 days in advance of the date the licence is required. No UK licence will be issued in these circumstances without a UK address for the station (or for correspondence) being entered on the application form. The licence fee (1977) is 5 pounds.

Visitors to the USA should obtain an FCC form 610A from any FCC office and mail it at least 60 days in advance to "Federal Communications Commission, Washington, D.C. 20554 USA". At present (1977) there is no licence fee. For Canada the licensing authority is the Department of Communications, Ottawa, Ontario.

For New Zealand at least two weeks notice must be given before a licence can be processed. The address is New Zealand Post Office Headquarters, Wellington". Required are — the operator's certificate of proficiency (including morse speed passed), receipt showing validity of current licence, permanent postal address in New Zealand, evidence of date of birth. Applications can also be made at the ports of entry: Auckland, Wellington, Christchurch or Dunedin to the local Engineering Office of the NZ Post Office.

For the USA possessions in the Pacific the FCC is not necessarily the licensing authority and no reciprocity exists (e.g. Saipan).

PART 5

Always remember that you must operate within the terms of the amateur licence of the country in which it is issued and from which you operate. The exceptions to this are few, if any.

Also remember that if you travel overseas with transmitting equipment you must comply with local customs and other import requirements. In some countries you cannot import amateur transmitters without being in possession of an amateur licence or specific authority to import.

It is also advisable to take note that if you are in the territorial waters of a country you are subject to that country's licensing requirements. Also, not many countries authorise amateur maritime mobile operations on the high seas. Much the same applies to aeronautical mobile operations.

For details of licensing in other countries write direct to the appropriate licensing authority or note licensing conditions as published in AR from time to time.

It is regrettable that in a few countries amateur radio is totally prohibited. ■

AMATEUR SATELLITES

Bob Arnold

VK3ZBB

In response to my appeal for financial support for the AMSAT Phase 3 satellite I was delighted to receive a donation from the WIA VK2 Division VHF Group which has been sent on to AMSAT HQ. Several promises have been made and further support is solicited. To avoid costly additional postage and bank charges, please forward your donations or membership fees ($US10.00 p.a.) direct to AMSAT, PO Box 27, Washington, DC 20044, USA. their financial support is urgently needed to get those 3 off the ground and will be gratefully acknowledged.

After corresponding with Martin VK4ZIL, a keen Oscar listener, I was able to have a QSO with him through the station of Don VK2PU, a regular on Mode B. A few hours later I contacted him from Brisbane via the Gold Coast repeater, guess what — we both agree communication is much better via the "bird".

Laurie VK4LO is now Oscar co-ordinator for VK4 Division.

I have been relatively inactive during the period under review but the following new stations have been heard:—

ZL3AC Club Station Christchurch
VK2AQG
VK3ACH
ZL2TIY
ZL1TKU

VK8ZGF is again in contact with VK3 on 52 MHz. Geoff, what about hearing you more often via Mode B? There is no waiting, no QSB and no QRM!

During a short visit to the UK I had an opportunity to attend the annual exhibition of the Amateur Retailers' Association held in Leicester, October 27th-29th. The stands were occupied by many of the UK retailers, familiar to readers of the RSGB monthly "Radio Communication", displaying a wide range of equipment of UK, USA and Japanese manufacture, well known to Australian Amateurs, together with a multitude of surplus components. Displays were also arranged by RSGB, BATVA and local radio clubs. It was estimated that over 15,000 amateurs and enthusiasts visited the exhibition which was well organised and of great interest. At the same time I was able to purchase a copy of a new book "Oscar Amateur Radio Satellites" by Stratis Caramanolis. Originally published in German, the new English translation is available from RSGB for £4.20 post paid. No doubt Magpubs at Federal Office and Divisional Offices will stock this book in due course. I will prepare a review of this excellent publication for next month's edition of AR.

I am pleased to pass on further information on the Phase 3 satellite including details of the two transponders.

The primary transponder on Mode B will have the following frequencies —

UP 435.150-435.290 MHz
DOWN 145.850-145.990 MHz
Signal inverted.
General Beacon 145.995

The secondary transponder on Mode J, will use —

UP 145.850-145.990 MHz
DOWN 435.150-435.290 MHz
Signal inverted.
General Beacon 435.145

The most exciting news for operators in the southern hermisphere is that the orbit inclination of the Phase 3 craft is now to be 57 deg. instead of the original 63 deg. On launching in December 1979 the initial inclination will be 17 deg. but when the on-board Thiokol rocket is fired, the inclination will be changed to about 57 deg. What does this mean to us? The use of a 63 deg. inclination is the most favoured one for professional satellites in elliptical orbit as in this situation the effect of the earth's equatorial bulge is negated and the satellite stays in a constant orbit.

Any variation of inclination from 63 deg. permits the effect of the bulge to be noticed by the satellite and consequently the orbit gradually drifts. With an initial inclination of 57 deg. the drift will be a degree or so each month and this will put the apogee of the orbit over the equator in three or four years. Just think what this will mean to VK stations using the satellite which will be 35,000 km overhead.

If you are interested in the geometry of satellites in elliptical orbit and the capabilities thereof, why not join AMSAT and receive their newsletter on a regular basis. You will find out about the problems of predicting the location of a satellite in a drifting orbit. ■

OSCAR 7

JANUARY 1978

	ORBIT	U T C	LONG.	MODE
1	14311	0038	65.3	A
2	14324	0133	78.9	B
3	14336	0032	63.7	A
4	14349	0126	77.3	B
5	14361	0026	62.2	A
6	14374	0120	75.7	B
7	14386	0019	60.6	A
8	14399	0114	74.1	B
9	14411	0013	59.0	A
10	14424	0107	72.6	B
11	14436	0006	57.5	A
12	14449	0100	71.0	B
13	14462	0154	84.6	A
14	14474	0054	59.5	B
15	14487	0148	83.0	A
16	14499	0047	67.9	B
17	14412	0141	81.5	A
18	14424	0041	66.3	B
19	14437	0135	79.9	A
20	14449	0034	64.7	B
21	14462	0129	78.3	A
22	14474	0028	63.2	B
23	14487	0122	76.7	A
24	14499	0022	61.6	B
25	14512	0116	75.2	A
26	14524	0015	60.0	B
27	14537	0109	73.6	A
28	14549	0009	58.4	B
29	14562	0103	72.0	A
30	14574	0002	56.9	B
31	14587	0057	70.4	A

REPEATERS

MILTON-ULLADULLA REPEATER VK2RMU

From "The Lyrebird", Oct. 77

The NSW coastline south of Kiama becomes increasingly rugged and heavily wooded and two-metre operation along the Princes Highway and at many popular holiday resorts and townships, has been, till recently, most disappointing.

The establishment of a repeater VK2RMU at Milton-Ulladulla has changed these poor conditions and has opened up 2-metre communications between Kiama and Narooma in a most satisfactory manner.

The repeater is temporarily located at the home of Frank VK2HQ at Milton. Ultimately it will be installed at a higher position about 300 metres above sea level. Thus the primary service area, the coastal strip, will have even better coverage than at present.

VK2RMU is one of the few repeaters in Australia using high power (100 watts ERP) and receiver sensitivity of 0.3 uV while at the same time running fully duplexed: transmitting and receiving on the same antenna. Additionally, one of the few repeaters with 100 per cent stand-by equipment. Two separate repeaters!

The stand-by feature is particularly valuable because of the widely scattered club membership and the difficulty of finding, at short notice, sufficient technical back-up with appropriate test equipment to keep the repeater operational without long out-of-service periods.

The installation comprises:

Repeater 1 Hybrid solid state/valves
Repeater 2 Solid State

(Remote control change-over facilities, Repeater 1 to Repeater 2, and vice versa are in the planning phase.)

A common ident board may feed either repeater. The ident board modelled on the Mt. Ginini repeater provides call sign ident, repeat ident, carrier-break timer, transmitter tail length, etc.

Provision has been made to alter the tone of the ident and give other audio frequency indications to enable identification of changes in repeater status. Such parameters as overheating, smoke (internal and external to repeater), low power output, drop in mains voltage, intruders etc., will be automatically relayed to listeners.

REPEATER 1

Is a modified AWA base station type BST-50A. The transmitter is solid state except for the final stages. The power amplifier uses a QQE06/40 with a nominal output of 50 watts. Deviation set for 7½ kHz. The above arrangement is particularly effective in reducing unwanted emissions and is quite superior in this regard. The receiver is solid state except for the 6EJ7 RF stages. This receiver has exceptional resistance to intermodulation products which often plague receivers located near other transmitters. The receiver sensitivity: 20 dB quieting for an input of 0.5 uV.

REPEATER 2

Power Output: 25 watts Barefoot, 65 watts with PA.

Receiver Sensitivity: 0.15 uV = 10 dB $\frac{S+N}{N}$

Ratio with ±3 kHz deviation at 1 kHz. The above figures do not take into account the duplexer but are measured at the Receiver input and the Tx output.

Keying: Fully solid-state switching is employed throughout (i.e. no relays). However overvoltage protection relays are incorporated in the 12-transmitter power supply so that in the unlikely event of power supply failure, excessive voltages will not be applied to the transmitter.

Power Supplies: Considerable effort has been taken with the power supply regulator to ensure that no reduction in receiver sensitivity or transmitter output power will occur, even if the voltage drops to as low as 165V AC.

Audio Characteristics: The audio response of the complete system has been tailored to be flat from 200 Hz to 2.8 kHz. The transmitter audio system has a 3 kHz low pass filter prior to the modulator with a 15 dB per octave roll off above 3 kHz to minimise modulation sideband products.

Mute characteristics: The repeater incorporates a sophisticated noise quietening mute system such that the mute threshold does not change with supply variations of 160V-280V AC or temperature

variations of —10 deg. C to plus 60 deg. C. The mute switching contains a 4 to 6 dB hysteresis system to ensure that even if a slight amount of receiver desensing should occur due to cavity drift in the duplexer, the repeater will not tend to chatter or hang on, i.e. the receiver needs a slightly stronger signal to open the mute than that which will keep the mute open once activated.

DEVIATION CHARACTERISTICS
Receiver Bandwidth: 30 kHz (± 15 kHz).
Transmitter Deviation: 7.5 kHz.
Diode clipping plus an active low-pass filter are employed to ensure that the transmitter peak deviation cannot exceed ±7.5 kHz.

Received signals with deviations of up to ±5 kHz will be faithfully reproduced at the transmitter output.

Deviation above ±5 kHz will be limited to a maximum of ±7.5 kHz at the transmitter output by the clipper filter.

Receiver: The receiver is a triple conversion superhet using a dual gate FET RF amplifier-bipolar mixer to the 10.7 MHz 8 pole filter-dual gate FET second mixer to a 455 kHz IF detector system. Seven transistors are employed in the noise quietening mute system. The complete receiver contains 17 transistors plus 2 integrated circuits.

Transmitter: The transmitter is a pure FM system rather than phase modulation (once again to reduce modulation side bands which may appear on the receiver frequency) using 6 transistors in the audio section and 4 in the 200 mW exciter driving a "Motorola" module to 25-30 watts barefoot. The "after-burner" is an 80 watt PA using a BL7568 with the power reduced to 65 watts in the interest of extended life.

The complete unit has undergone an elaborate testing programme in a sophisticated R & D laboratory under wide temperature and supply variations before being placed in service and it is anticipated it will perform with a very high degree of reliability in the field.

Both repeaters operate from 240V mains but Repeater 2 may be operated at a lower power (20 watts) from a 12V storage battery. This unit, receiver and transmitter, is compactly built to enable rapid transport for operation elsewhere should an emergency require it.

The receiver and transmitter are coupled to the antenna through a nest of high-Q cavity filters, four at the receiver input, and another four at the transmitter output. These duplexers provide a notch at receive and transmit frequencies, of the order of —118 dB with a width of about 100 kHz at the —100 dB point. Commercial repeater systems use a frequency separation of 2 per cent or more between input and output channels. Amateur repeaters on the 2 metre band, on the other hand, have a separation of only 0.4 per cent, a much more difficult proportion. The total insertion loss of each four-section duplexer is less than 2 dB. This is more than compensated for by the use of a common feedline and a common antenna for both receiving and transmitting. The duplexers were constructed and tuned by club members.

The narrow strip of inhabited coastline which the repeater services makes a directional antenna attractive. The antenna at present in use comprises a stack of two three-element beams feeding in a northerly direction and a similar array feeding south. The beams are arranged so that the back waves from the back-to-back arrays, effectively cancel in the mast. The effllective radiated power is about 100 watts north, and the same south.

NOTE:
Keith VK2AT has worked into the repeater from Smiths Lake near Forster. Ken VK2KP and Bill VK3JT have both worked into the repeater from Green Cape about 20 km from the Victorian Border.

INTRUDER WATCH

Alf Chandler, VK3LC

THE JAMMER
Everyone who operates on 40 metres must have experienced the frustration of finding a large segment obliterated by a jammer.

The Russian jammer is frequently referred to as "Majak". I explain the term by a quotation from the September ARRL Intruder Watch Memo:

" 'Majak' is a Russian word meaning 'beacon', and is used by Russians to identify their second program, from Radio Moscow. This second program is used as a regional program. The service uses six second ticks on the hour and half hour, and a somewhat different musical 'interval signal' from that on the first program".

The USSR frequently uses the Majak audio to jam other transmissions, particularly the Russian programs from Peking. This is done by overmodulating some 500 per cent so that the original audio is lost and a terrific noise, spreading wide, results.

Frequently, the transmitter spraying out the Majak jamming creates families of spurious signals so that a very large part of our 7 MHz band is sometimes obscured.

Occasionally, the six second ticks on the jamming transmission can be heard and matched with the program in the clear on 7200 kHz.

THE INTEREFERENCE PATTERN
It is a strange anomaly that, despite all the band planning, frequency allocations and regulations fiinalised at ITU Conferences, any nation may still place a transmitter on the air on any frequency that it so desires and will not be required to remove it unless a complainant nation can provide substantial evidence that the aforementioned transmitter causes harmful interference to a service operating on the frequency.

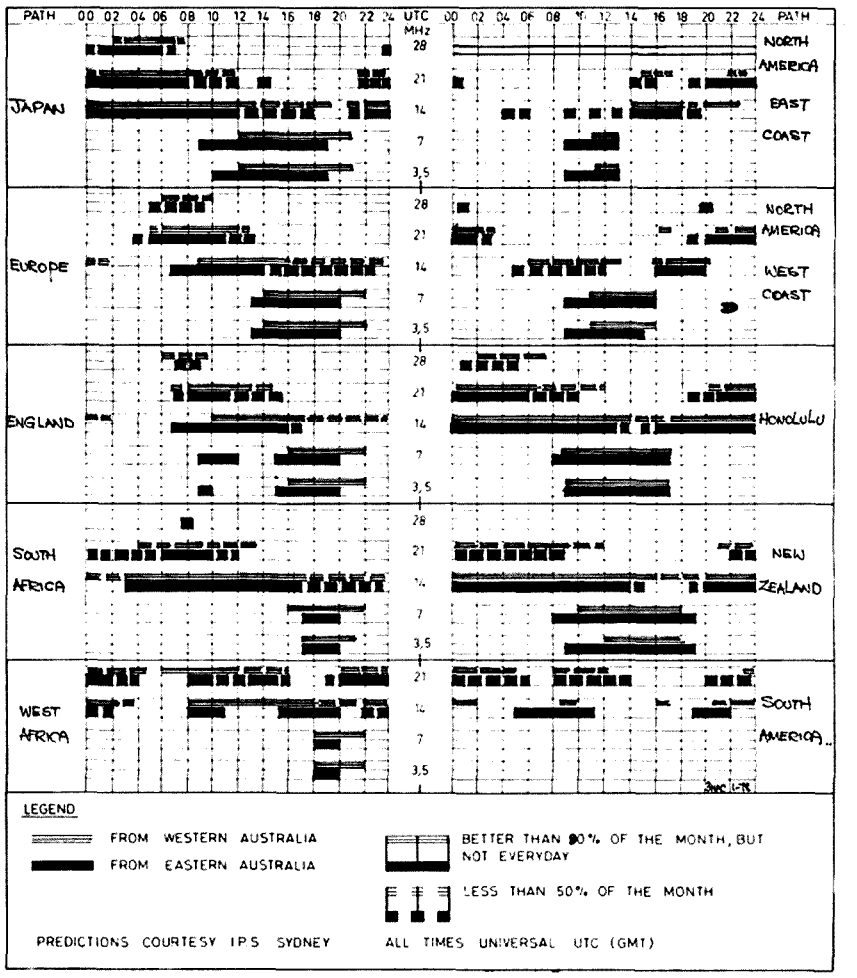
In the USA, the ARRL works in close liason with the FCC to provide the substantial evidence as mentioned above. Reports coming in are carefully scanned for patterns, the monitoring stations are alterted, and once the presence of the intruder is established, a telegram is sent by the FCC to its counterpart in the country from which the offending transmissions emanate.

To establish a pattern, many observers' reports are required. These are forthcoming in the U.S.A. where there are a thousand reports each month. Unfortunately, this is not so in Australia, where, at present, a mere handful of amateur operators regularly send in reports of intruders, and a few others send in reports occasionally. Although complaints about intruders are quite common, so very few feel inclined to put the time and effort into noting down full details of even one intruder.

Would the preceding paragraphs have spurred some readers to act? ■

IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



WICEN

Here is the text of a letter addressed to Brig. Roseblade VK1QJ by Maj. Gen. A. B. Stretton A.O., C.B.E., Director of the Natural Disasters Organisation —

"Thank you for your letter advising the results of the WICEN exercise which was based on the scenario of our exercise Backup 77. The radio teletype capability is a major step forward and should significantly enhance the usefulness of WICEN in a major disaster.

"I would also like to thank you for your participation in Backup 77 and can report that the

simulated WICEN input was most useful. I would hope that we can make similar arrangements for next year's exercise, possibly with a greater variety of messages representing information passed on behalf of other agencies, as well as direct information received from WICEN operators.

"My Communications Officer should be available to attend your exercise debriefing meeting provided the date does not conflict with any other meetings he may be required to attend."

This exercise was reported in the Canberra Press.

In Victoria the VK3 WICEN organisation has been involved with radio communications for the second year for the Light Car Club International Rally at Bright from 25th to 27th October. This Division will also be attending to radio communications for the Red Cross Murray River Canoe Maráthon for the fifth year in succession. The dates are 27th to 31st December.

The following is a simplified guide to emergency operating —

AIM

1. To provide the ordinary amateur radio operator who has had 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 kHz
   7 050 kHz
   14 100 kHz
   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.

WICEN EXERCISE — HARDIE FERODO 1000

From "Tuned-in", Nov. '77

The recent Hardie Ferodo 1000 at Mt. Panorama saw a combined effort by Bathurst State Emergency Service personnel and WICEN operators in providing a communications safety net at selected locations around the race track during the day long race on Sunday, 2nd October.

The exercise has been beneficial to both groups in understanding how each works and has also created a good working relationship for future exercises or emergencies.

The following letter was received by Robert VK2ZRJ, after the exercise:—

"On behalf of Bathurst SES I wish to thank you and your members for your co-operation at the Hardie Ferodo 1000. I feel it proved most beneficial for our members, it helps them gain experience in many facets of Radio Procedure and also gave them a look at how the Amateurs work.

"I hope that we can get together for future events of the same as Sunday. Again, many thanks and hope to see you soon.

A. Brownscombe,
Communications Officer"

Robert thanks WICEN operators Allan VK2BNA, Peter VK2TK, Eric VK2BEO, Bill VK2BVW and Ken VK2ZAN for their interest and co-operation during the exercise. ■

LARA

Ladies Amateur Radio Association

We start off this year by wishing a Happy New Year to all.

In the last year, LARA has grown considerably which means that the committee are kept busier and *all* that. At time of "going to press" the AGM in VK3 is imminent, so best wishes to the "new" office bearers (they'll need it).

The LARA newsletter, which along with the weekly skeds, is our main means of communication within the group, is being mailed to an ever-growing list of subscribers. A sincere vote of thanks must go to Norma 3AYL who handles most of the work involved in production and distribution of the paper. The first 1978 edition awaits articles from eager contributors (or not-so-eager contributors or even downright unwilling contributors) so get to work with pen and paper.

The Monday night sked on 80m has always been popular. These days the sked is so crowded that brief overs and brisk net procedure have to be the order of the day. Nonetheless new YL "laces" are always warmly welcomed (and we've all been "mike-s'y" at some stage so we understand!) New YL calls (some belonging to long-standing sked members) are being heard on air now, and congratulations to those ladies on their success in the exams (consolation to the not-so-successful such as myself).

Moves are afoot to establish a Novice YL sked either further down the 80m band or in another band, but this has to be co-ordinated with availability of crystals in common. Any ideas or suggestions on this subject would be welcomed by Mavis 3BIR who is co-ordinating the plans for this sked.

It's summer at present, which is of course associated with such pleasant thoughts as sun, surf, beaches 'n' beer, swimming, ice cream, LARA Christmas parties (and rain, as usual) — held in December, and last but definitely not least fox-hunting. "Hounds" in full beam-swing may soon be seen around the suburbs of Melbourne "Tally-ho"ing like mad and getting lost as usual (what a delightful prospect!) More plans for all this later on.

Just to keep readers interested, next month's article will continue with the second of a series on YLs in Australian *amateur radio.*

33s for now,
Kate Duncan (Publicity Officer) ■

CONTESTS

Kevin Phillips, VK3AUQ
Box 67, East Melbourne, 3002

CONTEST CALENDAR

Dec. 10-Jan. 8	ROSS HULL VHF/UHF MEMORIAL CONTEST
January	
14-15	YU 80 Metre CW Contest
14-15	DL QRP CW Contest
14	RTTY Flash contest
22	RTTY Flash Contest
27-29	CQ WW 160 CW Contest
28-29	French CW Contest
29-30	Classic Radio exchange
February	
4-5	ARRL DX Phone Contest
4-12	ARRL Novice Contest
11-12	JOHN MOYLE MEMORIAL NATIONAL FIELD DAY
11-12	Ten-Ten QSO party
11-12	QCWA QSO party
18-19	ARRL DX CW Contest
18-19	YL-OM Phone Contest
25-26	French Phone Contest
March	
4-5	ARRL DX Phone Contest
4-5	YL-OM CW Contest
18-19	ARRL DX CW Contest
25-26	CQ WW WPX SSB Contest
April	
1-3	ARCI ORP QSO party
11-12	DX to W/VE YL CW party
25-26	DX to W/VE YL Phone party
29-30	PACC Phone and CW Contest.

DL ORP CW CONTEST

Starts 1500 GMT Jan. 14 and finishes 1500 GMT Jan. 15. Power input for this contest is limited to 10 watts or less, single operator and CW only. QRO stations may participate but only contacts with QRP stations are valid. Limit operation to 15 hours. The 9 hours off may be taken in two parts. Contacts may be made on any five bands in the 1.8 to 28 MHz spectrum.

Exchange RST plus QSO No. and power input, add "X" if crystal controlled. (579001/8X) Stations using more than 10 watts indicate QRO instead of power.

Scoring

Contacts with stations in same country, 1 point. Other countries but same continent, 2 points. DX on other continents, 3 points. If OSO is with another QRP station, add 3 points. Stations using less than 3.5 watts get credit for 1 handicap point, and another point if rig is crystal controlled. Double the above points if both stations meet above handicap requirements (8 to 12 final points possible). Reducing input power of a commercial rig does not qualify it for handicap bonus.

Multiplier

Each DXCC country worked, one if on own continent, two if on another continent. Plus call areas of JA, PY, VE, VK, W/K, ZS. Final score is total QSO points from all bands limes the multiplier points from each band.

Include a summary sheet showing the scoring, equipment description and the usual signed declaration. Mailing deadline Feb. 15th to Hartmut Weber, DJ7ST, D-3201 Holle, Kleine Ohe 5, West Germany.

RTTY FLASH CONTEST

In two periods, 1500 to 2300 Jan. 14, and 0700 to 1500 GMT Jan. 22. All bands 3.5 to 28 MHz and also via Oscar. The same station may be worked on each band for QSO and multiplier credit. Exchange callsign, RST and CQ Zone.

Scoring

Contacts with station in own Zones, 2 points, and with stations outside own Zone according to the value in the "exchange point table". Oscar contacts count double in point value. Multipliers are each DXCC country and W/K, VE and VK call area worked on each band. Final score is total QSOs X exchange points X total multiplier.

It is suggested you write to Prof. Fanti for a more detailed rules sheet and an "exchange point table", handicap table and sample forms. Logs must be received no later than Feb. 28th, and go to Prof. Franco Fanti, via Dallolio 19, 40139 Bologna, Italy. ■

AWARDS COLUMN

Brian Austin, VK5CA
P.O. Box 7A, Crafers SA, 5152

ADXA AWARD

1. The award is available to licensed amateurs.
2. Contacts on and after 30.7.1952 are valid.
3. Do not send QSL cards. A list showing full details of the contacts should be certified by the Awards Manager of an IARU Affiliated Society.
4. The fee for the award is 10 IRC.
5. The address for applications is:
   JARL Awards Manager,
   Posibox 377
   Tokyo Central, Japan.

RULES:

Contacts with countries count only when such contacts are valid under DXCC rules as regards date etc.

Requirements: Confirmed contacts are required with 30 or more countries in Asia.

COUNTRIES LIST:

AC3	UI8
AC4	UJ8
A5 Bhutan	UL7
AP Bangladesh	UM8
AP Pakistan	VS1/9M4/9V1 Singapore
BV/C3	VS1/9M2,4 W. Malaysia
BY/C	VS2/9M2 Malaysia
C9	VS6
CR8 Damao, Diu	VS9/70
CR8 Goa	VS9K
CR9 Macao	VS9H
EP/EQ	VS9M/8QA
F18 (Fr. Indo China)	VU
FN8	VU Andn. & Nicr.
HM/HL	VU Laccadive
HS	XU
HZ/7Z	XV/3W8
JA/JH/JR	XW8
JD/KG6I Ogasawara Is.	XZ
JT	YA
JY	YI
KR6/8	YK
MP4B	ZC6/4X1
MP4Q	Soratly Is.
MP4M/VS90	4S7
MP4T	4W1
OD5	4X4/4Z
TA	5B4/ZC4
UA9 0	6Z4
UD6	9K2
UF6/4L7	9K3/8Z5
UG6/4J7	9N1
UH8	

5 x 5 AWARD, NEW ZEALAND

1. The award is available to licensed amateurs.
2. Contacts from November 1945 are valid.
3. Do not send OSL cards. A list showing full details of the contacts should be certified by the Awards Manager of a national society.
4. The fee for the award is $1 or 10 IRC.
5. The address for applications is:
   NZART,
   Box 489,
   Wellington, New Zealand.

Requirements: The same station must be contacted on 5 bands, and repeated with five DXCC countries. This makes the same station in five different DXCC countries on 5 bands.

Endorsements are given for 10, 20 and up to 100 DXCC countries on five bands. ■

HAMADS

- Eight lines free to all WIA members. $9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Commercial advertising is excluded. Repeals may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

FOR SALE

Drake TR4c Xcvr., current model, with mic., spkr., and matching Drake AC power supply. Sell for half new price, $475. VK3QM, QTHR. Ph. (03) 560 9215.

2m FM Carphone AWA MR6A, no case or xtals, $20. VK2ZQC. Ph. (02) 81 2143 AH.

Meters, Transformers, incl. 110V types and valves, most items new, selling cheaply. SASE for list. John Bilston, 19 Edgar Road, San Remo, 3925

FT101 Mk 2 $380; FL2100 amplifier, $300; FV101B external VFO, $75; Datong Speech Clipper, $50; QM70, 28/144 QRO transverter with 101 plugs, $100. VK4AKE, Tom Fishpool, Box 1225, Cairns.

Frequency Meter SCR211AK, $20; Heathkit Cantenna dummy load with oil, $15; Hygain trapped vertical 18AVT/WB-A, $50; 3 in. diam. 360 deg. directional indicator with drive unit, 12V operation, $25. VK3XY, QTHR. Ph. (03) 97 1265.

Remington 6mm High Power Rifle, 3-9x40 scope, all access. and reloading equip. and components, 200 rounds, sell or swap for amateur equipment, cash adjustment. VK3ZNC, QTHR. Ph. (051) 47 2368.

Varactor tripler, 20W o/p at 432 MHz, $20; Varactor quadrupler (2 diode), 20W o/p at 576 MHz, $25; FM base station, 52.525 MHz, 5 power levels to 150W i/p, $60; AM 150W 2m Tx inc. separate YL1060 final, p/s, heterodyne exciter (xtal/VFO), modulator, use as-is or convert to SSB, $90. Bob Halligan, VK3AOT, QTHR. Ph. (03) 697 6011 bus., (03) 787 6426 AH.

PFT-203 SIEWA VHF-FM C/W rptrs. 2, 4, 6, 8, ch. 40 & 50, excellent condition, high sensitivity with Ipswich pre-amp, provision for 25 ch. 28W power o/p min., $190; Tokai TC1001 CB 23 ch AM/46 ch. SSB, PA facility, extremely well made rig and brand new, easily converted to 10m by changing one xtl, all cables and connectors incl. $190. VK4ZEC, QTHR or Ph. (071) 28 2937 VK4PC.

Unimetrics Stingray, converted to WIA 28 MHz band plan, suit Novice, $189. Ph. (03) 232 9616.

Complete Video Display Board as per EA article, $150. Neil Osborne, VK3YEI, QTHR. Ph. (03) 763 5207 AH.

Yaesu FTV650 6m Transverter, as new, with handbook, in original packing, $165. AR22-R rotator and control, good condition, $40. TCA1675 with ch. 40, $45. Pye CCU and camera, with cables, spare vidicon and handbook, works OK, $125. Home brew ATV Tx, 10W, with very heavy PS, trans. mod., $65. R. N. Ferguson VK5EI, QTHR.

FT101B with inst. book and mic., $550. BC221, AC power supply, with calib. book, $25. 4A 6/12V charger, $15. LSG11 sig. gen., $25. Plus oddments. Send s.a.s.e. for list. Deceased estate. Contact VK3YQ, QTHR. Ph. (03) 859 3604.

Steel Tower, 44 ft., two section, self-supporting, heavy duty, triangular, crank up, tilt over, with or without TH3 Mark II Yagi and ham m. rotator. Transferring to VK7. What offers? VK2DM, QTHR. Ph. (02) 871 1662.

FRG7 Rx by Yaesu. Latest model with clarifier, as new in carton, $255. Ph. (03) 467 2131, business hours.

FT200 Transceiver with power supply, handbook, and complete set spare valve, $350. VK2BJS, QTHR. Ph. (02) 92 5290.

Galaxy 5 Transceiver, 400W 80-10m, with power supply and spkr., excellent condition, manual, circuit, 100 kHz calibrator, spare 6HF5 p.a.'s, other tubes, $300. VK4UF, QTHR. Ph. (077) 74 1195 after 6 p.m.

Collins S line. 325-3 Tx S/N 102190 75S3B Rx S/N 85224, 30L-1 linear amp. S/N40876, 516F2 pwr. supply, 312B4 control, KW108 monitor scope, all with handbooks, cables and in mint cond. Not a bargain, but will negotiate. VK3IZ, QTHR. Ph. (03) 813 2355 B.H.

WANTED

Licensed Amateur (full call) to coach student, wishing to obtain licence (theory only), fee negotiable, would prefer local person. Ph. (03) 689 2619 AH. J. Singarella, West Footscray.

VHF RX covering 2m, suitable for car, may be tcvr with Tx section completely U/S. L30546, QTHR.

MUFAX facsimile machine wanted, top price paid. VK5JE, QTHR. Ph. (08) 262 4622 AH.

Assembly instruction and any technical data on TH5-Hy Gain 4 el. 3 band beam, will buy or copy as required. Contact VK3CN, QTHR. Ph. (056) 55 1929.

Swan MB40 or MB40A mono band SSB/CW transceiver or similar 40m unit. Details and price VK3UJ, QTHR. Ph. (03) 874 5632.

CRO for general use. Single or dual trace in working order. Don Richards VK2NFF. Ph. (02) 406 4368.

FT101 or FT101B complete with AC and DC power leads, manual if possible, condition not critical. Also Mark mobile whips 40-80-20m. Reasonable price paid. Dan Clift VK2DC, QTHR. Ph. (047) 39 2782 evenings.

One Power Transformer 1100V, secondary winding at 250 mA, for linear amplifier, 3000V power supply. VK2AJT, QTHR. Ph. (044) 22786.

Shortwave Rx for serious monitoring, able to tune within 5 kHz. VK4NBC, QTHR. Ph. (074) 62 1294.

STOLEN

IC22A serial 1963, from QTH. Details please to VK3BH, QTHR, or police.

SILENT KEYS

It is with deep regret that we record the passing of—

GORDON V. LANCASTER VK3AFV

ALF KERR VK3JQ

All passed away 22nd July, 1977.

Alf's early introduction to the field of radio commenced about 1923, and at the age of 16 years, in 1928 he obtained his Amateur Operator Certificate and the call sign A3AL. With the introduction of the VK prefix he became VK3AL, a call sign he retained until the immediate post war years.

In 1929 Alf was successful in obtaining his Broadcast Operator's Certificate, and with Warne Wilson who held the amateur call sign VK3WA in those days, they became the co-founders and engineers of one of the first commercial country radio stations — 3BA Ballarat.

During the 30s VK3AL was well known as one of the few amateurs who had a great deal of success in the use of grid modulation. Alf's desire for precise technical perfection led him to import from Germany a specially designed valve for Telefunken (Grid) modulation, with which he produced such excellent grid modulation in those days. Due to business commitments Alf was not active as a licensed amateur for many years following the war. However he retained a great personal interest in Amateur Radio and in Februery 1974 became licensed as VK3JQ.

His love of radio, particularly Amateur Radio, and his interest and concern for the future of Amateur Radio, and The Wireless Institute of Australia, brought him in contact with problems of these days. He became a Councillor of the Victorian Division and in February 1977 he was elected as President of the Victorian Division.

As VK3JQ his operating was mostly from a mobile, and his kindly words of encouragement and help to other amateurs marked him as a true "Radio Amateur" in the real sense.

Ron Cannon VK3BRC

Mr. R. H. DIXON VK2QD

Friends of Reginald Dixon will be saddened to learn of his death on 22nd October, after a very long illness.

"Herb" as he was generally known, was licensed as VK2QD in 1934, and remained activa until about eight years ago, when illness overtook him.

Radio had been Herb's life commencing with AWA and obtaining his Broadcast Operators Certificate when with 2AY Albury.

He entered private business in radio and later TV, and then worked as a radio technician with the Army Workshops at Bandiana until illness finally forced retirement.

Condolence is extended to his wife Audrey and family.

Jack VK2AY

WHAT'S BLACK & WHITE AND TURNS 2-METRE OPERATORS GREEN ?

THE NEW KENWOOD TR-7400

This is the one, the Kenwood TR-7400 FM mobile transceiver of 25/10 watts and complete 2 metre band coverage (144-148 MHz). It has the largest digital readout in its class, and the 800 channel coverage with PLL frequency synthesizer provides you with all existing and proposed Australian repeaters. A convenient front panel switch offsets the transmit frequency up or down 600 kHz.

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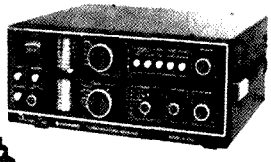
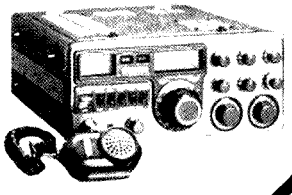
TR-2200 2-metre VHF FM portable receiver



R-300 all band or ham band communications receiver

The new TS-520S HF transceiver — ideal for the novice



TS-700 2-metre VHF all mode transceiver

Your nearest Kenwood dealer will be happy to give you more information on the entire Kenwood range of amateur radio products including the remarkable new TR-7400. Contact him direct or write to us at Weston Electronics.

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UHF for the Amateur...

ALL FULLY IMPORTED FROM THE U.K.

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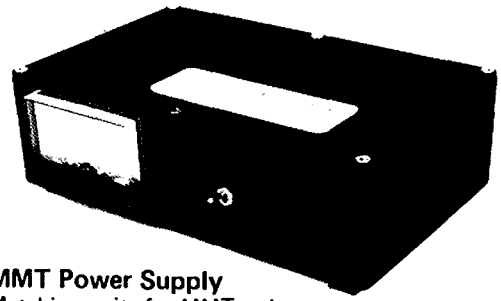
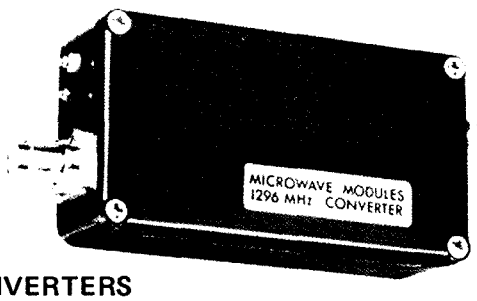
MODEL MMT 432/285 PRICE: $235

70cm

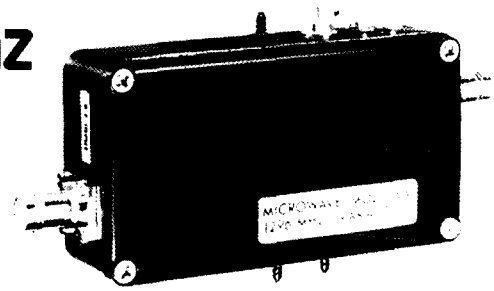


MMT Power Supply
Matching units for MMT series transverters.
PRICE: T.B.A.

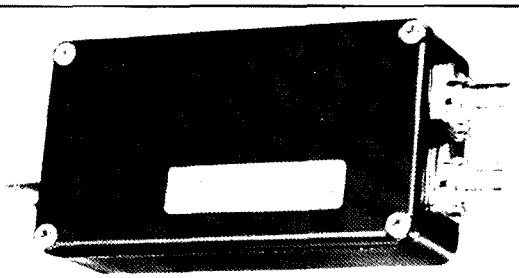
1296mhz



CONVERTERS
MODEL MMC 1296/28 PRICE: $65
MODEL MMC 1296/144 PRICE: $65



VARACTOR/TRIPLER
MODEL MMV 1296 PRICE: $74



CONVERTER, with Ocsillator Output Facility.
6 METER MODEL 52/28LO PRICE: $49
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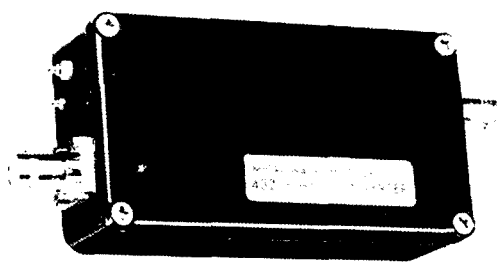
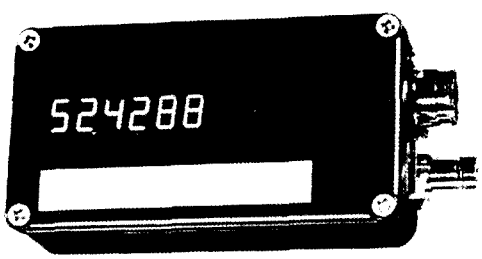


CONVERTERS
70CM MODEL 432/28 PRICE: $51
70CM MODEL 432/144 PRICE: $51
2 METER MODEL 144/28 PRICE: $45



500 MHZ COUNTER
MODEL MMD050/500 PRICE: $175

PRESCALER
Divide by 10, 500Mhz. Module only, no case PRICE: $49

LINEAR AMPLIFIER — FOR 70CM — 90-100 WATTS
Expected for delivery, late December, full details should be available at time of advertising.

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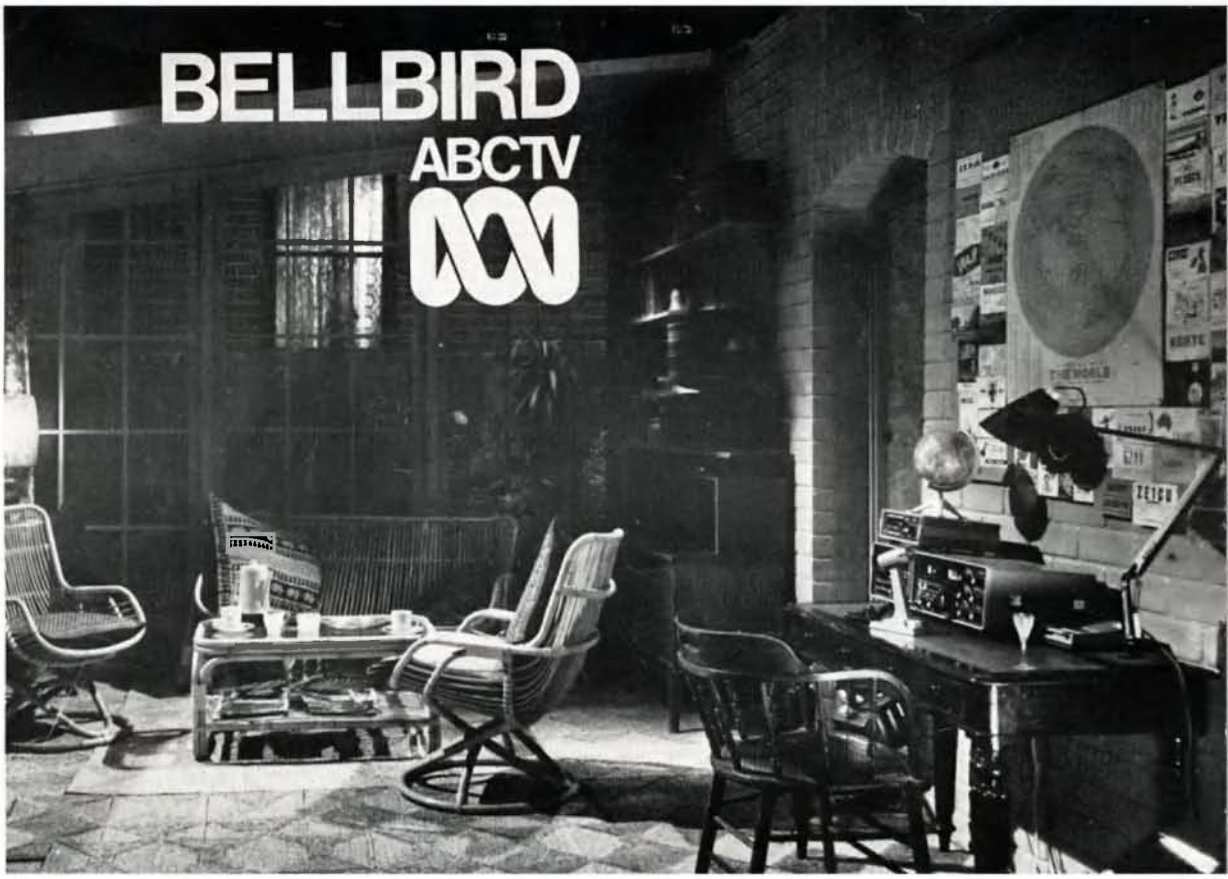


VOL. 46, No. 2 FEBRUARY 1978

CONTENTS

COVER PHOTO

Amateur Radio goes SSB on ABC TV national, and came to "Bellbird" after 10 years of transmission. Laurence Blakely — played by Bruce Kerr, portrayed an amateur (VK3BXT) in "Bellbird" during a search for a child calling for help on a radio. Laurence's study and amateur station featured in four episodes. Bellbird production ceased transmission on ABC TV before Christmas.

Photo courtesy Robin VK3BCL

HAM RADIO SUPPLIERS

323 ELIZABETH STREET, MELBOURNE, VIC., 3000

Phones: 67-7329, 67-4286

Our Disposals Store at 104 HIGHETT ST., RICHMOND (Phone 42-8136) is open Mondays to Fridays, 9.00 a.m. to 5.00 p.m., and on Saturdays to midday.

FM LEAD ANTENNALESS MICROPHONE

MODEL FIRST-101 (Uni-directional Condenser Microphone)

A new professional quality uni-directional condenser microphone featuring superb sensitivity and excellent frequency characteristics. Very easy handling because of cordless microphone. Operates on just one UM-3 battery for 100 hours of continuous use. Very economical. The transmitting frequency freely adjustable within FM radio band. If using without lead antenna, sound is caught within about 50 metres, when using with reinforced antenna to jack at the bottom, range is extended up to about 100 metres. **Accessories:** Battery UM-3, Wind screen, Adjusting screwdriver, reinforced antenna line, microphone stand.

NETT PRICE $33.90
Postage $1.40

MODEL YWI

STANDING WAVE BRIDGE, FIELD STRENGTH AND POWER INDICATOR

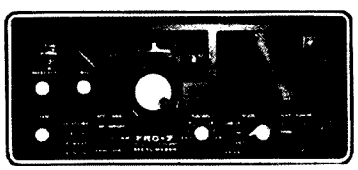
YW-1 is a handy, compact device for the amateur radio station in checking transmitters operation. For measurements, it uses the bridge method of comparing the power supplied to and reflected from the antenna system. Continuous monitoring of the transmitter output is possible by having the instrument in the circuit at all times. The model can be used as a simple field strength meter by disconnecting it from the feedline and attaching a small pickup antenna.

Meter Sensitivity: 200 uA on DC current (at full scale; **VSWR Meter Range:** 1 : 1 — 1 : 3; **Power Meter Range:** 0 — 10W; **Impedance:** 50; **FS Meter Range:** 0 — 10 dB; **Accuracy:** 1.5 MHz — 50 MHz 10 per cent; **Dimensions:** 5¾ (h) x 2-3/8 (w) x 3 (d) in.; **Weight:** 16.58 ozs.

NETT PRICE $22.00
Postage $1.50

YAESU FRG-7

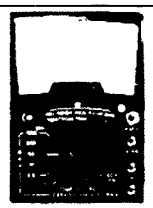
THE RADIO FOR WORLD-WIDE LISTENING AT ITS BEST — 0.5-29.9 MHz COVERAGE SYNTHESIZED COMMUNICATION RECEIVER



The model FRG-7 is a precision built high performance communication receiver designed to cover the band from 0.5-29.9 MHz. Its state of the art technology offers an unprecedented level of versatility. The Wadley Loop System (drift cancellation circuit) coupled with a triple conversion super heterodyne system guarantees an extremely high sensitivity and excellent stability. It provides complete satisfaction to amateurs as well as BCLs with superb performance and many features such as RF attenuator, selectable tone, and automatic noise suppression circuit.

$338

MODEL OL64 D/P MULTIMETER.



Very ruggedly constructed this model is particularly suitable for workshops. It features special scales for measurement of capacitance and inductance. Diode protested movement: **Specifications:** 20,000 ohm/volt DC. 8,000 ohm/volt AC. DC volts — 0.25; 1; 2.5V; 10; 50; 250; 1,000; 5,000. AC volts — 10; 50; 250; 1,000. DC amps: 50 uA; 1 mA; 50 mA; 500 mA; 10 A. Ohms — 4 K ohm; 400 K ohm; 4 M ohm; 40 M ohm. Centre scale — 40 ohm; 4,000 ohm; 40,000 ohm; 400,000 ohm. Decibel: —20 to +62 dB. Dimensions: 6" x 4-1/5" x 2"; 152 x 107 x 51 mm. Inductance — 0/5000H. Carrying case available, Model C $6.90.

$32.50 Postage $2.20

E.E.I. SOLID STATE CAR RADIO

MW BAND
PUSH-BUTTON TUNING
SPECIFICATIONS:
Power Supply: 12 V DC
Receiving Frequency: MW 520KC (580M) — 1640KC (183M)
Intermediate Frequency: 455KC
Audio Output: 4.5W
Transistors: 8, diode 4
Speaker: 5" Permanent Dynamic 4 ohm
Sensitivity: Less than 20 uV at 20 N/S
Selectivity: More than 25 dB at + 10 kHz detuning
A.G.C.: More than 45 dB at 1,000 kHz
IF Rejection: More than 40 dB at 600 kHz
IM Rejection: More than 50 dB at 1,400 kHz
Cabinet Dimension: 1-7/8" (H) x 6-1/5" (W) x 4-1/8" (D)

$32.90 — Free Post

E.E.I. PORTABLE RADIO

AM/AIR VHF
SPECIFICATIONS:
Freq. Range: AM530-1600 kHz, AIR (VHF) 108-174 MHz. **Intermed. Freq.:** AM 465 kHz, FM 10.7 MHz. **Output:** 450 mW max. **Speaker:** 2½" permanent—magnetic dynamic type, 8 ohm. **Power Source:** DC — 6V (4 x UM3 Penlite) or equivalent. **Semiconductor:** 10 trans., 7 diode. **Dimensions:** 8½" (W) x 4½" (H) x 1-7/8" (D)

$18.90 — Postage $1.40

MODEL AS100 D/P MULTIMETER

This meter features double zener diode meter protection and 3½" full view easy to read 2 colour scale. It is listed with polarity reversing switch and housed in a strong moulded case with carrying handle.
SPECIFICATION: 1000,000 ohm/volt DC. 10,0000 ohm/volt AC. **DC Volts:** 0.3, 3, 12, 60, 120, 300, 600, 1,200. **AC Volts:** 6, 30, 120, 300, 600, 1,200. **DC Amps:** 12 uA, 6 mA, 60 mA, 300 mA, 12A. **Ohms:** 2k, 200k, 2m, 20m, 200m ohm. **Centre Scale:** 20 ohm, 2,000 ohm, 20,000 ohm, 200,000 ohm, 20m ohm. **Decibel** —20 to +57 db. **Dimensions:** 7-3/5 x 5-2/5 x 2-3/5 ins. Carrying case for model I — $7.90.
Price: $52.50 — Postage $2.20.

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Type ENR5758, fitted with 6GK5 and 6G57 valves.

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NEW MAGNAVOX 53TS SPEAKERS

5" x 3" 8ohm, ideal for small extension speaker for communications equipment.

$1.95 each plus P&P

CAPACITORS

Variable Beehive Philips Type 25 pF, real value at

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with screw driver adjustment, available in 9-17 and 25 pF. While they last at

$2 each plus P&P

EDGE METERS

0-1 mA moemvent calibrated, 0-5 ounces. Brand new in boxes.

$3 each plus P&P

LARGE VARIETY OF MULTI-CORE SHIELDED CABLE

All extremely high quality.

2 CORE SHIELDED .... 30c yard
4 CORE SHIELDED .... 40c yard
6 CORE SHIELD, ideal for rotators 45c yard

Please add pack and post for above cable when ordering.

We also have a large range of **ELECTRONIC DISPOSALS EQUIPMENT,** including TRANSFORMERS, CABLE, TEST EQUIPMENT, TRANSMITTERS, METERS, etc.

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WE STOCK CB GEAR AS WELL AT VERY COMPETITIVE PRICES, INCLUDING ANTENNAS AND ACCESSORIES.

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amateur radio

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The response to subscription payments has been well up to standard.

Thank you on behalf of amateur radio, the Institute, and of all your fellow members.

All of us on the Executive are appreciative. Not for ourselves, since we are no more than your servants to safeguard the future of your hobby along with all our friends overseas.

We, that is you and I, face formidable forces to preserve our leisure activity. Not only at WARC 79 but against the gathering strength of other activities.

This Institute is the mouth-piece of amateur radio in Australia. To be of greatest usefulness it has to be strong. That strength is primarily in numbers, secondarily in unity and self discipline under the most provocative circumstances.

If amateur radio is to continue as the worthwhile leisure activity of civilised people your support and assistance are essential through thick and thin.

If you do not believe me, keep this to be read in ten years' time.

D. A. WARDLAW VK3ADW
Federal President. ■

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VK7 Mr. P. D. Frith VK7PF

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ACT:
President — Mr. E. W. Howell VK1TH
Secretary — Mr. D. J. Farquharson VK1ZDF
Broadcasts— 3570 kHz & 146.5 MHz: 10.00Z.

NSW:
President — Mr. T. I. Mills VK2ZTM
Secretary — Mr. I. A. Mackenzie VK2ZIM
Broadcasts— 1825, 3595, 7146 kHz, 28.5, 52.1, 52.525, 144.1, Ch. 8 and other relay stations: 01.00Z. (Also Sunday evenings 09.30Z and Hunter Branch, Mondays 09.30Z on 3570 kHz and ch. 3 and 6).

VIC.:
President — Mr. S. T. Clark VK3ASC
Secretary — Mr. J. A. Adcock VK3ACA
Broadcasts— 1825, 3600, 7135 kHz — also on 6m, 2m SSB and 2m Ch. 2 repeater: 00.30Z (Also on Radio 3HA).

QLD.:
President — Mr. D. T. Laurie VK4DT
Secretary — Mr. P. Brown VK4PJ.
Broadcasts— 1825, 3580, 7146, 14342 kHz: 09.00 EST.

SA:
President — Mr. C. J. Hurst VK5HI
Secretary — Mr. C. M. Pearson VK5PE
Broadcasts— 1820, 3550, 7125, 14175 kHz; 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.

WA:
President — Mr. R. Greenaway VK6DA
Secretary — Mr. N. R. Penfold VK6NE
Broadcasts— 3600, 7080, 14100, 14175 kHz, 52.656 and 2m (Ch. 2): 01.30Z.

TAS.:
President — Mr. R. K. Emmett VK7KK
Secretary — Mr. H. E. Hewens VK7HE
Broadcasts— 3570, 7130 kHz: 09.30 EST.

NT:
President — Mr. Doug Haig VK8JD.
Secretary — Mr. Henry Anderson VK8HA.
Broadcasts— Relay of VK5WI on 3.55 MHz and on 146.5 MHz at 2330Z. Slow morse transmission by VK8HA on 3.555 MHz at 1000Z almost every day.

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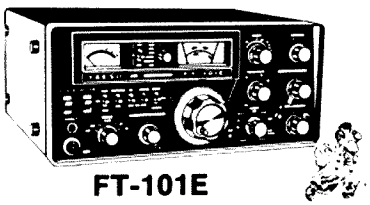
VK2 — 14 Atchison St., Crows Nest, 2065 (Ph. (02) 43 5795 Tues & Thurs (10.00-14.00h).
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 3535 Sat 10.00-12.00h).
VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton (Ph. (08) 254 7442).
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (Incl. with VK5), Darwin AR Club, P.O. Box 1418, Darwin, 5794.

Slow morse transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

YAESU



FT-101E

FT101E HF transceiver 160m thru 10m	$859
FL2100B HF linear amplifier	$578
FRG 7 Receiver	$338
FT301D HF solid state transceiver	$1149

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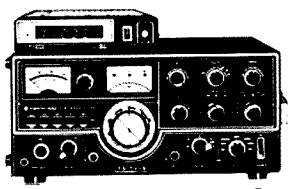

KENWOOD TS-520S transceiver

TS820S HF digital transceiver	$1105
TS520S HF 160-10m transceiver	$705
VFO820 vfo for TS820S	$115
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TV502 2m transverter	$260
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TR7400 2m fm digital transceiver	$450
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VM-2 base with preamp, low Z	$29.80

L.P. FILTERS

FD30M 32MHz cut-off, 1KWpep max	$35
FD30LS 32MHz cut-off, 200w max	$20

ROTATORS

ART3000C heavy duty with control box	$199
ART8000 super heavy duty	$478
AR22XL light duty for small beams	$109

NOISE BRIDGES

TE7-01 Omega, up to 100MHz	$40
TE7-02 Omega, up to 300MHz	$55

BALUNS

AS-BL(Asahi) for beams	$31
BN86 (HyGain) for beams	$30
BL50A (Rak) 50 ohm, 4Kw, dipole	$25
BL70A (RAK) 70 ohm, 4Kw, dipole	$26

couplers

CL65 500w, 2.5 thru 20MHz	$134
CL99 200w, 2 metres	$61
CSW216 incl swr/pwr meter, 3.5-28MHz	$219

$849 uniden

The fabulous Uniden 2020 phase-locked-loop transceiver offers separate usb/lsb/cw 8-pole crystal filters as standard and 6146B's in the final with screen voltage stabilisation for minimum distortion products. Features plug-in pcb's and even the front panel can be swung out for easy servicing. A full spares catalogue is available together with change-over pcb's. Compare the Uniden 2020 with other HF transceivers and you'll be quickly convinced that it offers the best value!

SPEECH PROCESSORS

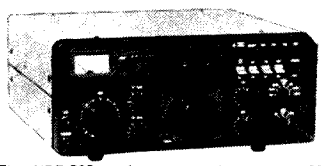
DAWA

MC330 audio mic compressor, ac/dc	$71
RF550 rf speech processor	$112
RF440 rf speech processor	$149

ATLAS

ATLAS 350XL s/state base stn.	$1199
ATLAS 350PS matching AC supply	$ 285
ATLAS 210X 80 thru 10m	$ 969
ATLAS 215X 160 thru 15m	$ 969

RECEIVER



The NRD-505 professional receiver covers 100KHz thru 30MHz with digital display, CMOS memory, high stability all-mode operation. Price $2499.

WARNING: The law requires that a licence be held for all transmitting equipment. Purchasers may be asked to provide evidence that he/she is the holder of an appropriate certificate of proficiency.

Prices and specifications subject to change without notice.

Direction: Russell J. Kelly
Peter D. Williams

HELLO 6M DX

Sunspot cycle #21 in now on the up-and-up! Share in some of the fun on 6 metres DX with the **ICOM IC502** ssb portable transceiver. The IC502 covers 52-53MHz with VFO control, RIT, effective noiser blanker, provision for external power and antenna and comes complete with carrystrap, mic and English handbook. Backed by **VICOM** 90 day warranty. Price **$219**

ICOM

IDEAL FOR SATELLITE WORKING

The **IC202** is the ideal 2m exciter for those long-haul DX contacts or to work oscar. 3watts ssb and cw, VXO control, quality manufacture and comes complete with manual, carry-strap, mic and VICOM 90 day warranty. Price **$219**

ICOM IC-215 2m FM transceiver $219

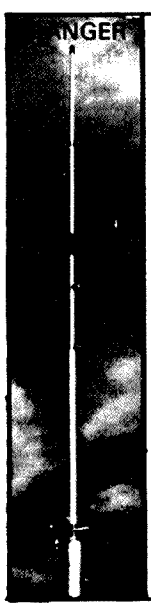
• 2 meter FM • 3 W PEP • 15 channels, 12 by selector, 3 by function switch • Dual power level, 3 W HI for long distance, 0.5 W LOW for local • Dial illumination for night use • Power pilot lamp • Frequency range: 146 to 148 MHz.

ACCESSORIES FOR THE PORTABLES

BC-20 nicad pack and reg.	$57
Rubber Ducky 2m antennas	$13
Mobile mounting bracket	$18
IC3PS matching power supply	$115
IC20L 2m linear, 10w out	$98
IC50L 2m linear, 10w out	$90

Sunspot cycle 21 coming up....

PORTABLES



Antennas!

You know you can count on

hy-gain

TH6DXX 6el 10/15/20m Thunderbird	$320
TH3MK3 3el tribander 8dB gain	$249
TH3Jr 3el tribander, 12' boom	$199

TRAP VERTICALS

V5Jr 6.7m high, 80 thru 10m, no guys	$109
V4Jr 4.25m high, 40 thru 10m, no guys	$89

TRAP DIPOLES

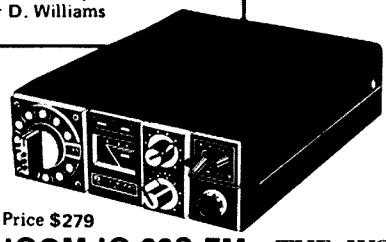
MidyVN 80 thru 10m	$87
AL48DXN 40 & 80 metres, 2Kw	$54

TWO METRES

ringo $49

The RINGO RANGER ARX-2 is a 2M gain omni-directional antenna with three half-waves in phase and a one-eight wave matching stub. The Ringo Ranger gives an extremely low angle of radiation for better signal coverage. It is tunable over a broad frequency range and perfectly matched to 52 ohm coax. Price $49.

4dB gain with reference to half-wave dipole.
6dB gain with reference to quarter-wave whip.



Price $279

ICOM IC-22S FM transceiver

IC-211
4 MEG, MULTI-MODE

ICOM IC211 2m fm transceiver
The new IC211 from VICOM is the last word in digital 2m, all-mode transceivers. Fully synthesised in 100Hz or 5KHz steps, has dual tracking, optically coupled VFOs with 7 digit LED readout. One knob controls all frequencies. Modes fm, usb, lsb, cw. Internal 240vac and 13.8vdc power supply. Comes complete with VICOM 90 day warranty. List price $785 plus freight and insurance.

ICOM'S DIGITAL ALL SOLID STATE
HF TRANSCEIVER

THE WORLD LEADERS IN VHF NOW BRING YOU THE ULTIMATE

IC701

- All Solid State, even the finals
- 100W Continuous Duty on All Bands, All Modes
- All Bands 1.8 ~ 30MHz
- USB, LSB (CW, CW-N(Narrow), RTTY)
- Double Balanced Schottky Diode Mixer used in both receive/transmit
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- ICOM's unique Pass Band Tune
- VOX, Semi-break-in CW, RIT, AGC, Noise Blanker.
- Built-in Speech Processor.
- Full Metering.
- Extremely compact.
- Digital readout and all filters built in
- Built in DC power supply
- Optional AC power supply/speaker
- Full line of accessories to come

ICOM

IC701 TRANSCEIVER $1160
IC701PS optional AC supply $239

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Perth: 446.3232

WIANEWS

INSERTS

Possibly the impending holiday season may have taken the minds of contractors off their work. Anyway, things occurred which were outside the control of the Institute and which only came to light too late for corrective actions to be taken.

In December AR you received only one of the two printed pages from the Executive — the one with the petition. After that issue had been mailed you can imagine the comments when the mailing service returned the entire stock of the second leaflet with the overs; in the unopened packages still carefully marked leaflet "A". This leaflet finally was included with the January issue of AR.

At about the same time complaints came in from Melbournites that they received a VK2 insert with their AR. Fortunately the stencil for this insert was still on hand so another run was produced for insertion into the January issue for NSW members.

Yes, quotes from other mailing services are being sought.

EDP

The subscription notices were produced from the computer file early in December.

Not only did this run use up the entire stock of subscriptions statonery because of a programme omission dating back to last april, but also the run was accidentally made on last year's subs. rates. The file has now been properly up-dated but where there were increases in rates the relative subs. notices had to be altered by hand.

Having completed these 2000 odd alterations, believe it or not, it was discovered that some small isolated batches of Final Notices had been sorted into the ordinary sets. By this time most of the notices had already been posted. Fortunately the quantities were small but annoying to the recipients, "How come I get a Final Notice without even receiving any earlier notice?" The fact that the trimmed notices received from the computer centre were trimmed too large to fit the envelopes (sample supplied of course) also did nothing to facilitate quick handling — a friendly local printer guillotined them so size.

Never a dull moment, but apologies though these things happened through no fault of your office.

Sadly other things like the power strike and an AR staplers' unscheduled close down between Christmas and New Year caused delays in processing ARs.

EXAMS AND EDUCATION

No representative from the Radio Frequency Management Branch ttended the Federal Education Co-ordinator's meeting on 7th December in Melbourne for interstate and local WIA experts. Sickness and pre-occupation with a State Radio Superindendants' testing on the same day were given for the omission.

Nevertheless the Co-ordinators' meeting produced a number of useful recommendations considered and discussed by Executive at the December meeting. Members will have noted the submissions made to the P. and T. Department as published in September AR.

One evening very late in December, Peter Wolfenden, the Executive Vice-Chairman, was entertained by Kaklum Lumenta YBOBY, on the latter's return to Jakarta from a short holiday in Adelaide. Kaklum is a Vice-President of the Indonesian amateur society ORARI and described in detail how their society organises, sets, holds and marks examinations on behalf of their licensing authority. Much more elaborate and in greater depth than occurs in the USA for their Novice level.

RON WILKINSON ACHIEVEMENT AWARD

The Executive Sub-Committee's recommendations were accepted by Executive and subsequently were found satisfactory by Mrs. Wilkinson herself. Details were circulated to Divisions. If no further suggestions come forward the full details will appear in March AR. Also to be announced will be the names of the 1977 recipients. This award should excite the interest of anyone wanting to achieve something in his chosen hobby of amateur radio.

WARC 79

Yes, WARC 79 is now next year with basic preparations by Governments to be readied for CCIR discussions later this year. The Federal President and Michael Owen VK3KI, one of the IARU R3 Directors, held discussions with NZART officers late during November in New Zealand.

WIA LOGO, POSTERS, STICKERS

Work is continuing on the production of a suitable logo or badge for modern day use. This would not necessarily replace the existing badge, as this is a matter for decision by Federal Council. Meantime some draft posters have been viewed but cannot be finalised yet. The intention is to produce sets of publicity material for use in show stands or displays. If any member believes he can produce designs please send them in to Toorak — much help is needed on this project.

1978 FEDERAL CONVENTION

A reminder that agenda items for this year's Federal Convention are required to be received during March. If any member has anything to put forward, please submit it now direct to your Division without delay. ■

QSP

IMPROVE YOUR STATUS

"Never say or write 73 (best regards); always say 73's (bestes regardses).

Never say 88 (love and kisses); always say 88's (loves and kisseses).

Never say "I" referring to yourself; always use the Imperial "We". Someone may come back to you addressing you as Your Majesty — just think how this would putf your ego.

Always call your wife "the XYL"; that let's the world know you regard her as no longer young and no longer a lady.

Adapted from CORA August 1977. And fail not to end a QSO with "over and out didahdidahdit 10-37 good buddy".

NEW MEMBERS SUBSCRIPTIONS

When you first join as a new member you normally pay the appropriate subscription for one year. Thus, if you join (in actuality when your AR begins) for July AR your subscription takes you through to June of the next year inclusive. In that next year you will receive a subscription notice only for the amount required to render you financial through to 31st December of that year. Thereafter your subscription year will run from January to December each year. An impending change in WIA EDP programmes may alter this however as it is hoped to adopt anniversary or cyclic billing for new members. Further details will be published later.

VISIT TO NEW ZEALAND

On November 25th to 27th the Federal President — David Wardlaw VK3ADW — accompanied by IARU Region 3 director Michael Owen VK3KI visited Wellington, New Zealand, to confer with officials of the NZART.

Attending were Arthur Godfrey ZL1HV, President of the NZART, Tom Clarkson ZL2AZ, a director of IARU Region 3, Doug Gorman ZL2IY, Post Office Liaison for NZART, Fred Johnson ZL2AMJ, who assists Tom Clarkson on IARU business, Gerry Kilpatrick ZL1BBS, and Jim Meachen ZL2BHF, Councillors.

Naturally, the most important subject discussed was the preparation for WARC 79.

To date the general preparation in New Zealand for WARC 79 is not quite as advanced as in Australia. It is pleasing to note that the NZART is well involved in the work.

The hope was expressed by the NZART that they will be able to have a member on the New Zealand delegation. Steps are being taken to provide finance.

The opportunity was taken to discuss IARU matters in relation to both the regional and overall organisations.

Also many points on common domestic issues were discussed. Examinations, regulations, legislation, CB, pirates, etc.

Many of the problems which we think are peculiar to Australia are also common on the other side of the Tasman.

In these areas, much useful information was gleaned and will be applied in the Australian context.

The visit was certainly not before time and will help to provide much closer liaison between the NZART and the WIA, a necessity in the critical days leading up to WARC 79.

de VK3ADW

160 METRE MOBILE RALLY

Visitors to the Bendigo Convention on the morning of 26th February will be looking for 160 metre band contacts. If you can work on this band why not come on the air and give the travellers a point or two to add to the score.

de VK3YQ

COMMUNICATIONS SATELLITES

According to Telecommunications Journal Aug. '77 the latest Intelsat TV satellite launched on 26th May carries 6250 two-way telephone circuits and two television channels in the frequency segment 3700-4200 MHz with a power of 20W. The apogee is given as 35755 km in geostationary orbit. The orbital mass was shown as 825 kg.

STOLEN

The following equipment has been stolen: IC215 S/N 7202417. Please report any information to your nearest police station or Vicom International Pty. Limited.

ILLEGAL VHF OPERATIONS IN MAITLAND

Licensed amateurs operating in the near Newcastle area of Maitland should be on the lookout for pirate operations on Ch. 40. The callsigns being used illegally are VK2YBC, VK2ZJY and VK2ZQF. They generally choose local WIA BC times on Monday evenings to try out their toys.

From Westlakes R.C. Newsletter, December, 1977.

RFI

"Extensive electronic controls used in 1977 autos are causing RFI problems — a recent Illinois Bell notice warned that the 'cruise control' in 1977 Cadillacs (and presumably other GM cars) is sensitive to strong RF fields, which could cause sudden speed up or slow down. Some electronic skid control braking systems have locked up from RFI, and complete engine failure in fuel-injected engines has been reported by two-metre users." Ham Radio August 1977.

EDITOR'S DESK

By Bruce Bathols VK3UV

The December 1977 issue of Amateur Radio has received acclaim from many areas and the Publications Committee is pleased with the final result.

Circumstances beyond our control contributed to the lateness of delivery and we regret any inconvenience which may have been caused to our members.

Amateur Radio — Australia's Window on the World, is designed for the information of newcomers, and for the first time in many years, this issue has been made available for sale to the general public through technical book sellers and other retail outlets. Copies of this issue are still available from the WIA, and we request those who would like an additional copy to forward $1.35 plus 40c postage to P.O. Box 150, Toorak, Vic. 3142, to secure same.

Limited bulk supplies are available to clubs, divisions, traders, etc. at special discount rates, and we suggest that initial contact be made with the Federal Secretary, Mr. Dodd, at the above address for bulk supply information.

In our efforts to continually present the current happenings of our hobby to our diverse membership, we strive to publish articles and items of general interest which we consider to have wide appeal. To assist in this regard, it is necessary to collect a backlog of suitable material, and in our case we require material prepared in advance for at least 3 months.

We are always on the look-out for technical articles especially, and photographs — lots of them — to brighten up the pages and the front cover.

Technical articles do take several months to prepare, technical editing, drafting of diagrams, ability to 'slot them in' at a suitable time, sometimes re-writing, all contribute to publication delays — but please don't be put off — keep them rolling in.

At the present time, we are in a very fortunate position in having sufficient technical articles in various stages of preparation to last approx. six months — but more are required.

We have been disappointed in the response to our appeals to divisions via executive notes for a supply of photographs of suitable items of interest.

Have Australian amateurs forgotten how to use a camera? How about dusting off the lens fellers and girls, loading up with some film and start looking around for interesting items such as unusual antennas, shacks, mobile installations, maritime and aero mobile, outdoor amateur scenery, hamfests, community displays, emergencies, etc. etc. — the list can go on and on with a little imagination. — Please don't forget captions and perhaps a short story.

Amateur Radio magazine can only be made interesting if our members help us to make it so.

Please let us have your submissions in the near future — act now before you forget. ■

MELBOURNE AMATEUR 70 cm BAND REPEATER — VK3RAD

Don Sinclair VK3VH
6 Tintern Ave., Springvale South

Glen Percy VK3ZQP
Cotswold Ave., Springvale South

It is a well known fact that Amateur Radio operators are compulsive experimenters, always trying new methods, new components and new techniques in a never ending quest for knowledge and ventures into new fields. It was this experimenting spirit and venture onto the 70cm band that brought about the birth of VK3RAD and this article.

In 1972 an experimental repeater, VK3WIA-R/5, was set up on Mt. Martha by the Australis Group as an aid to the intended Amateur Satellite Programme. This repeater uses Channel A (2M) 145.854 MHz in and [illegible]15 MHz out in the 70 cm band.

Quite a few amateurs worked through or could listen to this repeater and got the 70 cm bug. That repeater has not been active for many years now, but the amateurs who remembered it went on to establish a net frequency on 435.00 MHz and operated consistently on the frequency until the latter part of 1975. By this time approximately a dozen amateurs using the frequency formed a group and had regular meetings at each others' QTH to discuss the news, new equipment, antennae, etc. At one of these meetings it was suggested the group apply for a permit for an "experimental" repeater in the 70 cm band.

A letter was drafted and sent to the Telecom Radio Branch in April 1976. After a lengthy period and exchange of information a licence was granted for a repeater. The proposed equipment was accepted as it would comply with the technical specifications pertaining to the licence. The repeater was to be located at the QTH of VK3YEO as aerials were already available and access to the repeater was at all times restricted to the licensee. The frequencies selected were 433.525 MHz in and 438.525 MHz out, which complied with the WIA band plan, and are the primary frequencies in the 70 cm band for repeaters. The repeater was to have FSK identification and would incorporate a two minute timer. The call sign issued was VK3RAD. The power delivered to the antenna was not to exceed 25 watts.

At this point an elated group of amateurs proceeded to set up and test the equipment which had — apart from the main repeater unit — been designed and built by members of the group. The main repeater unit was designed around a PYE WESTMINSTER UHF mobile unit and initially ran barefoot, delivering 4 watts. The antenna for the transmitter was a five element co-linear, and for the receiver a UHF ringo was pressed into service. The system worked reasonably well but left much to be desired from a mobile situation. The problem showed two deficiencies in need of attention — more power output and better ears — and/or better antenna systems. An RF amplifier was constructed for the receiver incorporating a 3N210 MOSFET. Also an RF amplifier for the transmitter which delivered 16 watts for the 4 watts from the unit itself was forthcoming, once again designed and constructed by group members.

These additions created a new problem, namely desensitization due to antenna spacing, the increase in receiver sensitivity and the increase in transmitter power. The only solution to the problem was to incorporate a high gain antenna and a diplexer.

After much hunting and cajoling a UHF diplexer was located and obtained. Of course it had to be retuned and tested and many thanks are extended to John VK3ZRV for this task. The diplexer offered 80 dB attenuation in the receive mode to the transmitter. The repeater was now a workable system and gave constant copy from most parts of suburban Melbourne. As mentioned previously, amateurs are never satisfied and an application for a change in operating locality was granted.

The repeater is now located on a high ridge in the eastern suburbs of Melbourne and commands one of the best UHF locations for greater Melbourne. It has in fact been activated from Ballarat.

When this article was compiled, VK3RAD was one month off its first birthday and has enjoyed a failure free existence. Apart from frequency checks and inspection, the repeater has operated 24 hours a day and looks like having a good future.

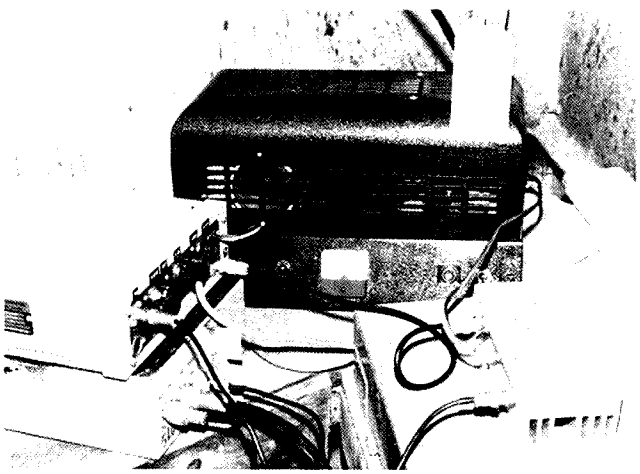
TECHNICAL SPECIFICATIONS

Transmitter: PYE WESTMINSTER with outboard PA (20 watts), giving 16 watts at the aerial port. Deviation 7.5 kHz.

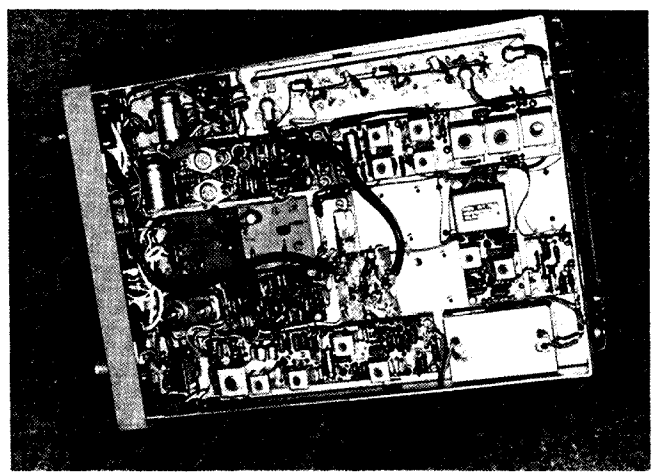
Receiver: Mute sensitivity 0.25 uV. Sensitivity 0.2 uV for 20 dB quieting. 3N210 MOSFET pre-amplifier.

Antenna: UHF "RINGO".

Other relevant information: Call sign — FSK, Time out facility — 2 minutes and automatic identification on restoration. ■



VK3RAD 70 cm Repeater — Power supply at rear, main Westminster repeater unit sitting atop diplexer — 20 watt RF-PA on right.



Inside view of the receiver section of the Westminster repeater.

ON THE ROAD WITH THE UNIDEN 2020

Some notes by Alan Noble VK3BBM
Reprinted from The Radio Bulletin (EMDRC) October 1977.

Every dog has his day and in that respect the owners of all those 101s and all those 520s will no doubt find this as interesting as those to whom it is primarily addressed. Being secretly of fastidious tastes and having that strong desire to own only the best on the market, I naturally equipped my humble shack with the UNIDEN 2020. This was in the good old days when the trade would only sell that sort of gear to licensed AMATEURS (and anyway I had a Limited, didn't I?) and I needed something to listen to the big boys on.

On the occasions of a visiting full licensee the machine would be put through its paces and seemed to perform up to all expectations — except that I did not yet collect all the commissions for the sets which I undoubtedly sold.

Now having mastered the art of copying morse at some very peculiar speed I found myself at last qualified to turn the knobs on my gear under my own steam. And this I did, I might tell you. And I did it mainly at night.

To mark my eventual success I put several 807s out of commission, thus further qualifying as a full amateur, put a quid in my pocket and ventured down to the local amateur hardware store to purchase a bit of prefabricated gear called an external VFO. This was duly connected to the main rig. Of course DX was the only thing to work and I tuned all that beautiful PLL circuitry to roughly 14 MHz, and set myself for many happy hours of DXing. Three months later I had given up going back to other station's calls as the fellows with the big guns and beams obviously were not going to talk to small fry like me. It was very apparent that if you ran a vertical you were on the outer. So a change in tactics was in order and firstly to make sure I was sort of in vogue with my operating practice I tootled down to 3.5 MHz and got in with the short-haul gang. Here I was accepted and found that all who used this band were gentlemen like myself.

Having proved myself on 80, the call of the DX returned and I ventured with some trepidation to that revered sanctuary at 14 megs. And I called CQ and I called it many times but the F layer would not answer.

By this time, as it was the end of another month, I was much distressed with frustration. So much so that I had a vision which said that I should change my call to something exotic like AN4Q2 . . . but I didn't. And it came to pass one evening soon after that, that another gentleman was also on the band (following an arrangement made via 600 ohms) and I called him to test another microphone. He came up and said that I should have another go at tuning up as I was only S1 on his meter. This I reluctantly did as I knew I had got it all together the first time anyway. He then asked me to turn down the mic gain as I was unreadable. Barley Charlie, just who does this guy think he is? But I knew he would not fool me and I also knew he used reasonably good gear (called Collins, I think) so I did as I was told. When I had finally turned the mic gain down to practically zero I was rewarded with a 4-1 report. Not quite the best that has been achieved with 100 watts PEP at 12 miles. Just to keep the story straight I had not introduced the microphone that I wanted to test and was using the standard Uniden mic.

We were operating on 14.115 and I knew that was true because that's what the dial said. Now came the comment that my audio was FMing and that is a facility the UNIDEN does not have, so something is but definitely screwy. Up came the suggestion that I should turn on my counter and check what was going up the spout, and I really took that as a vote of no confidence in my rig. Staggering with hurt pride I turned the counter on, ran some carrier and out of the corner of my eye squinted at the lying readout . . . 14.215. Quite unperturbed (born in Collins operators) he said he would go walkabout up the band and have a look while I tuned again without touching the VFO. Back came the report that I had a beaut carrier on 14.215 but there was no sign of any audio up there. Had my fantastic PPL become a frantic fazed loose hoop?

To cut a long story short, because I believe you are interested only in the facts and you have no time to read untechnical drivel (you can do that any time on an examateur band), we performed a number of isolation tests with the following results:

1. **External VFO CONNECTED to Transceiver and Operation Switch at INTERNAL.**
   (i) segment switch on transceiver at 100 kHz position
   segment switch on external VFO at 100 kHz position
   RESULT — transmission on frequency indicated on main VFO dial; audio FMing.
   (ii) segment switch on transceiver at 100 kHz position
   segment switch on external VFO at 200 kHz position
   RESULT — transmission on frequency 100 kHz higher than indicated on main VFO dial with low power signal on correct frequency; audio FMing.
   (iii) segment switch on transceiver at 100 kHz position
   segment switch on external VFO at 300 kHz position
   RESULT — as in (ii) above except main power now transmitted 200 kHz higher than indicated on main VFO dial.
2. **External VFO CONNECTED to transceiver and Operation switch at EXTERNAL.**
   All transmissions on frequency as indicated by the EXTERNAL VFO dial but audio FMing.
3. **External VFO DISCONNECTED from transceiver and Operation switch at INTERNAL.**
   All transmissions on frequency as indicated by main VFO dial and good audio quality Report 5-9 signal.

And so we had the clue to the problem — transceiver operating OK but when the external VFO was connected it caused the audio to FM and in addition it was taking over frequency control even though the Operation switch was at INTERNAL.

With the kind help of Peter and Duncan at Vicom the trouble was diagnosed and corrected without much agony. The 5 volt line from the transceiver to the external VFO is rather critical. When checked with a high impedance meter this was found to be 4.8 volts and was corrected. In addition the contacts on the plug-in board in the external VFO were cleaned with a spray of common cure-all. It appears that a few extra artificial diodes had been introduced to which all the higher class solid state devices took exception.

A week after carrying out the above tests, I was talking to Dusty VK3AYO who was rather put out about receiving a 5-0-7 report from a VE station. Being a regular brass pounder, Dusty queried the Canadian who said he could not give better than 5-0 as Dusty was not moving his meter. Dusty reckoned he did not give a hang about the 5-0 but what about this 7 business? The report was pronounced chip on Dusty's CW sigs. I told Dusty about my problem and putting two and two together with 7 I suggested we run some tests. These showed similar results to those shown above with chirp apparently caused by the shift in signal frequency. We have found the fault frequency dependent and was not evident on 3.5 MHz (this checks with my phone experience) but was pronounced on 14 MHz and above. Two other differences were also noted — Dusty's external VFO would not start on 7 MHz and also he did not have the problem of the external VFO taking over when on Internal switched position. Dusty no longer sounds like one of those U station washboards.

A few days after re-installing my gear I heard Doug VK3BIE talking about a mysterious distortion on his audio. I was able to tell him about the above and steer him hopefully in the right direction. Hope all is now OK, Doug.

My sincere thanks to Dave VK3DC for his assistance and patience in carrying out the original Isolation tests.

Next time someone hears me working split frequency would they please let me know? Happy VFOing. ■

KNOWING TOO MUCH FOR YOUR OWN GOOD!!

From Westlakes Radio Club — Monthly Newsletter, October 1977.

"The gear here is home brew and using 14 gold plated 3/32 left-handed framistran screws and running 10 kilowatts into a 6SN7 modulated by a pair of matched 6DQ's . . . awk . . . arghahhhhhhhhhhhhh . . ."

Only a dream, it's true, but if I can ever perfect my invention It may really come to pass. Right now all I have is a little black box with a push-button switch on the top. When I am on the receiving end of one of these conversations I reach over and press the little button once or twice, good and hard. Nothing happens of course, but one day. If I can just figure out a way to make some kind of weird horrendous atomic fireball leap from his microphone and down the chaps esophagus I will have contributed to the furtherance of amateur radio immeasurably.

The fault isn't in amateur radio itself — its the system. They ought to ask a few questions in the exams just to see that you are capable of communicating once the contact is established. Knowing how to dip the final is keen, but once the gear is tuned up you're sitting there with a mighty big carrier at your fingertips and nothing worthwhile to do with it. It's like getting a driver's licence, and then realizing that you only know how to drive in a straight line, with a Rolls Royce. Let's face it, it shows no technical prowess, accomplishes nothing for the state of the art of radio, to plug in a rig, connect an antenna, and ragchew with some chap.

OK, so you made the contact — you've also gained some valuable information such as: 1. The household wiring is truly hooked up to the council lightpole. 2. The voltage is approximately 240 volts. 3. The power bill has been paid. 4. The antenna didn't blow down or corrode since the previous contact. 5. Messrs. Kennelly and Heaviside knew what they were talking about. 6. The chap on the other end knows at least as much on amateur radio since he was able to get his junk working too. Like, so what? Once you've confirmed the foregoing things to yourself and the fellow on the other end, there's not much point In boggling the airwaves with insipid equipment rundowns. Do you think that now that he has learned that your fine super signal is coming via your Signaiizer Schpritzer Mk. XII (or whatever lies you feel like peddling that day) that he does really give two figs? Quite frankly, many of the signals heard are so feeble and poorly modulated that learning what the chap is using would only serve as a deterrent when one goes out to buy the next bit of equipment. Manufacturers of amateur gear should listen for the idiots with the rotten signals and then pay them to say that they were using a competitor's set.

Fact is, that many amateurs are simply too bashful or uninformed to get a good non-technical conversation going. If two of these chaps hook up on the air it becomes a Mexican standoff, with exchanges of finals, final-finals ad nauseum after the exchange of technical data. Each operator tries desperately to figure out a way to unload the creep on the other end without hurting the other chap's feelings or to make one look foolish.

The trick, of course, is to cleverly sneak a few subtle remarks into the QSO to let the other chap know that you are also programmed for non-technical style of communications. If he wants to he can pick up the ball and run with it. If he ignores it, then nobody's the wiser and you can go into your Hoges and Strop bit.

"Yeah Sam. I've got to run over to that Diggy's place and pick up a 10K pot."

"Careful Fred. If the fuzz hears you have ordered 10 kilos of pot you've had it."

For the older generation you might try:

"There's a 50 cycle ripple on your signal, OM."

"Yeah. We're getting Frank Ifields up here next week to put a little rhythm into the thing."

A little imagination and you'll find a way. You'd better — I'm coming close to perfecting my little black box with the switch on top. Guess that necessity is the mother of retaliation.

For the CW devotees I suggest closing your transmission with a crisp "Shave and haircut — $2.50" tempo. ■

FROM INCINERATOR TO IN-HABITABLE

Ian Hunt VK5QX
8 Dexter Drive, Salisbury East, 5109

The official opening of the South Australian Divisional Headquarters, the "Burley Griffin Building" on April 3rd, 1977, brought to a culmination the efforts of many members of the Division in establishing this centre for Amateur Radio in the State of South Australia. For those who do not know the history of this building, I will provide a brief summary.

This remarkable "edifice", for call it such one may, first saw life as an Incinerator and Bitumen Plant in 1937. Its design as an incinerator was produced by a company specialising in such matters, however the building housing said Incinerator was designed by the late Walter Burley Griffin, well known in connection with the design of our National Capital, Canberra. This renowned gentleman certainly had an eye for beauty and structure, as a result of which, after cessation of its use as an incinerator, the building was marked by the National Trust as "not to be destroyed or altered".

This presented the Thebarton Corporation, in whose municipality the building is located, with somewhat of a problem. "What on earth does one do with an incinerator which you cannot demolish?"

Well in time this problem was solved.

The VK5 Division was looking for a suitable building to serve as its headquarters. Contact was made with the Corporation by the Divisional Committee concerned and, after negotiations in which Rob Wilson VK5WA played a major part, it was agreed that the Institute would take a lease upon the property in itself. Suffice to say that many members contributed their skills, from jack-hammer operating through to carpentry, painting, electrical work, concreting, you name it, and in the area of construction it took place. Over a period of three years the work progressed up until late 1975, when the Divisional Council decided the building could be usefully occupied. At first the building was used for the monthly Council meetings, but following closely upon this decision other activities such as the General Meetings and VHF group meetings took place at this new location. The first General Meeting was held in the building on 28th January, 1975.

Working bees were still held and other voluntary work carried out until the time finally arrived when an official opening ceremony was both warranted and desirable. Much debate took place in Council as to the form and nature such a ceremony should take. Suggestions as to who should perform such a ceremony ranged from such as Garry McDonald from Wollongong, through the political sphere to State dignitaries. It was eventually decided with unanimous agreement that the Mayor of Thebarton, Dr. Flaherty, M.B., B.S., J.P., should be invited to perform this function. Right throughout the period in which the Division carried out all the work leading up to this event the Thebarton Council had shown great interest and encouragement in our plans and had provided much assistance and co-operation. Along with the Mayor and Mrs. Flaherty other members of the Corporation, including the Town Clerk, Mr. Mai Baker, and Mrs. Baker, were invited. Of the members of that body the following also found themselves able to attend: Alderman Crafter and Mrs. Crafter, Councillor Carter and Mrs. Carter, Councillor Baker and Mrs. Baker, Councillor Poley, the Assistant Town Clerk, Mr. Hanson, and Mrs. Hanson.

Also among the official guests were a representative of the National Trust, Mr.

Game, and author, bushman and artist, Mr. Len Beadell, and Mrs. Beadell. Important personages from amongst the Divisional members invited as special guests were Mr. Geoff Taylor VK5TY, and Mrs. Taylor, and Mr. Rob Wilson VK5WA, and Mrs. Wilson. Lastly, but by no means least, arrangements had been placed in hand to ensure the presence of the Federal President of the Wireless Institute of Australia, Dr. David Wardlaw VK3ADW.

Before commenting on the opening ceremony a description of the building and facilities and several other aspects of same would be in order.

The most striking aspect of the building would be its outside appearance. Built mainly of various coloured bricks, it is decorated with cement columns and arch-work, and also adorned with cement filigreed patterns between arches and columns. One feature which cannot be overlooked is the tall square brick chimney surmounting the building, and incidentally providing an excellent basis for the support of antennas. The chimney is also topped at each corner with concrete columns.

Facilities inside the headquarters are as follows: A large downstairs meeting room providing accommodation for approximately 130 members. An upstairs lecture room for YRCS and technical classes. A mezzanine floor on which the Publications Officer and Equipment Supplies Committee display their wares and also used at meeting breaks for the supply of tea, coffee and biscuits to members and visitors at meetings. Adjacent to the mezzanine floor are a lock-up store room and the separate transmitter room, which is well carpeted and houses three beautiful wood grained consoles made by members, which will be gradually filled with equipment and pressed into greater use as the official Institute Station VK5WI expands. Ladies' and gentlemen's toilet facilities are located to one side of the mezzanine entrance door. The main hall may be entered downstairs from the mezzanine floor or through two side entrances at ground level. The upstairs lecture room has a fire escape to ground level at the front of the building.

One problem encountered during the establishment of the headquarters was that of furnishing, particularly with respect to the seating of members at meetings. It was thus decided to establish a "Chair Fund", to which members could contribute at a rate of $5 per chair. This fund was most successful, with a total of $500 being contributed by members. Consideration was given to affixing a plate on each chair showing the name of the donor concerned, however this idea was shelved in favour of a plaque showing the names of contributors to the fund and which would provide a more lasting record. (Plates could be removed and lost and chairs damaged and replaced over the years.) The plaque is in the form of an etched copper laminate board and hangs on the wall of the main meeting room adjacent to the trophy niche wherein the Remembrance Day Contest and other trophies have resided for some time. Amongst the names on this plaque appear some "In Memoriam" for Silent Keys of the Division. Now to return to the opening ceremony itself and arrangements in connection with same.

The visitors and members, numbering approximately 200 in all, provided an overflow crowd. The ceremony was completely recorded on both colour video tape and audio, whilst those not able to crowd into the main meeting hall were able to watch the ceremony on closed circuit TV monitors placed at other strategic locations. Copies of these recordings are, incidentally, available to interested groups and may be obtained by contacting the VK5 Division.

Visitors and members were welcomed on behalf of the Divisional Council by the President of the South Australian Division, Gary Herden VK5ZK. In welcoming all present, Gary detailed the events over the years leading up to this culmination of efforts and referred to the co-operation and interest shown by the Thebarton Corporation and the National Trust in our project. He then introduced Mr. Game of the National Trust, who congrtulated the Division on its efforts to date. Mr. Game in fact had himself been involved with the original building project and had met the late Walter Burley Griffin during this time. He also stated his and the National Trust's appreciation of the way in which the Division had obviously gone about retaining the original aspects of the building and the need for the retention of such memorials as part of our National Heritage.

Following Mr. Game's interesting speech, Gary VK5ZK called upon the Federal President, Dr. David Wardlaw VK3ADW, to address the gathering. David in his inimitable manner did due justice to the occasion. In representing the Federal body and all the amateurs of the Wireless Institute, he referred to the progress and gains made as a result of such an organisation as ours. He also expressed his appreciation of such an opportunity to meet the Council and members of the South Australian Division and passed on his congratulations in respect of this attainment by the Division.

The Division President then introduced the Mayor of the Thebarton Corporation, Dr. Flaherty, who also had many congratulatory remarks to make insofar as the Division's efforts were concerned. In speaking Dr. Flaherty stated that, in his opinion, the Division had available to it a headquarters for as long as it should last, and one of which it could be justifiably proud. At this time the Mayor unveiled a beautifully made plaque in commemoration of the occasion. This plaque also is made of etched copper laminate and carries the inscription:

"This building was officially opened as the headquarters of the South Australian Division of the Wireless Institute of Australia on April 3rd, 1977, by the Mayor of Thebarton, Dr. J. A. Flaherty, M.B., B.S., J.P., in the presence of the Federal President of the WIA, Dr. D. Wardlaw VK3ADW, and Councillors of the South Australian Division: G. H. Herden VK5ZK (President), M. J. Hart VK5ZMH, C. J. Hurst VK5HI, R. A. Murphy VK5MM, G. Preston, VK5PI, G. M. Bowen VK5XU, I. J. Hunt VK5QX, J. B. Mitchell VK5ZJB, C. M. Pearson VK5PE, I. W. Wood VK5NVU."

Also on the plaque is a sketch of the building. Around this unique plaque the border is comprised of the symbols of dots and dashes representing in Morse Code the name of the Wireless Institute of Australia and the South Australian Division. Lines across the plaque in similar form spell out the abbreviation WIA, WIA.

Herein lies a small story! This plaque, and similarly the Chair Fund plaque, were designed by Len Beadell, well known as an explorer, bushman, artist and author of a series of books detailing his experiences in the Australian outback. Even the morse code border was Len's idea. Upon being aproached to carry out the design work, Len agreed with alacrity and applied his talents fully to producing an outstanding example of art work. He even devoted most of a week-end standing outside the building making a number of detailed sketches to guide himself in the final productio. The original of one of these sketches is now a prized possession of the writer of this article.

Following the unveiling of the plaque the Divisional President VK5ZK then spoke a few further words in reply to those who had addressed the assembled crowd. Thus each of the authorities connected with the Burley Griffin Building were ably represented.

During the ceremony Gary VK5ZK read a number of telegrams and messages of congratulations which had been received from far and wide. These were as follows: From — Alice Springs Community College Radio Club. John Emmell VK4ZGB, ex VK5 member. Bondi Junction, N.S.W. — don't build special enclosure for RD Trophy. President Darwin Amateur Radio Club. VK8CW Alice Springs, VK8HA and VK8DI Darwin. VK8AC Nhulumby. P29BS. VK6XY. VK6LG Len. VK4ATE, VK4AEM. ZL1BOL, ex Darwin. VK2ATY. President VK6 Division. President VK2 Division. VK5WB/4. Cairns Amateur Radio Club. Intruder Watch Co-ordinator, Alf Chandler. Secretary-Manager WIA, Peter Dodd. Chairman VHF/UHF Advisory Committee, Peter Wolfenden. Editor "Amateur Radio", Bruce Bathols 3UV. IARU Liaison Officer. Federal Contest Manager, Kevin Phillips 3AUQ. Federal Historian. Federal Education Co-ordinator. Chairman Federal Repeater Sub-committee. Chairman WIA Project Australis Group.

Following the ceremony members and visitors were provided with refreshments and given the opportunity to inspect all of the building and various facilities. A display of antique radio equipment provided by Eric VK5LP and set up on the mezzanine floor provided much interest, whilst the official station VK5WI was on the air. Special QSL cards for contacts with this station on the opening day are being produced.

Many people could be mentioned as having contributed to the efforts referred to herein, but a list of such names would in-

deed be formidable. Workers throughout the project from its inception, right up to the efforts of the ladies providing afternoon refreshments, arranging tables and floral decorations, members arranging media publicity, yes, we even made the TV news, cleaning up afterwards, organising PA and recording facilities, and many other functions, all must be thanked for their excellent efforts.

To the Divisional Council which planned the overall week-end activities, from the special council meeting to meet the Federal President and the dinner held the previous evening in his honour, right up to the closing stages of the ceremony and afternoon tea, the whole of the activities were most gratifying. The Federal President was even able to fit into his rushed schedule a short visit to the Micro-Processor Group meeting, and an afternoon at the Federal Councillor's QTH to meet Individual members and other officers active In the Division.

So I trust that this written description may have been of interest to whoever has read this far. For the South Australian Division this event has certainly been a milestone, and we hope the beginning of yet another successful era in the progress of Amateur Radio in this State. As at the date of writing the new headquarters is undergoing a great deal of use. Each Sunday the Divisional Broadcast is originated from there with VK5WI operating on 160 metres and relayed on 80, 40, 20, 10, 6 and 2 metres in Adelaide, on other frequencies in both Mount Gambier and Darwin, and until recently on 11 metres in Adelaide.

The monthly Council and General meetings are held in the building. Three nights per week see classes for those studying for the Novice Amateur Operator's Certificate of Proficiency. Youth Radio Club classes are conducted in the building, whilst Micro-Processor Group and VHF Group meetings also take place there.

Should you at any time be in Adelaide and wish to view the Burley Griffin Building, it is located in the Thebarton Corporation yards in West Thebarton Road, Thebarton, approximately three miles west of the centre of Adelaide. All visitors are welcome to attend any of our meetings should their visit occur at an opportune time, and should you wish to Inspect the building at close quarters, contact with any member of the Divisional Council would permit such an arrangement. A visit of this nature would most certainly prove worth your while I can assure you. ■

A FUNNY THING HAPPENED IN BERT'S SHACK THE OTHER MORNING

A. Shawsmith VK4SS
35 Whynot Street, West End, 4001

Bert's rig is in the bedroom above his shop. The big thing about bedroom shacks is that it's all together in the one room; very cosy and intimate on nights when DX is scarce.

Bert's boudoir is not overly large. There's space for a chair at the rig but no more: a visitor must sit on the bed — in fact, this is what Bert often did when he was listening for a new prefix to show up. He used phones and his wife, Bessie, seldom stirred; she was used to his nocturnal natterings. However, if cold or snuggily amorous, she was likely to roll over on to his side of the bed and throw out an arm around her OM's waist or thereabouts, as if to say, "come on, cut out all that senseless nonsense, come back here where it is warm".

On this particular morning, Bert rose at the usual hour and set about the daily routine. First, a few quick moments at the rig to see what's doing, then downstairs to prepare the shop for its first customers. He usually left the rig on and tried for another short listen before opening up. Ernie the milkman galloped in from the pre-dawn dark outside. He painted a salutory greeting, put down his jiggling crate and prepared to write out a docket. In the silence, there came from above, the faint but clear sounds of the rig. Bert realised he'd left the gain well up.

Ernie tilted an ear. "You're one, too?" he asked.

"I'm one, two, what!" queried Bert.

"A good buddy — a CBer."

Bert drew himself up to ful stature. "I'm a member of the WIA and belong to the amateur service," he said, hoping to establish superiority at the outset.

"Oh yeah, a Ham!" said Ernie contemptuously, "I see your vertical. Does it work any DX?"

"Plenty."

"Me, too — Japan, New Zealand, the States and all over," boasted the milko. "I've got a 4 el. monster moonraker quad up 60 ft."

"Liar!" thought Bert, as he looked out through the door to a quarter wave screwed on to the bumper, but he sarcastically said, "What, on top of the van?"

A smirk spread over Ernie's eighty IQ dial. "Nah, at home — and a 100W afterburner, too."

"I hope the neighbours dob you in."

"No way, I tell 'em I'm a Ham novice just starting."

"Great for AR's image," thought Bert, "a nutty rubber duck on 11, posing as a novice on 10." He made a quick mental calculation and began to burn: Ernie's 5 watt CB-licensed set was beaming out 20 times more RF field than his own 100W Ham job. CB is full of real good buddies— they often come into his shop — but what to do with a big mouth "johnny-come-lately" like Ernie. Maybe if he heard some real DX . . .

"Got a minute?" asked Bert.

"Yeah, sure."

"Come on up and I'll let ya hear some real raries." He hoped this would make Ernie drool. "We don't switch channels, we tune bands, ya know!" Again he let sarcasm lace his voice.

At the bedroom door, Bert gave the milko the "be quiet" sign. "Ssh," he said, "the YF's asleep, but don't worry, she won't wake." Bert slid into the chair and pointed to the vacant side of the bed which was nearest the rig. After an apprehensive look at Bessie's somnolent form on the far side, Ernie eased himself gingerly down and donned a pair of phones. Eighty, forty and twenty were open and Bert tuned In a variety of DX and Ernie seemed quite impressed.

As it was early morning, Bert began to feel the call of nature. In short, he'd hafta go — and quick. "Be back in a tick," he told the milko, "tune the rig, or change bands if you want to." He'd hardly made it to the bathroom, when a piercing shriek rent the morning stillness and Bessie, clutching her nightie, shot from the bedroom, closely followed by Ernie with a look on his Dagwood dial, as if his manliness had come under threat — which it had, Incidentally.

"There's a strange man in my room," Bessie screamed at Bert (she'd never seen the milko) "and you're sitting there, doing nothing."

"I am d——," began Bert.

"Go on, grab him quick," yelled his YF.

At that moment Ernie bolted past the bathroom, down the stairs and out into the dawn.

"Look at that!" said Bert, still unmoved, "not even a goodbye — or a bloody word of thanks." Then, suddenly, he tumbled to what had happened in the bedroom. He let out a great guffaw and rose to his feet, "Ha, ha, ha, so you tried to drag old "Blue Tops" into bed: he musta thought we were trying to set him up for something — they say he's a woman-hating bachelor. That'll take his mind off CB for a while. Suppose I should apologise to him — but no way!"

"Apologise?" screamed Bessie between hysterical sobs.

Bert could see he was going to cop a long rave. He should have sympathetically explained but there was the shop to open, so he turned chauvinistic instead. "Belt up," he yelled, "or I'll tell all the customers I copped you in bed with the milko."

Of course Bessie won out in the end. Bert is now relegated to the dog house, which, in his case, is at the end of a draughty verandah: but It's an ill wind that blows no good at all. As he now no longer has it all together — nor is ever likely to again, he's decided to build a super shack in the yard and throw up a monster sky hook. This will shut the biggest CB mouth and make DX a piece of cake.

By the way, Ernie still gallops in each morning, past a new 4 el. quad, deposits his milk and leaves with never a word of CB or AR. Bert just smiles in a superior sort of way at his departing back. ■

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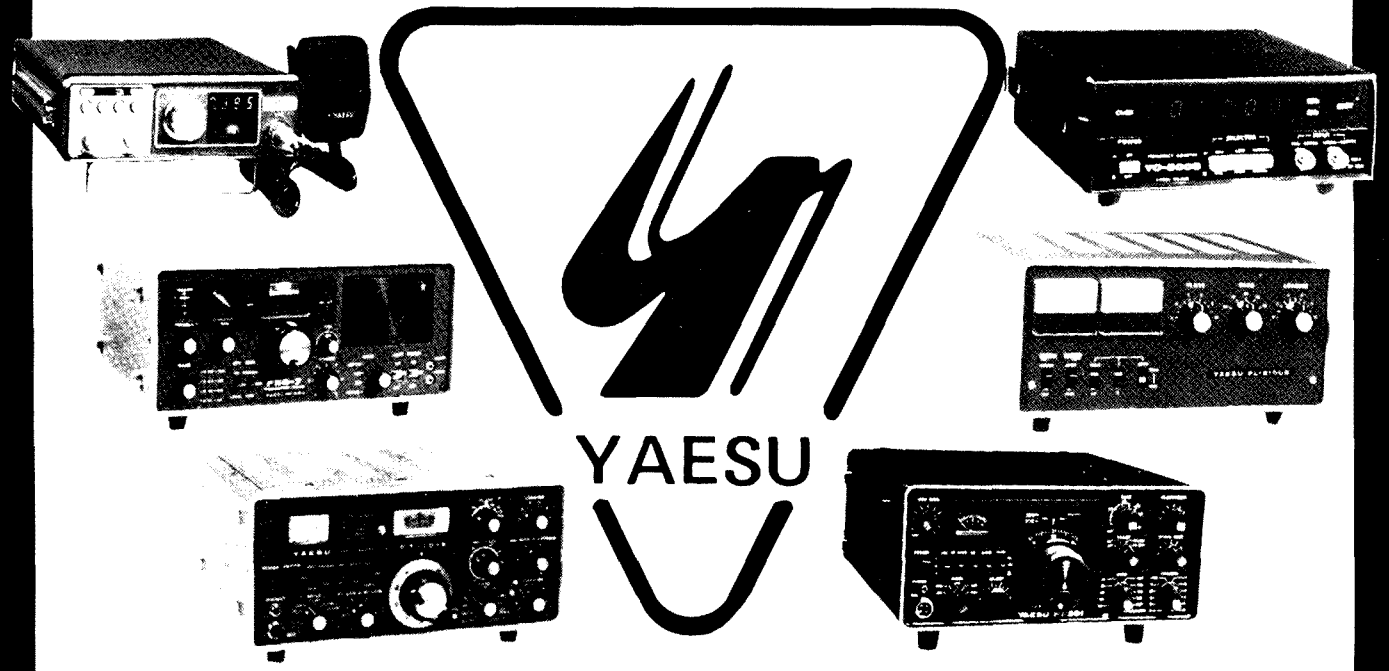

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1977 WESTERN ZONE CONVENTION

The Annual Convention of the Western Zone, Victorian Division, WIA, was held at Ararat on the weekend of October 22nd and 23rd. Registrations were taken at the Golden Gateway Motel on the Saturday afternoon while Trade Displays were conducted by Vicom, John Lewis Retra-Vision and the Moorabbin Radio Club.

About 90 people attended the dinner which followed. Visitors included Keith VK3YQ (Federal Councillor), John VK3ACA (Vic. Div. Secretary) and Gordon VK3TF (Vic. Div. Councillor). The after dinner speaker was Michael Goode VK3BDL, who spoke about amateur radio in England and Europe. He outlined some of the problems encountered in gaining reciprocal licences and showed a number of slides of his recent trip.

The Ararat trotting track was the venue for Sunday's activities. Mavis VK3BIR and Norma VK3AYL finally found Jim VK3NDT, the 80 m fox. The 27.125 MHz hidden transmitter was found by Gary VK3ZSP and Ron VK3KN. Trevor VK3YJT found the 146.0 MHz hidden transmitter, followed closely by Roger VK3RG. The 144.1 MHz sniffer hunt was won by Dennis VK3ZKH, with Helen Guy, harmonic VK3ZUY, second.

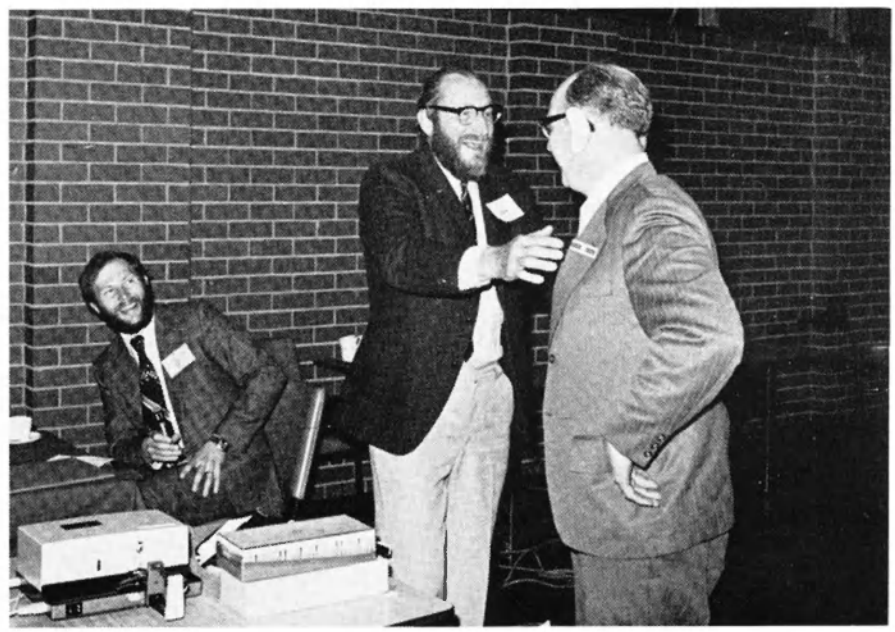
A magnificent array of salads prepared by the Ararat Ladies, led by Lyn, YF VK3NEK, complimented by barbeque lunch.

Following lunch the 300 Hz to 3.3 kHz scramble was won by Mavis VK3BIR, with David VK3AGB second. Chas VK3NET then delighted the crowd with his fully aerobatic radio controlled model aircraft. Stunts performed included several low rolls over the crowd, dropping a load of wrapped lollies each time.

Special guest for the day was Madam Mayor, Jess Boyles, of Ararat City Council, who presented the prizes.

A number of special Western Zone awards were also presented during the weekend.

These included the "Big Ears" award to Oliver VK3AEU, a very regular listener on RWZ-7, a specially modified tuning fork to help George VK3ALS to control his "mountain goat oscillator" and a "new improved power supply" to replace the "gas powered thermocouple" used by Woody VK3AGD during the power strike. A master control switch presented to David VK3AGB will prevent him from accidentally operating on two frequencies simultaneously. A specially silenced saw will allow Pat VK3ADN to cut wood without causing accidental QRM on RWZ-7. ■



The "Big Ears" Award being presented to Oliver VK3AEU by Woody VK3AGD. Left to right: Peter VK3AQO, Woody VK3AGD, Oliver VK3AEU.

Woody entertaining the children after the model aircraft display.

CLEARING THE AIR

Reprinted from Westlakes Radio Club Monthly Newsletter, December 1977

With 500,000 licensed amateurs in the world, and an average increase of over 50,000 a year, there will be a doubling of our numbers by 1980. This would be fine if some beneficent authority *were* to double the width of our bands, although even in those improbable circumstances we should still be facing the same QRM levels as we are today.

Everyone realises that the congestion on certain bands, at certain times, is beyond the joke, and that *complete* strangulation is sometimes very near. Therefore, since no one is going to widen them for us, we must take the matter in hand and do it for ourselves.

How could we double the effective width of the amateur bands, as we know them today? One answer would be a worldwide agreement whereby every amateur restricted himself to working for only half the available time — either by going on the air on alternate days, or by restricting his operation to alternate periods of one hour or two hours. This method would be effective (if it could be enforced), but would obviously be extremely unpopular. And it would be an admission of defeat — rather like improving the roads of this country by allowing motorists to drive on alternate days. If we were all to talk less — that would be equivalent to increasing the space available on the bands. And this should be pretty easy, when one notes the enormous amount of long-winded natter that drools on and on without imparting any information whatever. Maybe this is how the term "talkpower" was derived in the first place! And, of course, the use of long calls when a short snappy one would be more than effective. And the use of phonetics repeated at nauseum, like "I spell for you" and so on.

In several European and Asian countries it is obvious that a semi-trained type of operator can be let loose with the most primitive transmitting gear. Either these countries do not go in for any form of monitoring, or their authorities simply do not care what happens as long as it is happening in an amateur band. A VK with a bad signal is relatively easy to deal with; how do you cope with a HA, an LZ or a YU who, apart from having a thoroughly wicked signal, is virtually impossible to communicate with on the subject? Nine times out of ten, if you tell this chap that his signal is a bad T6, with chirp and clicks, he will reply, "TKS for FB report, OM, my QSL for sure" — and then where are you?

An operator who uses up twice the necessary time to complete a QSO is as bad as another man who uses twice the width of the band with a broad signal. It is not the intention that OSOs should be reduced to rubber stamp standards. On the other hand, what one might call "unnecessary prattle" can be cut down a lot and still leave some meat on the bone. Listen to a great many nets and call backs, at some length, and if you are honest you will be forced to admit that a lot of people keep on talking for the sake of talking. The next words are usually, "I'd better keep it short!"

Why do we take so long saying goodbye? How often do you hear three finals and a "final-final" types working out the variations on 73, see you again, hope to meet you soon, thanks for the 100 per cent enjoyable QSO, all the best — simply because they couldn't drag themselves away. And the other type of horror "This is VK2 Blah-Blah over and off and clear, and pulling the big switch, with VK4 Blah-Blah who is located 25 km north of Townsville . . ." The VOX operators are pretty slick these days. But there are those who deliver long monologues and do not listen-through at all. A command of the situation calls for much use of "aahs" and "uughs" to hold the VOX in all the time. In the end the group has vanished without a soul on the frequency. The use of phonetics is a waste of time when a 5/9 signal is being received. If you happen to live in Parramaribo, Tananarivo or even Blagoveschensk, the horror is most complete. Use phonetics when plain language can't get through but the misuse makes us all sound like a mob of Charlie Bakers. ■

BASIC ANTENNAE FOR OSCAR SATELLITE COMMUNICATIONS

By Dave Clingerman W6OAL
Submitted by Bob Arnold VK3ZBB

This article presents three basic types of antennas and the derivation of each. Since the launch of the AMSAT-OSCAR 6 spacecraft the author has, at one time or another, tried every type of antenna imaginable, for satellite communications, from a coat hanger ground plane to a log periodic helix.

During this five year period of experimentation the various configurations have been used to set such world records as, first aeronautical mobile amateur satellite communication including an airborne satellite command station over the Pacific Ocean. This was accomplished using a bent brass rod ground plane. The first maritime mobile, transcontinental amateur satellite contact was conducted using a "J" antenna for uplink and a dipole for downlink. The first automobile-in-motion amateur satellite Trans-Pacific contact was completed using a "J" on one side of the vehicle for uplink and a Webster Band Spanner mobile antenna on the other side. The claimed longest distance contact via amateur satellite, 9,264 km, Kwajalein, Marshall Islands to Tacoma, Washington was completed using a ground plane and longwire on the South Pacific end of the contact. In the setting of all these records low power was used (below ten watts), so "brute force" is not the name of the game.

A ground plane antenna (GP) can be built onto a female coaxial fitting, a BNC, N, and SO-239 being most common. This allows a coaxial feed, a great convenience. If you're a stickler for low VSWR and good impedance matching, droop the radials to about 42 deg. out of the horizontal. This increases the impedance from the normal GP, 36 ohms to approximately 50 ohms. This type of antenna can be used for both uplink and downlink. It is a fixed frequency device and an SWR approaching 2:1 will be noticed at operation ±10% of the frequency for which it was constructed. GPs are noted for their low angle of radiation and that is where you want to put your power, toward the horizons. The "cone of silence" mentioned in various texts occurring directly above a GP may not be noticed due to the very high sensitivity exhibited by the OSCAR series spacecraft receivers. The GP can be mounted almost anywhere without difficulty, preferably above existing structures; an outrigger from the existing ham tower; a pole stuck in the backyard; a fence post; the eaves of the house to mention a few.

From two metres, up in frequency or down in wavelength, the GPs are not very visible, especially if painted sky-blue. I make this point in case the intended operation is to be in a neighbourhood of grouches or if an apartment type of operation.

Building the GP involves a minimum of material. Brazing rod is the author's mainstay for such projects. Plain copper wire will work, however flimsy. For a ten metre GP, a modified CB antenna will work great plus they are already of proven design and inexpensive. Used ones are readily available for little or nothing. For the higher frequencies, as previously mentioned, a coax fitting can be used for the hub. Then radials, at least four, can be soldered to the fitting and the radiating element to the centre conductor. The plane may also be made of a circular sheet of aluminium or formed into a cone in order to achieve the degree of matching desired.

A derivation of the GP is the 5/8 wavelength radiator. Several advantages are available in this configuration. The first being an approximate 1.8 dB gain over the conventional GP or almost the same gain as a vertical dipole. Secondly, a slightly lower angle of radiation which is the reason for the increased gain; thirdly, and possibly the most attractive feature, is the radiating element may be affixed directly to the radial system, plane or mounting device. Part of the radiating element is wound into a three turn coil. The centre conductor of the coax is tapped to this coil and soldered in place at the point where the lowest obtainable VSWR is measured on the intended frequency of operation. Brass or copper rod/tubing will work well in this application. Steel rod is hard to work with and equally difficult to solder to. With a little torch work, stainless steel can be used and would weather the best. To keep weather out of the coax, tin the braid before affixing it to the counterpoise and saturate the open end with Glyptal or seal it with Selastic Rubber. The 5/8 wavelength antenna may also be built on a female bulkhead coax fitting if desired.

The dipole antenna is a centre fed half wavelength radiator. Its characteristic impedance is 72 ohms. It is generally utilised in a horizontal configuration, some applications may necessitate its vertical usage. Horizontally it is a bi-directional radiator; vertically it's omni-directional with a low radiation angle. The dipole when used in the HF region and constructed of wire requires two structures for support. Vertically it may be mounted to a single structure preferably wooden or other non-metallic material in order to reduce pattern distortion. Coax feed is the normally applied method, but 72 ohm ribbon is available from Beldon Cable Company. In the application of a folded dipole, 300 ohm TV twinlead is readily available and inexpensive.

A dipole may be constructed of wire, tubing, brazing rod, flat stock, whatever may be available. In the category of VHF/UHF dipoles, construction may be on, again, a coax fitting. Baluns may be added, but for the sake of simplicity are not required.

Mounting a dipole .2-.25 wavelength above a sheet of aluminium that, on a side, is 5% greater than the length of the dipole yields a system of 3 dB more gain than a dipole by itself, and becomes unidirectional. The configuration makes it a handy, portable antenna for 2 metres or 70 cm. It does not have quite the aperture (capture area) required for very weak signal reception but for OSCAR work it performs quite well.

A derivation of the dipole antenna is the "Turnstile". This comprises two dipoles perpendicular to each other and fed through a 1/4 wave coaxial balun. The result is a cloverleaf pattern effectively doubling the aperture and enhancing the propagational properties. The "Turnstile" may also be mounted above a reflector previously mentioned with the dipole. The dipole configurations exhibit a slightly greater tolerance to frequency excursions than the GP. The order of ±12-15% should not raise the VSWR over 2:1 especially at 145 MHz and above. Unless the VSWR is extremely high, it won't be all that noticeable because of the feed line loss. The best policy is to cut the dipoles for the frequency to be most used and don't worry about occasional frequency and accompanying VSWR excursions.

At this point I'd like to introduce a frequency independent antenna, the Discone. The main advantage of this type of antenna for satellite communications is it may be used for uplinking on one bird and downlinking on another. An 8:1 frequency range with the VSWR remaining below 1.5:1 can certainly be appreciated by those of us who don't have a great deal of room for varied multiple arrays. The Discone is fixmounted with ease and simplicity incorporating a small diameter centre pole. it is omni-directional and vertically polarised. The feed-point arrangement is such the 50 ohm coax is used. The material needed in the construction of this antenna requires nothing fancy. Brazing rod and hardware cloth (copper screen) plus a suitable insulating material, preferably Teflon, is all that need be used. Such a large frequency range doesn't require the crowding at the bottom end of the design band. In most cases this antenna will be built for 2 metres as the bottom band. A rule of thumb is to drop the design frequency 20% below the lowest frequency you intend to use. Even to use 100 MHz as the design frequency allows the coverage of three ham bands, two of them common to the present OSCAR series. The space required for this antenna is less than two cubic feet. This still isn't too large to be used on an apartment dweller's balcony.

Construction details are not the subject of this article, however, dimensions are available in Bill Orr's *Radio Handbook* and

Henry Jasik's *Antenna Engineering Handbook*.

Last, but not least, let's look at the Yagi antenna for satellite operation. The Yagi is narrow-banded but a derivation of the Yagi, the "Log Periodic", which I will discuss later, is frequency independent. Similar in band-width to the Discone, the Yagi is unidirectional having a front to back ratio of 15-25 dB depending on the number of elements and their spacing. As a basic antenna let's consider a three element Yagi on 2 metres. The boom is approximately 2 feet long. The longest element (reflector) is approximately 40 inches. A gain of 4.5 dB is obtainable over a dipole. It would require a little over 2 feet for turning radius. A light weight TV rotor would be adequate. For best results a fixed tilt angle of 30 deg. is suggested unless elevation control is contemplated. The boom can be wood or metal, the elements aluminium tubing, but stiff clothes line wire will work fine. A variety of matching systems may be used. This is left to the constructor's preference. Myself, I'd use a matching system that allows the use of coax for the sake of simplicity.

As we progress higher in frequency, the Yagi becomes smaller allowing us to add more elements and still conserve space. A word of caution — the more elements, the longer the boom, the sharper the beamwidth, lots of time spent in repositioning (manual tracking), i.e., reduced operating time. In the embryo stages of your satellite communicating, the emphasis should be on operating, not pin-point tracking.

The "Log Periodic" type of Yagi is independent of frequency over about a 10:1 range. This type of antenna allows multiband operation with one antenna and without the compromises of traps. The LP requires no special type of match since one-half the composite boom is feed (hot) along with all the elements on that boom half. The second half acts as a balun plus supports the other assembly of dipole halves. Here again economy is stressed. The elements may be clothes line wire or aluminium heli-arc rod swaged into holes in the two-piece main boom structure. Even though the LP has a lot of elements, the gain on any one frequency will not be more than a three element Yagi. In operation, the LP has one element that resonates at the frequency of operation, a longer element behind acting inductively as a reflector and forward element acting capacitively as a director.

I hope to have inspired some of you who have thought about satellite communications to try it. Contrary to some erroneous belief, large steerable arrays are not needed and high power is for the most part wasted. I used as little as 0.5 watt to set the world distance record, so I'm sure you can do a lot with 100 watts to a GP, dipole, Discone or turnstile. Let's hear you via OSCAR. ■

THE YOUTH RADIO SERVICE IN N.S.W.

THE YOUTH RADIO SERVICE IN N.S..W

WHAT IS THE Y.R.S.?

The Youth Radio Service is a service of the Wireless Institute of Australia, and was formed to further the Institute's educational alms. It was originally a confederation of Radio Clubs, mostly involved with young people starting out in Radio, but now caters for people of all ages looking for help in studying Amateur Radio, so the term "Youth" is now only partly correct. Thus we often term it the Y.R.S. Education Service.

The Y.R.S. meets annually, and member clubs determine policy and elect an executive committee to carry out the aims of the service throughout the year. The present executive is:

State Supervisor: Ken Hargreaves VK2AKH, 52 Marlin Avenue, Floraville, 2280.

Education Officer: David Wilson VK2ZCA/NMW, 63 Superior Avenue, Seven Hills, 2147.

Treasurer: Rex Black VK2YA, 10 David Street, East Springwood, 2777.

1. To **Member Clubs**

- A system of progressive syllabuses and examinations in elementary radio. Attractive certificates are awarded to successful candidates.
- The regular publication "Superbull" — the SUPERvisors' BULLetin with club news, circuits, and instructional ideas.
- The national quarterly bulletin of the YRS — "Zero Beat".
- A component shop service, supplying components specifically useful for small club-type projects.

To register your club with Y.R.S. costs $3 per year, and this fee should be sent to the Treasurer, Rex Black, together with your club's name, and the leader's or Secretary's name and address.

2. **Services to all Clubs and Individuals** Y.R.S. has available for purchase notes and tapes of use to anyone starting out in radio, or striving for the novice licence.

Materials available are:

- *Y.R.S. elementary notes, stage 1.*—For those who haven't a clue about radio at all. Simply presented in digestible stages. If you can read, this will help give you a start. 48 pages quarto.
- *Y.R.S. elementary notes, stage 2.*—So you handled the Stage 1 alright? Here's some more. Simply written and illustrated. Takes you through components and simple circuitry. 38 pages f'cap.
- *1,000 questions for Novice Licence Candidates.* — Want to walk into that novice theory and regs. exam with confidence? This book has 1,000 multiple choice questions, pitched at what we believe is novice level. Arranged under topics similar to the Westlakes Manual, with additional sections on interference, 150 questions on regulations, and a sample novice-style paper. A key to answers is provided, of course. 120 pages quarto.
- *Learning the Morse Code* — by Rex Black VK2YA. Has been teaching morse since the R.A.A.F. days during the war. This Is the companion book to Rex's two C-60 tapes teaching novice morse code. Jam-packed with advice, instruction and reasons why the morse code is easy to learn. 32 pages quarto.
- *Novice Morse Cassettes.*—The two C-60 tapes that go with the book. The tapes are arranged in 20 steps which include 83 individual practices. Equally useful for an individual studying, as for an instructor who would rather teach with a tape.
- *Morse Code Copying.*—We have a range of tapes, starting from "Introductory" to speeds ranging in value from 5 words per minute to 12. Each tape covers one speed, and all (whole number) speeds are available to be copied.

What you do is send your tape in, together with 36c worth of stamps to Fred Santos VK2NDN, 8 Cooper Avenue, Blacktown 2148, and Fred will dub on to your tape.

COSTS INVOLVED

Elementary Stage 1 — $1.00 posted or 60c plus post in bulk.
Elementary Stage 2 — $1.00 posted or 60c plus post in bulk.
1,000 Questions — $3.00 posted or $2.50 plus post in bulk.
Learning Morse Code (book and 2 cassettes) — $6.50 posted.

THE SELF-STUDY KIT

Contains: Westlakes Manual, Elementary Stage 1 Notes, 1,000 Questions, Learning Morse Code Book, 2 cassettes, PLUS study guide containing the address of a qualified amateur who will help you through a problem or two (or more).

THE KIT FOR $15.00 POSTED!

DID YOU SAY YOU ALREADY HAD THE WESTLAKE MANUAL? WELL . . . THE KIT WITHOUT WESTLAKES MANUAL FOR $12.00 POSTED.

WHAT'S COMING?

We are always looking for new ways to help people onto the air. We also want to help school Technics and Electronics classes.

50 circuits — tried and tested — clear and simple. Coming up soon.

The novice course on cassette — We're working on it. Could it be a learn-as-you-drive, or even a learn-as-you-sleep? Watch for this one.

Novice by correspondence — Another one we're working on.

WE CAN USE HELP TOO — IF YOU'RE AN AMATEUR AND WOULD LIKE TO HELP, OR EVEN JUST OFFER IDEAS — WE'RE INTERESTED! DROP US A LINE. ■

REMEMBRANCE DAY CONTEST OPENING ADDRESS

Opening address by Mr. H. S. Young for the 30th RD Contest 1977

(Mr. H. S. Young has recently retired from the P. and T. Department, Radio Frequency Management Branch, having held the post of Assistant Secretary, in charge.)

It is a privilege indeed to have been given the opportunity to open your Remembrance Day Contest for this year.

Of the various contests that are open to members of the Amateur Service In this country, this particular one is surely of special significance in that it serves to remind us that there have been periods in our telecommunications history when we have had to temporarily shelve the practice of amateur radio and instead take up arms in the defence of our country.

The worth of the amateur radio operator in times of hostilities, with his broad understanding of telecommunications technology, and practical operating experience, has been amply demonstrated, and is no doubt appreciated in the Defence area, as well as by members of the community at large.

Unfortunately, it is one of the sad facts of war that casualties are inevitable and of course Australian amateurs serving in the Armed Forces have suffered in this regard.

It is to these men that we should direct our thoughts on the occasion of the Remembrance Day Contest.

What better way of revering their memory and expressing our gratitude for the sacrifices they made, that we may be permitted to pursue our various interests in a free society, than by engaging in a competitive exercise in the very communication medium which in life they knew so well.

As you participate in this Contest you will doubtless be conscious of the fact that there are a number of countries whose administrations do not condone amateur radio activities at all. I believe we can indeed count our blessings in this regard.

In these days, when heavy pressure is being brought to bear by some Administrations for greater radio frequency spectrum, it is not so surprising that some overseas countries consider the amateur service as one rating a very low priority in the allocation of spectrum, if indeed, any at all. It goes without saying, of course, that in such circumstances the Australian amateur movement must remain ever watchful of the influence that such people can bring to bear, especially in the international forum that decides these issues.

It is surely important for the amateur service to continue to be seen, in the eyes of the various communities throughout the world, as one forming a particularly useful part of our human society. A service which is also capable of providing a noteworthy contribution to education in radio communication technology, as well as practical communication expertise.

I believe that competitive contests such as the one you are about to commence are a worthwhile contribution towards achieving this end.

And now I know you are all anxious to commence operating in your contest, so I should just like to conclude by saying "thank you for listening", and that it gives me a great deal of pleasure to declare this, your 30th Remembrance Day Contest, open.

Good luck and happy hunting to you all. ■

QSP

LET'S QSY TO CP-LAND

The Radio Club Boliviano reports complete understanding between themselves and their Director-General of Telecommunications, with a cordial relationship and mutual respect so that any transactions, including the granting of licences, revalidations or upgradings are completed within 48 hours. Another aspect of these relations is that the Club's Board of Directors receives preferential treatment, namely that when an interview is requested it is granted immediately and the matters submitted for consideration are resolved within a spirit of great understanding. From IARU R2 News November 1977.

WIA CORRESPONDENCE

Postal and Telecommunications Department
G.P.O., Box 5412CC,
Melbourne, Vic. 3001.

Secretary,
Wireless Institute of Australia,
517 Toorak Road,
TOORAK, VIC. 3142.

Dear Sir,

I refer to previous correspondence advising of the temporary withdrawal of the use frequency band 26.96-27.23 MHz by the Amateur Radio Service to accommodate the Citizens' Radio Service and of the arrangements made for the use of the band 28.1-28.6 MHz by the Novice Amateur Service.

It was recognised, of course, that certain Novice Amateur station licensees could perhaps suffer some immediate disadvantages as a result of the withdrawal of the band concerned because of the need to purchase new equipment or, where practicable, to have their existing units modified.

Accordingly approval was sought and has been obtained from the Minister to a proposal that any existing Novice Amateur radio station licensee who was so disadvantaged and who desires to participate in the Citizens' Radio Service (CRS) may be granted a special licence to cover participation in both the Novice Amateur service and the CRS. The annual fee for such a licence has been set at the normal rate for a CRS station licence, namely $25.

It would be appreciated if you could see your way clear to arrange for the new provision mentioned to be publicised through the Institute's normal channels please. The new special licences will be available from Offices of the State Superintendents, Regulatory and Licensing, of the Department.

Yours faithfully,
D. WILLIAMSON,
First Assistant Secretary,
Radio Frequency Management. ■

AWARDS COLUMN

Brian Austin, VK5CA
P.O. Box 7A, Crafers SA, 5152

WALA (Worked All LA)

This certificate is offered by the Norsk Radio Relae Liga (Norwegian Radio Relay League). The following conditions must be met:

1. All contacts with LA/LB stations made after 1 January 1950 are valid.

2. Applicants must produce evidence of contact with 20 different LA/LB stations on any amateur band. At least 6 of these stations must be situated north of the Polar Circle. The location must be clearly indicated on the QSL card. Special rules for amateurs of Scandinavia are printed and published in Norwegian.

3. Contacts on CW or phone or mixed are allowed. Minimum reports required are RST 383 or RS (M) 33 (3). Crossband contacts are not allowed.

4. Contacts with stations with prefixes JW (Svalbard and Bear Island) and JX (Jan Mayen) count for the certificate.

5. The application, including a list of the stations worked, showing date and time, signal reports, frequency, mode and QTH, plus the QSL cards should be sent to:

NRRL Award Manager,
Hans E. Kinck, LA4YF
3800 BO 1 Telemark
Norway.

6. A fee of 10 IRCs must be included with your application.

A list of counties (fylke) and county numbers follows:

NORWAY

County Letter	County/Fylke
A	Oslo (City)
B	Ostfold
C	Akerhus
D	Hedmark
E	Oppland
F	Buskerud
H	Telemark
I	Aust-Agder
K	Vest-Agder
L	Rogaland
O	Bergan (City)
R	Hordaland
S	Sogn og Fjordane
T	More og Romsdal
U	Sor Trondelag
V	Nord-Trondelag
W	Nordland
X	Troms
Y	Finmark
Z	Vestfold

OVERSEAS TERRITORIES

3Y	Bouvet Island, Pater Island
JX	Jan Mayen
JW	Svalbard

County letters are in use as the criteria of the WALA Certificate for Scandinavian stations.

(WRN)

R-10-R

Work with the radio stations of 10 radio amateur regions (R-10-R) is issued to all licensed radio amateurs and SWLs who fulfill the following conditions:

1. Contact one amateur in each of the 10 Soviet Union call areas during a period of 24 hours. Prefixes such as UA2, UC2, UP2, UQ2 and UR2 are all the same call area.

2. All contacts must be either all CW or all PHONE.

3. All contacts must be made since 1 July 1958.

4. Minimum reports shall be RST 337 or RS 33.

Applications must include the list of contacts with date, calls, type of emission, frequencies and a fee of one rouble or 14 IRCs. The QSL cards are required to be sent along with the application. Send your application to:

Central Radio Club
P.O. Box 88
Moscow, USSR.

(WRN)

I am always on the lookout for new awards, or old ones which few of us have ever heard about. Send any information to Brian W. Austin VK5CA, Federal Awards Manager, WIA, P.O. Box 7A, Crafers, SA 5152. ■

NEWS FLASH

Word has just been received from the IARU that Worked All Continents Certificate has been issued to Len Poynter VK3NAC.

This should be the first VK Novice W.A.C.

Congratulations, Len. ■

AROUND THE TRADE

AMERICAN ELECTRONIC LABORATORIES LOW PASS FILTERS

American Electronic Laboratories, Inc. (AEL) presents the FLD1000 series of low pass filters, which are eleven element elliptic function filters (with chebyshev response in both the pass band and stop band). These filters operate in the cut-off frequency range between 1 MHz through VHF.

With a size of less than 3 in. by a depth of only .56 in., a width of .75 in. combined with a weight of only 1.5 ounces (approx.), this filter is easily integrated into circuits. SMA female connectors are standard.

Further information is available by writing to Scalar Distributors Pty. Ltd., P.O. Box 48, Kilsyth, Vic. 3137. ■

DIPOLE ARRAY ANTENNA 20-1000 MHz

American Electronic Laboratories, Inc. (AEL) offers technical information on two models in its line of coplanar log periodic dipole array antennas.

Models APN1509 and 1202A cover the 20 to 100 MHz frequency range. They both feature a detachable dipole element assembly for tactical utilization of the antenna. Model APN1509 consists of snap-on dipole elements. The APN1202A elements are bolted in place.

Both antennas meet the requirements for testing in accordance with SAE specification J551 on electro-magnetic interference.

The APN1509 and 1202A weigh approximately 70 lbs. and measure 13 ft. by 15.75 ft. assembled.

Data sheet No. 28-8 can be obtained by writing to Scalar Distributors Pty. Ltd., P.O. Box 48, Kilsyth, Vic. 3137. ■

AUTOMATIC TUNER

Hatfield Instruments announce the release of their "Servomatic Antenna Tuning Unit Type 7550", a completely automatic tuner having infinitely variable adustment for maximum power transfer from a 50 ohm output transmitter to a whip or long wire antenna between 5 and 40 metres in length.

Features include automatic re-tuning should the geometry or environment of the antenna change; no expensive multi-way cables required between the transmitter unit and tuning unit; no restriction in frequency range between 1.6 and 30 MHz or dial setting.

Power rating: 50 watt with overload factor to 100 watt.

Frequency range: 1.6 MHz to 30 MHz.

Output impedance: 25-3000 ohms resistive ± jW 2000 onms continuously variable.

Resolution time: Maximum 10 seconds. Typically 4 seconds.

Input power: 12/32 volts DC.

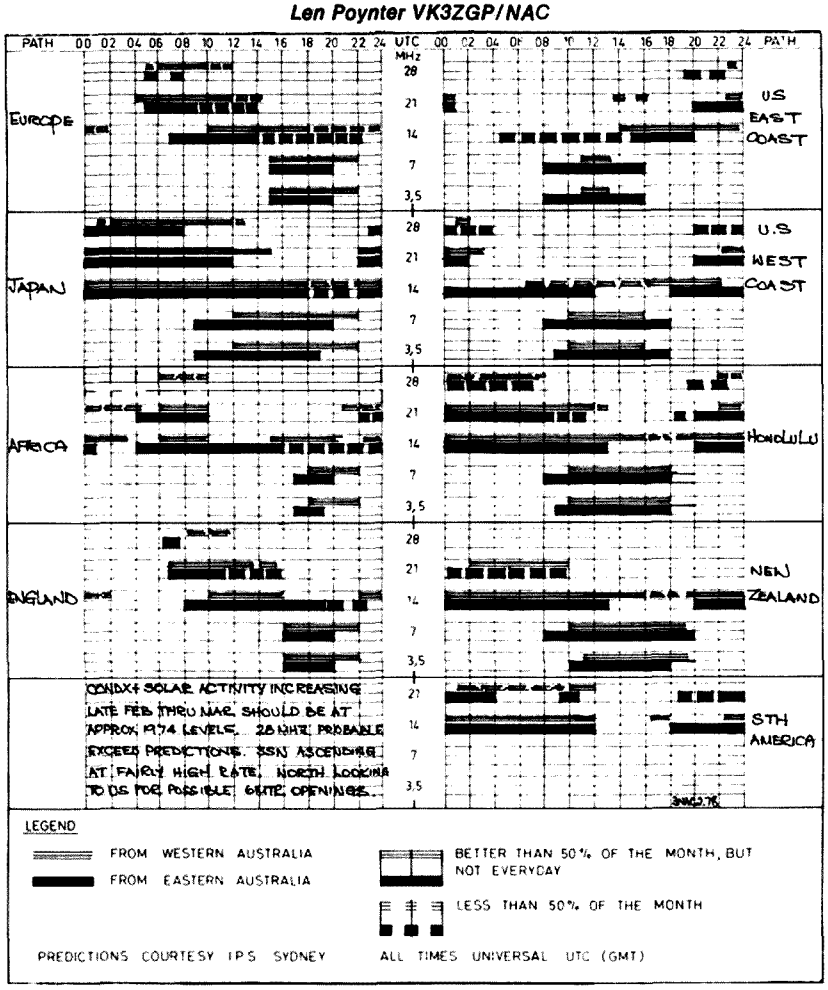
Temperature range: —20° to +40°C.

Dimension 265 x 422 x 248 mm, excluding connectors and handle.

Contact Scalar Distributors Pty. Ltd., 18 Shelley Avenue, Kilsyth, Vic. 3137. ■

IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



MAGAZINE INDEX

Syd Clark, VK3ASC

BREAK-IN September 1977
Fundamentals of Digital Frequency Synthesizers for the Two Metre Amateur Band; Panel Indicator-Battery Indicator; Coupling Networks; A simple Adjustable Voltage Power Supply; Visual CW; A Soliloquy on Aerials.

BREAK-IN October 1977
A Soliloquy on Aerials; Another Answer to the Mast Problem; Printed Circuit Board Layout for the ZL2AOM Transceiver; Carrier Balance Meter; Fundamentals of Digital Frequency Synthesizers for the Two Metre Amateur Band; World Problems in Radio Communication: Pt. 3.

RADIO ZS August 1977
Mobile Radio Communication: A Reliable and Inexpensive Power Supply System for Remote Mountain-top Repeater Stations; Roll Your Own or Insulators in Epoxy; A Multi-band End-Fed Inverted-Vee Aerial System.

OST August 1977
Phase III: Toward the Ultimate Amateur Satellite; A Delayed Brake Release for the Ham — II; A Novel Antenna Installation for a Sailboat; Using a Frequency Counter as a Capacitance Meter; Solar-Electric Power and the Amateur; Designing Solid-State RF Power Circuits; Updating the Noise Blanker; A Crowbar-Proof 12V Power Supply; Know Your Receiver; Active Low-Pass Filters for CW or SSB; Mark 40 and Still Going Strong; Twisters Take Tolls — Hams Hurry Help; The French Atlantic Affair.

OST October 1977
Measuring Antenna Gain with Amateur Methods; Optimizing Vertical Antenna Performance; Designing Solid-State RF Power Circuits, Pt. 3; The Emergency Broadcast System; An Exetnded Frequency Range for the Collins 75S-1; Printed Circuit Boards — An Easier Way; The Gentlemen's Band — 160 Metres; Morse Code to ASCII Translator Using a Microcomputer; The Zany Zener; Build a UTO-1; Update your OSCARLOCATOR — and Your Amateur Rrdio Library; 20th Jamboree-on-the-air.

RADIO COMMUNICATION October 1977
Power Supply and Control Circuits for a 4CX250B Amplifier; A Multi-mode Transceiver Using SL1600 IC's; A Solid-State 1.8-3.5 MHz Receiver; Further Notes on the DSB1 Mk. 2. ■

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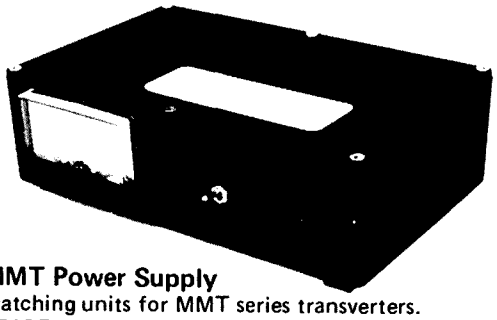

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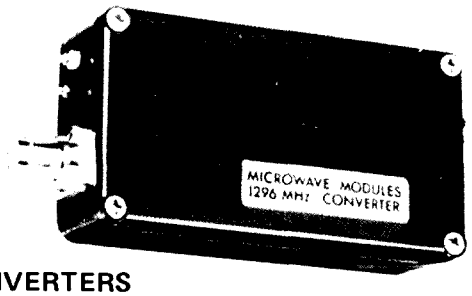

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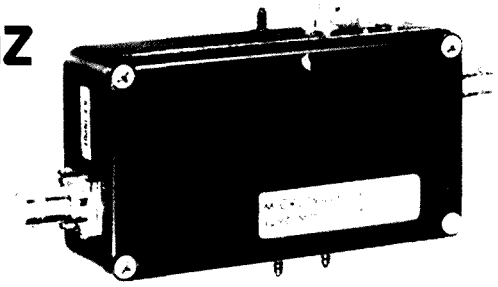

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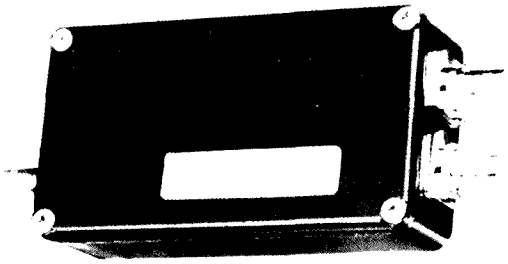

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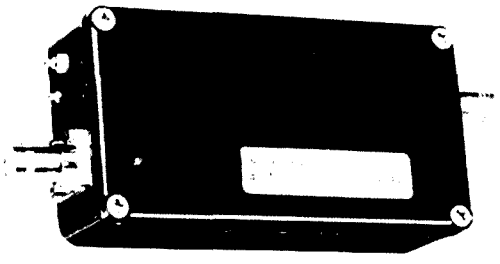

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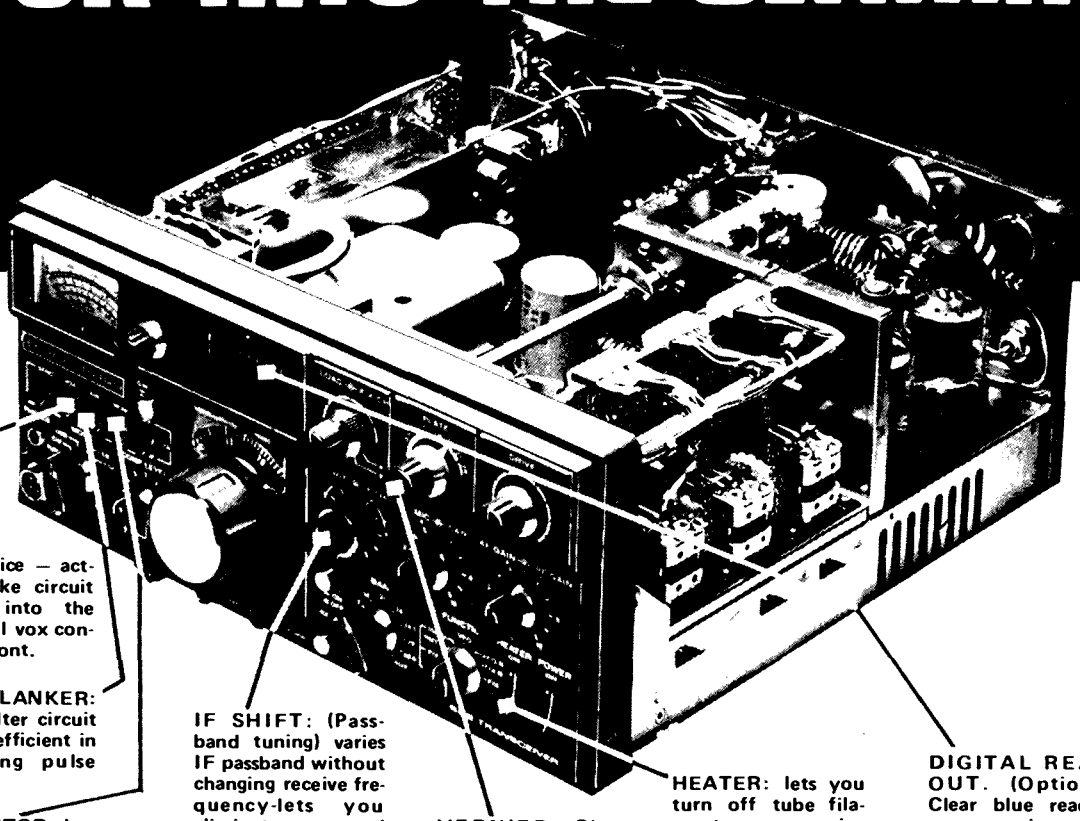

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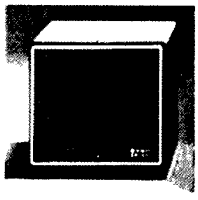

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WECARI

AMATEUR SATELLITES

Bob Arnold

VK3ZBB

The latest information received from Harl JA1ANG the Amsat Pacific Co-ordinator via Charlie VK3ACR is that the launch date of OSCAR D is now set at 5th March, 1978. We also hear that the Russian series of satellites have been delayed and will be launched "sometime in 1978".

In the hope of obtaining some authoritative information on the RS series I have been in communication with the Ambassador of the USSR in Canberra. His Excellency tells me he has sent my request to Moscow and I await further information with interest.

During November and December, Mode B of OSCAR 7 has been intermittent and quite disconcerting for its loyal band of operators. The cause of the unprogrammed switches to Mode A has been overloading of the transverter by European stations which in turn causes excessive battery drain within the satellite. I had heard of this problem in the UK and of the lack of response from at least two stations when requested to operate in a reasonable fashion. Despite this lack of available orbits, the following new stations have been heard on Mode B: VK2ZTA, VK3YFU, ZL3THM, ZL3AAD, VK2BIE.

Dave Hull VK3ZDH, who operates the Australian Command Station for OSCAR reports that during November he made a vigorous attempt to switch on OSCAR 8. Unfortunately, this effort was to no avail and it must now be presumed that the satellite is permanently inoperable.

This information has been confirmed by others, so after 56 months of operation, OSCAR 6 is quiet.

OSCAR 6 was launched from Vandenburg Air Force Base in California on 15th October 1972 and had a designed life of twelve months, and through the dedication of the command stations including our own Dave Hull, the four-year life was achieved.

OSCAR 6 achieved many distinctions, including:

— First Amateur Communications Satellite capable of responding to telemetered commands.
— First Amateur Satellite with dual frequency beacons of 29.45 MHz and 435 MHz.
— First long life Amateur Satellite with regular two-way communication capability.
— The use of Codestore for the automatic retransmission of a telemetered message.
— Used by many US educational institutions for classroom instruction.
— Used in the development of a downed-aircraft emergency location system (ELT) in a joint venture between the Canadian and United States Governments.
— Discovery of the Inverted Doppler propagation mode using the 435 MHz beacon.
— Used in numerous tests involving transmission of medical data between medical institutions and field mobile to medical institutions.
— Numerous propagation experiments.
— Allowed regular communication between all continents involving over 100 countries.
— First Inter-Satellite communication involving AMSAT-OSCAR 6 and AMSAT-OSCAR 7.
— First transmission of meteorological data using 110 baud ASC11 from a remote platform.

So, we say farewell to our friend and say a sincere Thank You to the designers of the venture, from Australia, Canada, Germany and the USA, together with those involved in the command operation of the satellite.

Last month I mentioned my purchase of a copy of "OSCAR — Amateur Radio Satellites" by Stratis Caramanolis the English language edition of which is distributed by the RSGB at £4.20 post free. The first six chapters of the book deal with the theory and practice of satellite operation including orbital geometry, satellite anatomy, fundamentals of communication and telemetry. These chapters give the reader a sound grounding in the basics of satellites which will be invaluable when considering our future programmes.

Chapter 7 gives a comprehensive review of the OSCAR series giving in one compact volume all the data necessary to evaluate past operating practices. Then follows considerable data to operate amateur satellites ranging from frequency to orbital calculations.

Details are also given of the use of the OSCAR series for educational purposes, QRP tests, Slow Scan TV and data transmission. The book is amply illustrated with photographs and drawings and the basic mathematical treatment of the subject is quite easy to follow through worked examples.

Perhaps my own disappointment with this excellent book was the lack of treatment of practical antenna systems, and I have therefore, presented an article from Amsat newsletter on this subject which may answer many questions I am repeatedly asked. The article is published elsewhere in this issue.

OSCAR, 7 ORBITAL PREDICTIONS, FEBRUARY '78

Date	Mode	Orbit	Time Z	Long.
01	B	14700	0152	84.0
02	A	14712	0051	68.8
03	B	14725	0146	82.4
04	A	14737	0045	67.3
05	B	14750	0139	80.9
06	A	14762	0039	65.7
07	B	14775	0133	79.3
08	A	14787	0032	64.1
09	B	14800	0127	77.7
10	A	14812	0026	62.6
11	B	14825	0120	76.2
12	A	14837	0019	61.0
13	B	14850	0114	74.5
14	A	14862	0013	59.4
15	B	14875	0107	73.0
16	A	14887	0007	57.8
17	B	14900	0101	71.5
18	A	14912	0001	56.3
19	B	14925	0055	69.9
20	A	14939	0154	83.4
21	B	14950	0048	68.3
22	A	14963	0148	81.9
23	B	14975	0042	66.7
24	A	14988	0141	80.2
25	B	15000	0035	65.1
26	A	15013	0135	78.7
27	B	15025	0029	63.6
28	A	15038	0128	77.2

For the benefit of those who wish to listen for or work through, OSCAR 7, the following table, used in conjunction with the above data, will give the approximate time of acquisition of the satellite in various locations for a range of evening passes.

For each day of the month listed above, the **GMT time** is given at the time the satellite crosses the equator on the first pass for that day and the longitude is the position in degrees West of the meridian of that crossing.

For each subsequent pass over the equator, add 115 minutes to the time shown and 28.7 degrees to the longitude shown. Round off the longitude to the nearest 5 degrees — this figure is called the Ascending Node (AN).

Select the capital city nearest your position and find the AN in the table. Then read off the "Add Minutes" in the top row. Add this to the time calculated above and the result will give the time of satellite acquisition for the selected pass.

Looking at the overhead pass column, if the AN determined is less than that figure the pass will be East of you and if the AN determined is greater than the overhead pass, it will be to your West.

All evening passes are from South to North and are in sight for between 16 and 24 minutes depending on the AN.

For more accurate information and morning pass calculations, refer to Amateur Radio, October 1972.

Example:

For Melbourne 07 Feb. 78
Time 01.33Z Long. 79.3° Mode B.
For Pass No. 4
Time is 01.33 + 4 x 115 min.
= 01.33 + 07.40
= 09.13

Ascending Node is 79.3 + 4 x 28.7
= 79.3 +114.8
= 194.1
Rounding off AN = 195

From Time Correction Table:—
for AN 195 Add 92 mins. (01.32)
Therefore, Time of Acquisition is . . .
09.13 + 01.32
=10.45 GMT

As AN 195 is less than but near to, the Overhead pass, the satellite pass will be East of Melbourne but high in the sky at its peak, and being near overhead will be in sight for almost 24 minutes. ■

TIME CORRECTION FOR ASCENDING NODES

Overhead	Add Minutes	100	98	96	94	92	90
190	Sydney	155	160	165-175	180-200	205-235	—
200	Melbourne	—	160	165-170	175-185	190-220	225-250
205	Adelaide	—	170	175-185	190-205	210-250	—
200	Hobart	—	—	155-160	185-170	175-190	195-225
				{220-230			
185	Brisbane	155-160	165-170	{175-195	200-215	—	—
225	Perth	190	195-200	205-215	220-270	—	—

IARU NEWS

WARC 79

The August '77 issue of the Telecommunication Journal notified a resolution of the ITU Administrative Council that as WARC 79 will need to take account of technical advances, new services, more intensive use of the frequency spectrum and the use of higher frequencies than presently used and that a considerable amount of technical information will be required to ensure that the Conference achieves the best results, it was resolved to invite the CCIR to carry out the necessary studies and to arrange for a special joint meeting of CCIR study groups on 23rd October 1978 for a duration of four weeks as a Special Preparatory Meeting to provide technical bases for WARC 79.

2m DX RECORD

A new 2 metre DX record was set up on 9th October last during a spell of intense TEP observed on 6m. Initial CW contact was established on 145.9 MHz between YV5ZZ and LU1DAU whereafter both stations switched to SSB. The distance was 5044 km (3135 miles), both stations used 10-element cross-polarised Yagis, the former station was operating portable with 200W input and the latter 100W input. At the end of the QSO YV5ZZ then worked LU7DJZ under similar conditions. Congratulations. ■

REPEATERS

WESTLAKES REPEATER

From Westlakes Newsletter, Oct. 77

One of the most common gripes heard on the air about the Westlakes Repeater is the fact that it times out after two minutes. This is the reason that the repeater if often left idle for long periods without usage. Users just don't like timeouts under five minutes! This special feature is known as the Westlakes Waffle-Stopper and isn't there some.

No over should be longer than two minutes on any repeater. Always leave a pause between overs for breakers. Let breakers in as soon as possible as they don't "break" for fun. Don't develop the fastest button finger in the west. If possible, go simplex as soon as contact is established. If you wonder why the channel seems dead when you call CO — ask yourself whether you are a good operator or a waffler.

MT. GININI REPEATER ACCESS

From "The Lyrebird", Oct. 77

The Mid South Coast Amateur Radio Club has made an unusual contribution to mobile VHF operators travelling the Princes Highway on the South Coast of NSW. This is the planned provision of "access" points in various locations to enable amateurs to reach repeaters not normally accessible when mobile.

The first of these points, giving access to VK1RGI on Mt. Ginini, has been installed in the Milton-Ulladulla district, 233 km south of Sydney.

An eight-element beam antenna (a "Quagi" refer QST April 77) has been mounted on a convenient tree and the co-ax feeder brought underground to a strong steel box fastened to a fence post on the side of a little-used track.

The gain of the antenna is estimated to be about 12-13 dB. The loss in the co-ax feeder is about 2.5 dB. The SWR is less than 2:1. Provided propagation conditions are reasonable, the ten watts or so from the average transceiver should get a good noise-free signal into VK1RGI.

The box is padlocked, but amateurs can by-pass the lock by pushing a pencil or small stick through a hole in the front lid. Inside the box is about 4 metres of co-axial feeder terminated with a PL259 plug for connection to your rig.

A log book is supplied to measure the degree of use.

The box is painted green with the letter G.I.N.I.N.I. printed to give an official appearance (not that such would stop determined vandals).

To find the box, turn off the Princes Highway at the Ulladulla Post Office (opposite the harbour) and travel west along Green Street for about 1.5 km. At the end of this street are five white "termination" posts, skirt around these and continue straight on about 100 metres following the power lines. The box is on the right side fence opposite the first power pole.

Prospective mobiles should make a note of the above against the time they may be in this area.

The Club is making surveys to provide more access points for Mt. Ginini and Wollongong repeaters at several locations along the coast.

It would be appreciated if visitors would fill in the log book and securely lock the box.

— Information from Frank VK2HQ ■

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 publishers.

The Editor,
Dear Sir,

In the September issue of Amateur Radio mention was made by Sam Voron VK2BVS of the formation of a VK/CB club. After discussions with Sam a Victorian Division of the VK/CB club is being formed and as Victorian Co-ordinator I cordially invite VK3 amateurs to join the VK/CB club and assist in educating CBers to a standard suitable for a pass in the Novice Amateur Licence. The aim of the club is to assist the CBer in the use of his or her station and to minimise friction between the two radio services, Amateur and Citizens, where basically each service achieves similar trials.

Membership to the VK/CB club is open to all interested. The VK/CB club will work together with various CB clubs in Victoria and will reflect a spirit of the amateurs contribution to the development of the Citizens Radio Service.

For further details on the VK/CB club in Victoria, write to Mark Stephenson, 43 Cuthbert Road, Reservoir, 3073, enclosing a stamped self-addressed envelope to assist in a prompt reply.

Yours sincerely,
Mark Stephenson,
Victorian Co-ordinator (VK/CB Club).

The Editor,
Dear Sir,

Just a few lines through your column to thank the many amateurs who gave me encouragement and assistance after the fire which destroyed my home and all my gear. Although the fire was in October 1976 this is the first opportunity I have had to thank them all.

We are now re-established in our new home and will be looking for some new gear to get back on the air.

Again thanks.

73s'
Dan A. Clift VK2DC. ■

The Editor,
Dear Sir,
Re YJ8KM.

My apologies to all Novices awaiting confirmation of QSO with YJ8KM. My recent wedding has delayed despatch of the cards; also the overwhelming demand for that country and its close proximity to Australia (easily worked on 80 metres) have completely exhausted both Ken's and my QSL supplies. A new set of cards will shortly be printed. To those who sent a s.a.s.e. thanks, to those who didn't, check your cards from the Bureau after Christmas.

73's
Steve Gregory VK3OT ■

The Editor,
Dear Sir,

I refer to the letter from Mr. N. W. Lavelle VK3ABH, in November AR, wherein he refers to the Russian pulse interference, and stales, quote:

"I have yet to see any evidence that official objections have been lodged at any level."

I would like to inform him and all others interested that, since the Russion P9 Pulse first appeared in our bands, 35 completed Appendix 8 forms covering 105 separate observed intrusions on 100 separate segments in the 7, 14, 21 and 28 MHz band have been handed to officers of the Radio Frequency Management Division of the Postal and Telecommunications Department.

I might also mention that several hundred further reports on other intruders, broadcast stations, etc., have also been lodged. Many more would have been presented if more amateur operators had offered themselves as regular intruder watch observers, but such is not the case. I have made appeals on WIA broadcasts, and since February 1977 have sent letters fully detailing our needs to the secretaries of 10 clubs and zones, and have received only one reply.

We cannot force the authorities to act on our reports. We can only make representations. We have done so, as the above details indicate.

I am yours hamlully,

Ivor Stafford VK3XB,
Acting Federal Intruder Watch Co-ordinator. ■

The Editor,
Dear Sir,

Reading an article on "How to become a Radio Amateur" stirred me into writing an article tor the benefit of amateurs. In this particular article one paragraph is very interesting, it read:

"If it had not been for the courage, persistence and tenacity of a relatively few enthusiasts — particularly in America and England — amateur radio would have died in those post-war years and the world of communication would have lost us services of hundreds of technical people . . ."

Perhaps the death of amateur radio is or isn't happening — nevertheless the interest in this paragraph lies in the fact that in our day and age there are still only a few persistent and tenacious people keeping amateur radio alive, and one group doing just that are the Intruder Watchers.

I often hear of people complaining about commercial stations or RTTY stations creating QRM in the 80/40 metre bands — unfortunately these same people do nothing about it! Have they ever heard of hetrodyning an intruder — or noting down/taping the intruders — then relaying the information to their Intruder Watch Co-ordinator? Obviously an amateur cannot be a member of every radio club in the State, participate in fox hunts or in seminars and contend with an XYL too — but surely he can contribute a little to amateur radio by ensuring that the bands are free of unwanted and illegal stations?

CBers look over 27 MHz — were they not intruders? Two metres is slowly being taken over in the same manner (although assuming that the intruders are all CBers is false). Unfortunately, you the ordinary amateur will not stir until your particular favourite frequencies are threatened! Don't wait until then to act, do it now while something can be done!!

It's not up to Alf Chandler and his Co-ordinators to do all the work — it's up to you to help, after all, they are your bands — AT THE MOMENT!!

Particular frequencies to watch are 3535 kHz, 3550 kHz, 3560 kHz, 3640 kHz, 7060 kHz, 7070 kHz, and 7090 kHz. Details needed are station identification, types of transmission and periods of transmission. Details should be sent to your Intruder Watch Co-ordinator in the State in which you live.

Yours sincerely,
Mark Stephenson L30848
(awaiting Novice call). ■

The Editor,
Dear Sir,

I would like to advise you on a couple of matters which may be newsworthy in AR.

Firstly, last night (23/11/1977) at 0910Z during a normal sked with my friend Graham ZL2AGU in Havelock North, on 3.570, I suggested that we try to contact on 21.170 MHz, which we did at 0920Z. Quite reasonable signals were received both ways — even though the band was not good. I then suggested that we try 10 metres — 28.550 MHz.

I had another rig running on this frequency and gave ZL2AGU a call at 0930Z, and he came back to me. Not strong — S 0 but readability 5, and he gave me R 4/5 S 0. So I had made three contacts on 3 bands with the same station within half an hour, on virtually two "dead" bands. I guess this is a record.

Now, the other item — and something which needs correcting — is the information which AR published over a year ago, called "G5RV Antenna, by G5RV, the Man Himself".

All text books and AR are wrong in giving the length of the 300 ohm flat TV ribbon feeder as 29 ft. 6 in.

The correct length of 300 ohm ribbon is 32 ft. 6 in. No wonder people were troubled with SWR problems. How do I know? Simple. Recently I had a QSO on 80 m with a ZL who was using a G5RV and his signal was superb — he told me his SWR was flat on all bands except 28 megs and it was 1.6-1 on this band. When I asked him for further details, he then told me that he often has a sked with Lou Varney G5RV on 40 m, and Varney told him that "somehow the text books published the wrong information".

His own 300 ohm flat ribbon is 32 ft. 6 in. and he does not use a balun.

I gave this information to a "N" call friend of mine and now his signal on 80 m is excellent.

So that's the story. Also what about publishing something on the "10 x 10 International" net, so that amateurs may join in on this 10 metre band and thus populate the band. I am the first Novice in VK7 to have qualified for my "10 x 10" certificate — my number is 14763.

Vy 73,
Jim Davis VK7NOW,
Activity Officer MWIA, North-Western Branch.

(Any takers for an item on the 10 x 10 net? —Ed.) ■

15 Broughton Street, Tumut 2720, N.S.W.

The Editor,
Dear Sir,

Not yet being a Novice operator as I failed the last theory examination. I don't know if you will read this letter or print it, but I would like to write it anyway.

(We are doing both, Butch!! — Ed.)

Firstly let me say how truly sorry and shocked I was to hear of the passing of Tubby Vale. I am one of the unfortunate people who never got to thank him on air for his help in the morse sessions. I will miss his key pounding away very much.

I was a bit disappointed to read of the bitterness that some of your readers have toward Citizens' Radio operators. I know that most of the rot you can hear is a bit trying, but you must try to remember that most of them don't know what they are doing wrong? I am sure that if they had someone with VK knowledge most of them could become responsible amateurs (let's face it, we all have to learn from someone).

We had a problem in Tumut as small as it is, and we were very fortunate that local VKs here came forward and helped us, and we now have a good Amateur Radio Club.

I am not trying to excuse anyone on any side, I am just feeling glad that our local VKs came forward when they did to help us on to a radio career.

Yours faithfully,
Butch Chapmen. ■

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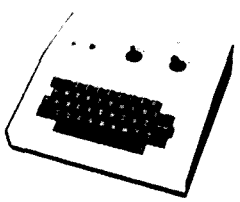

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Features:
4 speeds (60, 66, 75, 100 wpm)
Built-in AFSK with 3 shifts (170, 425, 850 Hz)
Automatic CR & LF at end of 64 or 72 character line
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Built-in T.U. with 3 shifts (170, 425, 850 Hz)
32 character x 16 line video output with scrolling
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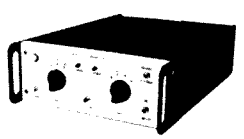

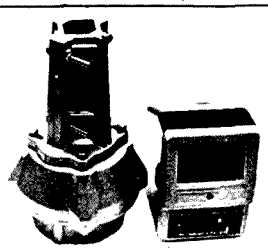

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Constructed for long trouble-free operation. 200 kg vertical weight capacity. Extra heavy duty disc brake that prevents wind-milling.

NEW Model DX-555 Counter-Generator

Generator:
440 kHz to 30 MHz in 3 ranges.
Output displayed on counter and available at back on rear panel 600 Hz modulation for AM receivers.

Counter:
5 digit display, 7 digit readout capability. 10 Hz to over 30 MHz (250 MHz with prescaler). Input level 20m Vrms to 5 Vrms (Prescaler 200m Vrms to 2 Vrms). Base oscillator beats directly against WWV.

NEW COUNTER-GENERATOR
Two vital pieces of test equipment in one.

LINEAR AMPLIFIERS

SCS: HF3-100L2, 3-30 MHz bi-linear amplifier.
SCS: 2M10-80L, 144-148 MHz, FM/SSB linear amplifier.
METRON: MA1000, all solid state, 1 kW amateur band linear amplifier — lightweight, compact and rugged.
YAESU MUSEN: FL-2100B, 80-10m linear amplifier.

ANTENNAS:

HUSTLER: 4-BTV — vertical trap antenna.
HUSTLER: Mobile vertical trap antenna (80-10m).
HUSTLER: G6-144A, 6 dB gain base colinear.
HUSTLER: CGT-144, 5.2 dB gain mobile colinear trunk-lip mt.
HUSTLER: BBLT-144, 5/8 mobile with trunk lip mount/spring
CUSHCRAFT: ATB-34, 4 element beam, 10-15-20m

RF PREAMPLIFIERS FOR 3-30 MHz BAND:

Model SX-59 for use with transceivers.

SPECIFICATIONS:
Frequency range 3-30 MHz in 3 bands; 3-7, 7-14, 14-30 MHz
Gain 20 dB nom. (at 7 MHz), front panel variable control
Attenuator —20 dB attenuation selectable from front panel control.
Imped. 50 or 75 ohm systems, UHF connectors on rear panel

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NEW — NATIONAL: RJX1011 — Unique SSB/CW 160-10m transceiver with digital readout and matching speaker and external VFO.
TRIO KENWOOD: TS520S — SSB/CW, 160-10 metres, with optional digital readout.
TRIO KENWOOD: TS820S, 160-10 metres digital readout.
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AMATEUR BAND BEACONS

VK0	VK0MA, Mawson	63.100
VK1	VK1RTA, Canberra	144.475
VK2	VK2WI, Sydney	52.450
	VK2WI, Sydney	144.010
	VK2RHR, Mittagong	144.120
VK3	VK3RTG, Vermont	144.700
VK4	VK4RTT, Mt. Mowbullan	144 400
	VK4RBB, Brisbane	432.400
VK5	VK5VF, Mt. Lolly	53.000
	VK5VF, Mt. Lolly	144.800
VK6	VK6RTV, Perth	52.300
	VK6RTU, Kalgoorlie	52.350
	VK6RTW, Albany	52.950
	VK6RTW, Albany	144.500
	VK6RTV, Perth	145.000
VK7	VK7RNT, Launceston	52.400
VK8	VK6VF, Darwin	52.200
JA	JA2IGY, Nagoya	52 500
KG6	KG6JDX, Guam	50.110
KH6	KH8EQI, Hawaii	50.104
ZL1	ZL1VHF, Auckland	145.100
	ZL1VHW, Waikato	145.150
ZL2	ZL2MHF, Upper Hutt	28.170
	ZL2VHP, Palmerston North	* 25 520
	ZL2VHF, Wellington	145.200
	ZL2VHP, Palmerston North	145.250
	ZL2VHP, Palmerston North	433 250
ZL3	ZL3VHF, Christchurch	145.300
ZL4	ZL4VHF, Dunedin	145.400

* Despite the letter from Selwyn ZL2BJO correcting the ZL2VHP beacon frequency to 52.250 last month, in speaking to John VK2BHO recently he said the beacon was still operating on 52.500 — so what gives?

As these notes are written the end of 1977 has arrived, with plenty of mixed feelings regarding the type of VHF DX season experienced so far. There seems ample evidence in many areas of VK that something upset the E layers of the atmosphere to produce a long drought on six metres for about a fortnight at least during the middle of December. In VK5 as in many of the eastern States areas the 23rd and 24th December were extremely poor, with practically no openings, some improvement on Christmas Day, and to finally come good again on the 26th, and has been reasonably good since.

Then you strike others like Steve VK3OT at Hamilton who says he has not noticed any great changes from usual, but maybe he has been operating from a more optimum location, with skip going well over the 1000 miles to produce long haul signals but not so much at 1000 miles and down to 600 miles which suits VK5 and many other areas. Anyway, what really matters is how you personally find it.

Graham VK8ZCJ in Darwin writes again this month with a couple of newsy bits to commence. Firstly, Lyell VS6BE in Hong Kong advises he now has spot frequency allocations in our portion of six metres, namely 52.025 for November, December and January, and after that is likely to be 52.100, which is very good, it seems if we are unable to go down to work 'em they will come up to work us!

Graham also mentions receiving the current antenna schedule for KH6EQI beacon viz. 1500 to 2200Z North America; 2200 to 0100Z South America; 0100 to 0400Z North America; 0400 to 0700Z Guam, and 0700 to 1500Z South Pacific. If sufficient reports are received the schedule could be re-arranged to suit openings.

A letter has arrived from Dick Northcott, 3D2CM, C/- University of South Pacific, Box 1168, Suva, Fiji Islands, in which he mentions reading my notes for October 1977, and writes to "let you know there is a station at this end of the world interested and set up for 6 metre operation. I have for the past few weeks been listening and occasionally transmitting but with no result. I have a transverter which has an output of about 30 watts PEP and a 3 el. yagi. I am located in an elevated position which has a clear outlook towards New Zealand, but it is a bit cluttered towards VK.

"Frequency wise I am very limited, my transverter works into an HW 32A which only covers 150 kHz and so have arranged to cover from 52.050 to 52.200 which includes the ZL and VK calling frequencies. Unfortunately I am further limited in not being quite sure of frequency to the last 5 kHz having ground a crystal at 6 MHz and found its frequency to the last kHz or so. Another crystal is coming soon which should solve the frequency problem.

"I would be pleased to arrange skeds by either post or via 20 metres, and am anxious to work into VK".

Thanks for writing Dick, and I hope you make the contact soon. We do appreciate your efforts in trying to make a signal available from Fiji on six metres, and probably those of us better situated with regard to operating aids and facilities do not appreciate what is really involved in getting on the air on VHF in such a remote location. Good luck, the fact that YJ8KM from the New Hebrides has been worked very consistently indicates at least possibilities for you.

George Francis, P29HV/VK3HV sends a lot of information including the high incidence of reception of Australian TV stations, as well as from New Zealand Ch. 1. JAs were worked on 6-10, 7-10 (21 contacts) 1015 to 1312Z; 8-10, 9-10, 27-10. First VK contact since 2-7 came on 7-11 to VK4RR, VK4JH and then to Barry VK2ZAY. First real taste of interstate Es DX after 9 months of residence occurred on 17-11 when he contacted VK4ZRQ, VK7DA, VK7ZIF, VK2BXT and heard VK3AMH. During this opening 0620 to 0815Z, Ch. 0 from Brisbane, Wagga and Melbourne were watched, as well as TV from Auckland and Gisborne, N.Z.

Things were relatively quiet until an unexpected opening on 12-12, the day starting off with Brisbane Ch. 0 at 2210Z, the first JA1 heard at 0340 patchy working ZL4LV and ZL3AAN, they came up quickly in signal strength at 0608 enabling him to have 5 x 9 de JA1, 2, 3, 4 and 6, until a quick fade out at 0750Z, 23 QSOs. During this opening George heard the JAs working VK2, 3, 5 and 7 between 0630 and 0730Z. He suggests this opening came as a surprise to both the Japanese and Australian operators.

George also includes copies of a number of letters from JA stations, and the following are extracts from them which could be of interest to readers. Firstly, Jun JI1HHX is very active on 6 metres, and lists the following stations in the Pacific area as active on 6m: HL9WI, KL7FBI, JD1YAA (Marcus Is.), JD1AIZ (Bonin Is.), VS6BE, VS6DA, KG6RO (Saipan Is.), KG6DX, KG6APP, KG6JDX, KG6JIH, KH6HI, KH6IAA, WB5LBJ/DU6, KH6IMH/DU2, FO8DR, KC6CW. He also lists JD1YAA on Marcus Is. as having a beacon on 50.110.

Hatsuo JA1VOK mentions in his letter that numerous stations in Japan run from 10 to 50 watts with 5 to 8 el. yagis, 10 to 20m high. He also mentions receiving a letter from FO8DR in Tahiti who operates on 50.100 every day and had worked three KH6 stations by the end of August.

Kazumasa JE1HYR joined JR1SQU, JR1FZZ and JR1FRG in a Dx-pedition to Ponape Is. from 3 to 11-9, and operated under the call sign KC6PO, contacting 142 stations in Guam, Saipan and Japan. At home he uses a TS520 with a transverter using a 4CX250 and 200 watts input.

Finally from George P29HV, I have received a copy of "Garamut", newsletter of the Papua New Guinea Amateur Radio Society, which is very interesting and contains a lot of information. Of special interest to VK and north Queensland operators in particular is the progress being made with a 2 metre repeater for P29, which will probably be operating by the time you read this. Frequency probably will be Ch. 48 146.400/147.000 and the transmitter will run about 10 watts output, in the interests of reliability and to minimise desensitising problems. Deviation about 7 kHz, time out 3 minutes, and MCW ident will run every 5 minutes at low level. Three good sites in elevated positions are being considered at the moment, and antenna experiments are being conducted to find a good and cheap gain antenna, as until enough funds are raised for the purchase of a cavity duplexer, they will have to operate with two separate antennae. Call sign P29RPM.

So it may not hurt you two metre operators in VK4 at least to watch that repeater in P29, additionally, if you do hear it and have 144 MHz gear as well, remember George P29HV monitors 144.100 continuously, looking south, and calls CQ when he receives high band colour TV from Queensland. This has occurred on the evenings of 28-3, 3-9, 9-10 and 13-11, receiving Ch. 6 Mackay, Ch. 7 Townsville, and Ch. 9 and 10 Cairns for several hours at a time, due mainly to ducting across the Coral Sea. It would seem therefore only a matter of time before a two metre QSO takes place between VK4 and P29, and this may well be aided by that repeater!

Looking at 6 metres in general it would seem from this end anyway that there are a few outstanding days this year, such as 13, 19, 26 and 29-11, 2, 3, 4, 26 and 31-12, 1, 2 and 3-1-78. 3-12 seems to stand out from the others due to the extremely wide coverage of contacts available, plus at least two JA openings the same day, followed by another the next day, 4-12. On 3-12 the JAs first arrived around 0320Z continuing until about 0400, then they appeared again about 0615, this time including JR6DQO and JH6TEW, which districts seem to be a bit rare around here. It was a good day because even I was able to work VK1 to VK8 inclusive, ZL1, JA1, JA2, JA3and JA6 areas.

Geoff VK3AMK in a letter agrees with all the above, with only slightly varying times for the JA openings, but the areas worked in VK3 and VK7 differed at times, not all stations and areas being available across the continent. Ken VK3AKK worked 18 JAs which included JA0 and JA7 which Geoff could not hear, also Ken worked JA8EXN which was his first JA8 in more than 70 JA contacts, and believed to be the first to be worked from VK3 since Ch. 0 commenced.

The second Japan opening the same day was not heard by Steve VK3OT, but by Geoff VK3AMK and here in VK5. And it seems some call signs are now becoming familiar from Japan, apparently being the most keen, and keeping a good ear on the band e.g. JA1LZK, JA2DDN, JA2BZY, JA1RJU, JA1VOK, etc.

Geoff also remarks on the incredible number of stations which continue to use 52.050 after establishing contact, so that portion of the band becomes hopelessly blocked. The message is obvious!

Robert VK3AUR writes to support the campaign to regain 50-54 MHz, and offers a number of interesting thoughts. I also want to thank Geoff VK3AMK for an extensive letter outlining a number of ideas on the same subject — thanks Geoff, they are filed temporarily! Anyway, back to Robert, who takes both the Melbourne and Adelaide 2 metre ops. to task for lack of interest in the band — remaining mostly on repealers — this extract from his letter is good . . . "many only use repealers, working their 'DX' the easy way. I personally get quite upset to hear Mt. William Ch. 7 clogged with VHF DX experts working Melbourne to Adelaide, expounding on the virtues of this or that black box, and generally patting themselves on their collective backs, while a few dyed-in-the-wool real VHF operators call vainly towards Melbourne or Adelaide (beacons running 20 dB SN or better) to nil response except from one or two regulars." The cap will fit those with the correct head size

Robert reports a rather exclusive 6 metre opening to him on 6/11 from JA when he heard many signals and worked JR3KRK and JR3AKY during the 10 minutes the opening lasted. Roy VK3AXV who is 90 miles away heard nothing, and it appears no one else did. Exclusive job!

Although Robert calls the following "bitching" and is concerned to a degree he has written it, I feel there is surely a message here, which I think you, as an amateur, should read at least twice, not once, and digest, some of the thoughts may be applicable to you.

"Not many amateurs seem to be interested in developing their stations these days, black boxes have adedd to VHF/UHF activity, but to the detriment of DX.

"(a) To name but one rig, the IC202 has poor overall noise figure, and the addition of a PA means big mouth, little ears.

"(b) From my own experience, home made 'long yagis' don't as a rule exhibit the gain claimed. Enter gain measuring contests and observe red faces from some who have learnt the lesson.

"(c) Lousy co-ax e.g. ex disposals, yellowing dielectric.

"(d) Clogging call frequencies with local chatter, and failing to leave at least a 3 second break between overs.

"(e) Not bothering to listen with attenuator (sorry, beam) pointed in a useful direction, at least *line it up on a worthwhile point.*

"(f) Lack of interest in coming on the band!

"If 10 watts into a non-directional antenna (VK3RTG beacon) in a not too brilliant location in Melbourne produces 10 dB SN or better 180 miles away, logic dictates that 3 watts into a 10 dB gain antenna should equal or better that performance, depending of course on your own location. It's not being done. The band has to be really open to hear or be heard except for a few really dedicated stations, who go to the trouble *of making* sure their station *is* efficient.

"I don't suggest that vast amounts of money be spent, but a 2N310 pre-amp costs about $5, and makes a world of difference. Sorry for the bitch, but it's most disheartening especially when there is so much pressure from outside interests who would take our 144 and 432 MHz bands in a flash if they could lay their hands on them."

"And just to keep some happy, I'm not really against black boxes, I had a beaut OSO with Jim VK4ZMJ in Bundaberg for about two hours on 6-11 as *Jim drove around* on his motor cycle using an IC502, hand held. At times his signal peaked to S9+. He had a ball!"

Well Robert, I don't think anyone will be too snakey with you, probably what you have said is fact in many circumstances. I can support you in saying just how much it means to spend some time (and money) on upgrading an antenna system. For many who have visited my QTH will testify, I don't live in a good VHF area, so I work hard for all I get in the way of contacts, especially on 144 and 432 MHz. *However, at* the end of November I finally was able to place in position my two recently constructed 16 element yagis for 144 MHz, spaced 14 feet apart, with the top yagi of the pair 88 feet high. Proper matching baluns were used, and a mast head pre-amplifier fitted for receiving — this can be switched in and out of circuit as required — and the improvement in results over the original 8 element yagi at 57 feet (which is still in position for evaluation purposes) is staggering to say the least, particularly when the amplifier is used. I can now receive as good a report as I can give in return, and it makes me feel good for the first time for years. The next thing is to find the time to make good use of it, but I do believe that if one makes a worthwhile attempt to upgrade equipment, there is more likelihood of it being used *often because* results will be more rewarding on a greater number of occasions than with a mediocre assembly. My next move is to do much the same for 432 MHz.

Steve VK3OT has written with some interesting pars. He adds further to the fantastic opening all over Australia and New Zealand on 3-12. VK3 worked ZL1, 2, 3 and 4 that day. YJ8KM worked first ZL2 ever for number 1 QSO YJ to ZL. VK9NI working into Sydney on 29-11, though appears not to have been heard much since.

On 20/11 TV channel from Madan, Indonesia, sound on 53.75 AM was into Western Victoria for six hours at 5 x 9+. Witnessed also by VK3AMK and VK5SV over phone. Steve worked Ed VK8ZER/6 for first 6 metre QSO with Giles, WA at 0430Z 52.050 on 17-12. Ed is now QRT and will be taking up residence in Townsville shortly.

Steve is not very pleased at the prospect of a 100 kW Ch. 5A station about 15 miles north of his Hamilton QTH in 1980. Exit all Western VK3 contacts on 2 metres, severe restrictions probably will spell the end of 2 metre contacts across the border between VK5 and VK3 and VK7 — still, it's an easy way to ease the amateurs off 144, vested interests will be happy, more money for licence revenue — it's the thin edge of the wedge, you see! Hugh *VK5BC reports* local Ch. 5A causes severe disruption to low end of 2 metres. Ask John VK2BHO what his Ch. 5A does to him on 144 MHz?

John VK7JV confirms that Greg VK7KJ worked KH6NS awhile back, date unknown, reports were 5 x 7 sent and 5 x 4 received. We all offer our congratulations to Greg. And of course, VK7 have been really given the royal treatment this year, with JA openings on 6 metres, on 13-11 for 3 hours, with some stations working nearly 40 JA stations. JAs back again on 14-11 and 3-12 etc. etc. Not to be outdone, 144 MHz opened to VK7 on 13-11 when David VK5KK worked VK7ZAH and VK7ZIE with distances around 750 miles, via an inversion.

I notice an "In Memoriam" notice in the WA VHF Group News Bulletin for Nov/Dec which reads: "Oscar 6 *officially died on orbit* number 21405 on 15-6-77 after failing to respond to ground command signals. It was launched on 15-10-72, its anticipated life-time then was about 1 year. Well done, Oscar 6. R.I.P." Indeed well done.

A few snippets from my note book. Tony VK6BV in Kalgoorlie was noted working ZLs on 6 metres early December, that's a long haul . . . reported in Ham Radio Sept. 1977 a 5000 km contact on 144 MHz across the Atlantic between Brazil or Venezuela and the Ivory Coast of Africa, that's also a *mighty long* haul, and will no doubt *eclipse* the terrestrial record for that band if verified. I will obtain details later . . . There have been quite a number of good 144 MHz openings between Albany and Adelaide, 10-12 VK6XY, VK6BE and VK6KJ all 5 x 9+, VK6XY and VK6WG also on 432.1 5 x 9, and on 1296.12 MHz David VK5KK had a contact extending over 1½ hours with his 3 foot dish being supported on the back fence by father VK5SV, signals 5 x 6 . . . Graham VK8ZCJ has passed his CW . . . Wally VK6WG had his VHF tower struck by lightning on 22-12, damage to aerials, but not a lot of equipment damage I hear . . . YJ8KM heard working VK3OT on 24-12 . . . 144 open to Albany on 26-12, many stations worked in VK5 and VK3, Bob VK6BE heard Charles VK3BAR on 144.1 at 1215Z, 144 open intermittently all day . . . Ken VK6ZFQ on Koolan Is. off NW coast of WA has worked all JA districts on 6 metres in the year he has been there . . . VK8ZGF Alice Springs copied TV Ch. 4 on 27-12 at 0425Z good signals, Cr. 3 from somewhere snowfree.

Finally, two things. Those requiring QSLs for contacts with YJ8KM and VK9NI should send their QSL with SA envelope to Steve Gregory, VK3OT, P.O. Box ZZ, Hamilton, Victoria.

Secondly, those lull call amateurs who send CW on the VHF bands should give consideration to slowing down their speed of sending if they want more contacts. Please bear in mind there are quite a few limited licensees with a knowledge of CW, particularly as some also now have N calls, and 15 to 20 w.p.m. CW is not called for on VHF when caling CQ. If you make contact with a good CW operator then use the speed which is most satisfactory to both operators, but KEEP THE SPEED DOWN when sending your call sign during a CQ call. Anyway, it's long been proved through EME contacts that high speed CW has little use for marginal contacts through noise and with the fading characteristics of sporadic E VHF, and on 144 and 432 MHz a marginal CW reader is more likely to persevere with a weak CW signal if he has a chance of deciphering it, he won't spend long with a 15 to 20 w.p.m. signal if he can't copy better than 10. Give it a thought boys, the above might make some sense. I know it is not so easy for a practised operator to send rather slowly, but don't worry, the guy at the other end will sort it out!

Thought for the month: "A different world cannot be built by indifferent people".

The Voice in the Hills.

STOP PRESS

1-1-78.—Big six metre opening, VK5 worked VK1, 2, 3, 4, 5, 6, 7 and 8. *0900* 144 MHz opened up to VK3, with Eric VK3BEH 5 x 9+, then to VK3OT, VK5DK and VK5NC (Mt. Gambier), Roy VK3AXV, then all repeated again. Steve VK3OT watching TV from Albany.

2-1-78.—144 MHz continues with excellent signals from VK5 to VK3OT, VK3BJ, VK3LT, VK3AXV, VK3ZHY, VK3BEH, and several others, plus Mt. Gambier VK5DK, VK5NC, VK5MC, VK5ZCH etc. Michael VK3ZQV about 100 miles east of Melbourne at Carrajung 5 x 9+ at times.

432 MHz also open. David VK5KK worked Michael VK3ZQV with signals 5 x 8/9 both ways. Michael also worked by Peter VK5ZPW, and Keith VK5MT. Not sure who really worked who on 432 at this stage, but I know Keith VK5MT, Roger VK5NY were also in it from this end and Les VK3ZBJ at least from the VK3 end.

To cap off two nights of really good VHF/UHF DX I heard Garry VK5ZK working Ed VK8ZER/5 and Mike VK8ZMA/5 both at Loxton on the River Murray on 144.1. At 1255Z I also worked them, they were using an FT221 and an IC202 to a vertically polarised antenna, and both pieces of equipment were contacted here. Mark VK5ZVQ then worked them.

It was also noted during the 2 metre opening on 2-1-78 that Col VK5RO from his super location at Woodville worked Mike VK3LT in Melbourne, using his IC202 and whip antenna. Not a bad effort Col.

Also 2-1-78, Kerry VK2BXT (ex-VK5SU) worked Kevin VK7ZAH, Daniel VK7DA and Joe VK7JG on 144 MHz. 6 metres was very strong into VK2 at the time. ZLs into VK3 at the same time.

It was almost VK5 to VK4 on 144 MHz bn 1-1-78, when the interrupted carrier from Rod VK4ZRQ was monitored at the VK5LP establishment, and relayed back to Rod on 6 metres. 144 only stayed open for a minute or so, thus no contact resulted, there wasn't time to get organised once Rod had recognised his signals.

Looks like the "season" did come good for a while after all.

VK5LP ■

SPECIAL ANNOUNCEMENT
NEW WORLD 432 MHz RECORD?
On 11-1-78 Les VK3ZBJ and Wally VK6KZ/8 near Albany, made contact on 432.125 MHz. Reports were 5 x 3 both ways, distance 2470 km.

The current Australian record is 776 km between VK5ZKR and VK7ZRO and the current World Record is 1940 km. Les has previously worked 2430 km on 432 MHz but has not made a claim. How about making an application this time, fellows? Congratulations for a fine effort Wally and Les. ■

C.A.R.E.

(Community Amateur Radio Events)

In world-wide radio magazines, one frequently reads of the splendid work done by amateur radio operators in emergencies relating to earthquakes, fires, sickness, lost persons, air/road/rail accidents etc. Such performances are almost a daily occurrence in the USA, but in Australia, fortunately, the need is seldom presented. But when it is, VK amateur radio operators too, can rise to the occasion.

There has recently come to our notice, rather belatedly, unfortunately, details of the splendid work done by Reg Ross VK3YD, during an emergency involving the Government radio station at Casey Base in the "deep south". Reg happened to be around at the "right time" — a time when radio communications failed between Casey Base and the Antarctic Division's Headquarters station in Melbourne. According to subsequent letters from the Director of the Division, and the OIC Casey Base, Reg won appreciative comment for "assistance given by VK3YD in the re-establishment of communications between both stations following the breakdown at Casey (station VNJ)."

It is understood that at the time of the emergency, Reg was operating SSB on 14 MHz.

Well done, Reg VK3YD.
Submitted by Eric Trebilcock. ■

QSP

BRIEFS

During a *meeting* between DARC and Federal German Post Office officials the W. German administration agreed to a change in official classification of the amateur radio service from "Private operation" (which includes CB) to "Technical Experimentation Operation". This decision will be put to the next meeting of the CEPT sub-group concerned. JARL has submitted an amateur radio service WARC 79 paper to their P. and T. Ministry.

Best wishes to the Radio Society of Sri Lanka upon celebrating its 25th anniversary.

AFTERTHOUGHTS

Please amend QSL information on page 54 of December issue — 3rd column: Tasmania Divisional Information:

QSL Bureau Postal Address:
G.P.O. Box 371D, Hobart 7001

QSL Manager:
Chas. Harrison VK7CH, 95 Wentworth St.,
Bellerive 7018.

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CA3018	CD4028	CD40098	LM382N	MC14553	UA757
CA3023	CD4029	CD40174	LM387N	MC1648P	ULN2208
CA3028A	CD4030	CD40175	LM395K	MC4044P	ULN2209
CA3035	CD4031	CD40192	LM555CN	OM802	ULN2111
CA3039	CD4035	CD40194	LM555H	SAJ110	74C00
CA3046 LM3046	CD4040	CD40195	LM556N	SAK140	74C02
CA3053	CD4041	DM8097 1.90	LM562B	SD305DE	74C04
CA3059	CD4042	HEF see "CD"	LM565N	SD306DE	74C10
CA3060	CD4043	LH0070	LM566CN	SL415A	74C14
CA3079	CD4044	LM114H	LM567CN	SD425A	74C20
CA3080	CD4045	LM301AN	LM709N	SL437D	74C85
CA3081	CD4046	LM301CN	LM710CN	SL440	74C86
CA3082	CD4047	LM304H	LM710CH	SL442	74C90
CA3083	CD4049	LM305AH	LM723H	SL447	74C154
CA3086 LM3086	CD4050	LM307N	LM723N	SL449	74C160
CA3089E	CD4051	LM308V	LM725N	SL610C	74C162
CA30900	CD4052	LM309K	LM733CH	SL612C	74C174
CA3091	CD4053	LM310N	LM733N	SL613C	74C192
CA3120E	CD4066	LM311A	LM741CH	SL620C	74C901
CA3127E	CD4068	LM311H	LM741CN	SL621C	74C925
CA3128E	CD4069	LM312H	LM747CH	SL623C	80C95
CA3130T	CD4070	LM317K	LM747CN	SL622C	MISC
CA3140T	CC4071	LM318N	LM748CN	SL624C	AL5352
CA3600	CD4072	LM319H	LM1303N	SL630C	GL4484
CD4000	CD4075	LM319N	LM1310N	SL640C	GL5253
CD4001	CD4076	LM320K	LM1458N	SL641C	OL31
CD4002	CD4078	LM320T	LM1488N	SL645C	RL4484
CD4006	CD4081	LM322N	LM1489N	SL901B	RL5023
CD4007	CD4082	LM323K	LM1496N	SL917B	FND357
CD4008	CD4085	LM324N	LM1808N	SL1310	FND500
CD4009	CD4086	LM325N	LM3028 CA3028	SL3046	9001
CD4010	CD4093	LM326H	LM3046	SP8505	9368
CD4011	CD4502	LM339N	LM3086	SP8515	9601
CD4012	CD4503	LM340K	LM3900	TAA300	NSN71
CD4013	CD4510	LM340T	LM3905	TBA570	NSN74
CD4014	CD4511	LM349N	LM3909	TBA700	T1L306A
CD4015	CD4514	LM358N	MC1035P	TBA810A	11C90
CD4016	CD4515	LM370H	MC1312P	TB1750A	95H90
CD4017	CD4516	LM371N	MC1314P	TCA220	2102-2
CD4018	CD4518	LM372H	MC1315P	TCA290A	2513N
CD4019	CD4519	LM372N	MC1350P	TCA420A	S1883
CD4020	CD4520	LM373N	MC1351P	TCA580	S50242
CD4021	CD4528	LM374N	MC1454G	TCA730	MA1002
CD4022	CD4539	LM375N	MC1458 LM1458	TCA740	7805CP
CD4023	CD4555	LM377N	MC1468L	TDA1005	7824CP
CD4024	CD4556	LM379	MC1488 LM1488	UAA170	
CD4025	CD4720				

In some cases pin for pin substitutes will be supplied.

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7400	7483	74S258	74LS174	BD238	2N3566
7401	7485	74S196	74LS175	BD437	2N3568
7402	7486	82S23	74LS181	BD438	2N3569
7403	7489	8281A	74LS191	BF173	2N3638
7404	7490	82S90	74LS192	BF180	2N3638A
7405	7491	74LS00	74LS193	BF194	2N3642
7406	7492	74LS01	74LS194	BF200	2N3643
7407	7493	74LS02	74LS195	BFY50	2N3694
7408	7494	74LS03	74LS196	BFY51	2N3731
7409	7495	74LS04	74LS221	BPX25	2N3819
7410	7496	74LS08	74LS253	BSX19	2N3866
7411	74100	74LS09	**SEMICONDS**	BU126	2N4037
7413	74107	74LS10	AC125	MFE131	2N4249
7414	74121	74LS11	AC126	MJ802	2N4250
7416	74122	74LS13	AC127	MJ2955	2N4355
7417	74123	74LS14	AC128	MJ4502	2N4356
7420	74132	74LS20	AC132	MPF102	2N4360
7422	74141	74LS21	AC187	MPF103	2N5245
7425	74145	74LS22	AC188	MPF104	2N5457 MPF103
7426	74150	74LS27	AD149	MPF105	2N5458 MPF104
7427	74151	74LS28	AD161/62	MPF106	2N5459 MPF105
7430	74153	74LS30	AS322	MPF121	2N5485 MPF106
7432	74154	74LS32	AT1138 2N301	MPF603	2N5590 MPF603
7437	74157	74LS37	ASY17	TIP31C	2N5591
7438	74160	74LS38	BC107	TIP32C	2N6027
7440	74164	74LS40	BC108	TIP120	2N6084
7441	74165	74LS42	BC109	TIP125	BA102
7442	74174	74LS73	BC177	TIP141	OA47
7445	74180	74LS74	BC178	TIP2955	OA90
7446	74181	74LS75	BC179	TIP3055	OA91
7447	74185	74LS78	BC182	TT800 2N4037	5082-2800
7448	74190	74LS86	BC212	TT801	40440 2N3731
7450	74177	74LS90	BC327	2N301 2N2869	40637A
7451	74191	74LS92	BC337	2N706A	40673
7453	74192	74LS93	BC547	2N918	40822
7454	74193	74LS95	BC548	2N2222A	40841
7460	74194	74LS109	BC549C	2N2646	BZX61
7470	74195	74LS113	BC559	2N2869	BZX79
7472	74196	74LS114	BC639	2N2904A	BZX70
7473	74S00	74LS151	BC640	2N2905	BZY93
7474	74S10	74LS153	BD131	2N3053	BZY91
7475	74S20	74LS157	BD132	2N3054	PA40
7476	74S74	74LS163	BD139	2N3055	PB60
7480	74S112	74LS163	BD140	2N3564	MEL12
7482	74S251	75LS164	BD237	2N3565	FCD820

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8" x 3" S.S.
6" x 6" S.S.
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12" x 4" D.S.
12" x 12" D.S.
6M CONVERT
2M CONVERT

DIP SOCKETS

8 PIN
14 PIN
16 PIN
24 PIN
40 PIN

TOROIDS, etc.

IRRESPECTIVE OF MIX

T-12
T-25
T-37
T-50
T-68
T-80
T-94

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5200/8PLB
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ASTRO - 200 digital solid state 200 W.P.E.P. $1000

TRIO KENWOOD new model TS-520-S 160 to 10 M, with optional digital readout connected externally. Can be used as a frequency counter self contained separately powered by 12 volt DC. $700

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TRIO KENWOOD model TS-820 AC only 160 to 10 M. $930

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ICOM

VHF TRANSCEIVERS SSB

ICOM model IC-202 2 M SSB portable transceiver 144-144.4 MHz $215

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YAESU MUSEN model FT - 301 - S $660

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YAESU MUSEN model YC-500-E-S-J P.O.A.

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(MHz) 144-148 PA10– 80BL 80 OUTPUT (watts)
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Model CDR Ham-11 for all hf beams except 40 M $240

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All models rotators come complete with 230-volt AC indicator-control units.

6-conductor cable for KR-400-500 65 cents per metre

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PL-259 $1.20
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Twin meter model: Y.M. - I.E. 3.5 to 145 MHz prof quality $ 28

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CRYSTAL FILTER, 9 MHz, similar to FT-200 ones. With carrier crystals. $ 35

APOLLO 3 position co-ax switches $ 15

All prices quoted are net SYDNEY, N.S.W., on cash-with-order basis, sales tax included in all cases, but subject to changes without prior notice. ALL-RISK INSURANCE from now on free with all orders over $100; small orders add 50c for insurance. Allow for freight, postage or carriage; excess remitted will be refunded.

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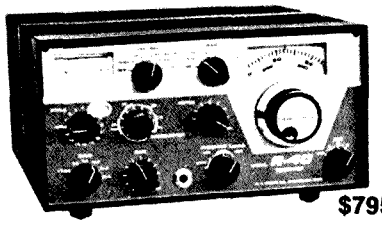


$795

Drake R-4C

Solid State Linear permeability-tuned VFO with 1 kHz dial divisions. Gear driven dual circular dials. High mechanical, electrical and temperature stability.

Covers ham bands with crystals furnished. Covers all of 80, 40, 20 and 15 meters, and 28.5-29.0 MHz of 10 meters.

Covers 160 meters with accessory crystal. In addition to the ham bands, tunes any fifteen 500 kHz ranges between 1.5 and 30 MHz, 5.0 to 6.0 MHz not recommended. Can be used for MARS, WWV, CB, Marine and Shortwave broadcasts.

Superior selectivity: 2.4 kHz 8-pole filter provided in ssb positions. 8.0 kHz, 6 pole selectivity for a-m. Optional 8-pole filters of .25, .5, 1.5 and 6.0 kHz bandwidths available.

Tunable notch filter attenuates carriers within passband.

Smooth and precise passband tuning.

Transceive capability; may be used to transceive with the T-4X, T-4XB or T-4XC Transmitters. Illuminated dial shows which PTO is in use.

Usb, lsb, a-m and cw on all bands.

Agc with fast attack and two release times for ssb and a-m or fast release for break-in cw. Agc also may be switched off.

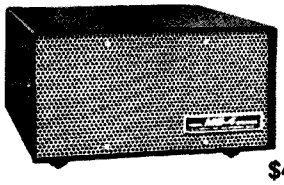
New high efficiency accessory noise blanker that operates in all modes.

Crystal lattice filter in first i-f prevents cross-modulation and desensitization due to strong adjacent channel signals.

Excellent overload and intermodulation characteristics.

25 kHz Calibrator permits working closer to band edges and segments.

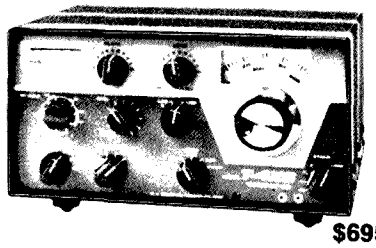
Scratch resistant epoxy paint finish.



$47

Drake MS-4

Drake MS-4 Matching Speaker for use with R-4, R-4A, R-4B and R-4C Receivers. (Has space to house AC-3 and AC-4 Power Supplies).



$695

Drake T-4XC

Solid State Linear permeability-tuned VFO with 1 kHz dial divisions. Gear driven dual circular dials. High mechanical, electrical and temperature stability.

Covers ham bands with crystals furnished. Covers all of 80, 40, 20 and 15 meters, and 28.5-29.0 MHz of 10 meters.

Covers 160 meters with accessory crystal. Four 500 kHz ranges in addition to the ham bands plus one fixed-frequency range can be switch-selected from the front panel.

Two 8-pole crystal lattice filters for sideband selection.

Transceives with the R-4, R-4A, R-4B, R-4C and SPR-4 Receivers. Switch on the T-4XC selects frequency control by receiver or transmitter PTO or independently. Illuminated dial shows which PTO is in use.

Usb, lsb, a-m and cw on all bands.

Controlled-carrier modulation for a-m is compatible with ssb linear amplifiers.

Automatic transmit-receive switching. Separate VOX time-delay adjustments for phone and cw. VOX gain is independent of microphone gain.

Choice of VOX or PTT. VOX can be disabled by front panel switch.

Adjustable pi network output.

Transmitting agc prevents flat-topping.

Meter reads relative output or plate current with switch on load control.

Built-in cw sidetone.

Spotting function for easy zero-beating.

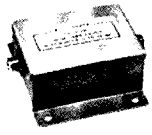
Easily adaptable to RTTY, either fsk or afsk.

Compact size; rugged construction. Scratch resistant epoxy paint finish.

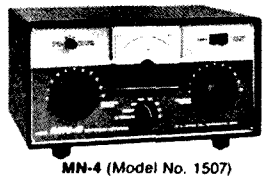
High Pass Filters for TV Sets

provide more than 40 dB attenuation at 52 MHz and lower. Protect the TV set from amateur transmitters 6-160 meters.

Drake TV-300-HP
For 300 ohm twin lead **$13**

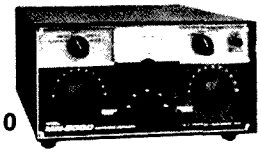


Drake TV-75-HP
For 75 ohm TV coaxial cable; TV type connectors installed **$17**



$165

MN-4 (Model No. 1507)



$310

MN-2000 (Model No. 1509)

Drake MN-4 & MN-2000 Matching Networks

• **Integral Wattmeter** reads forward power in watts and VSWR directly; can be calibrated to read reflected power • **Matches** 50 ohm transmitter output to coax antenna feedline with VSWR of at least 5:1 • **Covers** ham bands 80 thru 10 meters • **Switches** in or out with front panel switch • **Size:** 5½"H, 10¾"W, 8"D (14.0 x 27.3 x 20.3 cm), MN-2000, 14⅜"D (36.5 cm).
• **Continuous Duty Output:** MN-4, 200 watts; MN-2000, 1000 watts (2000 watts PEP) • **MN-2000 only:** Up to 3 antenna connectors selected by front panel switch.

T-VI Filters

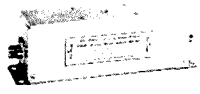
Low Pass Filters for Transmitters

have four pi sections for sharp cut off below channel 2, and to attenuate transmitter harmonics falling in any TV channel and fm band. 52 ohm. SO-239 connectors built in.

Drake TV-3300-LP

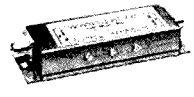
1000 watts max. below 30 MHz. Attenuation better than 80 dB above 41 MHz. Helps TV i-f interference, as well as TV front-end problems. **$32**

Drake TV-5200-LP



200 watts to 52 MHz. Ideal for six meters. For operation below six meters, use TV-3300-LP or TV-42-LP **$32**

Drake TV-42-LP



is a four section filter designed with 43.2 MHz cut-off and extremely high attenuation in all TV channels for transmitters operating at 30 MHz and lower. Rated 100 watts input.

$19

Prices shown include Tax

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1977 REMEMBRANCE DAY CONTEST RESULTS

WINNER — VK1 DIVISION

	a	b	c	d	e
VK1	35	144	1308	15847	111357
VK6	138	581	1975	60287	105739
VK5/VK8	238	907	1880	79778	89838
VK7/VK0	46	251	1460	22179	89823
VK4	170	851	1753	55944	67492
VK3	91	2219	942	27607	13383
VK2	138	2383	875	25914	11751

a—Logs received
b—Licences
c—Average top 6 logs
d—Total points from sections (a), (b), and (c)
e—Trophy score.

In the following detailed scores, the first figures are the points scored and the second are contacts made.

VK1 PHONE

1GB	1521	520	1TH	116	44
1PM	1125	326	1ED	104	25
1KP	1056	310	1ZCB	94	92
1 `C	971	344	1VP	93	85
1 CA	913	372	1ZPC	90	83
1 K	823	307	1ZDF	90	83
fFT	746	235	1VW	81	77
1TD	717	202	1EP	59	59
1RH	675	237	1JE	56	14
1TR	560	200	1ZAR	41	39
1QJ	484	153	1DR	27	7
1LF	395	123	1YR	24	24
1NE	395	126	1CR	11	11
1JJ	147	145	1ML	11	11
1JN	124	118	1ZJR	6	6

VK1 CW

1PG	1140	158	1VK	246	30

VK1 OPEN

1AOP	2034	622	1WI	232	135
1AD	779	233			

VK2 PHONE

2BAM	753	417	2NBQ	113	58
2AGF	718	360	2BSG	108	70
2BDT	705	360	2AGS	102	51
2LE	690	403	2BCT	98	56
2AHV	664	340	2ACH	90	52
2BGF	615	345	2AKH	90	57
2BGI	595	395	2NEP	90	41
2NDL	506	290	2ACK	88	45
'W	453	273	2BUC	87	52
₄P	450	246	2SP	85	51
2BGL	377	225	2APU	84	46
2AJF	360	199	2NDP	80	37
2QC	359	170	2SB	79	29
2BDB	343	230	2AQ	78	43
2APP	329	150	2CS	78	40
2BJN	314	154	2NCD	77	45
2ALZ	318	151	2UJ	74	45
2BJN	314	154	2ASH	70	19
2BKE	274	164	2QV	59	43
2BPT	241	131	2BMD	59	18
2BMX	228	110	2JQ	56	42
2ACB	227	128	2AIB	55	54
2PT	220	87	2BJK	53	18
2ABC	214	113	2WW	51	23
2ZX	212	108	2BSB	47	35
2AKO	210	123	2RX	46	21
2EY	202	140	2CU	44	19
2NIP	195	123	2ZSG	44	44
2AJL	194	103	2ACZ	42	18
2PF	168	100	2ASE	42	25
2ACT	162	101	2ZIA	39	39
2AJH	160	75	2AWX	37	37
2WT	158	75	2NFA	36	18
2JS	134	61	2AGZ	34	25
2LF	129	70	2BAD	33	22
2ZVB	129	87	2ZFF	30	30
2AXU	127	75	2BHD	29	13
2NGM	125	84	2ZOK	27	27
2BDN	123	82	2IJ	25	10
2AEC	25	17	2ASJ	10	7
2MJ	24	18	2AHH	9	9
2BET	23	9	2YJ	8	8
2ZVN	23	23	2AWF	8	8
2NJY	21	17	2YEH	8	8
2CM	19	17	2FD	7	7
2MR	19	17	2NCU	7	6
2BLI	18	18	2YCM	7	7
2NGG	18	13	2OH	6	6
2ZIC	16	16	2AND	6	6
2BUV	14	7	2ZOC	6	6
2NDC	14	5	2AZD	5	5
2NKT	14	5	2NJN	5	5
2NCH	13	9	2ZNW	5	5

VK2 CW

2CX	888	227	2IC	178	41
2DI	754	202	2BBW	122	33
2EL	732	187	2VM	88	25
2QL	580	122	2JY	80	29
2AQF	482	116	2HC	70	20
2XQ	466	112	2ZC	40	10
2IV	320	70	2JM	20	10
2GT	314	87	2RJ	16	7
2WE	188	46			

VK2 OPEN

2BO	1108	565	2HQ	145	59
2OO	1017	415	2VA	113	55
2AOA	559	325	2DO	72	40
2PN	452	169	2AAC	71	27
2DA	425	156	2HZ	65	20
2AUX	375	258	2BNW	48	24
2NAW	282	146	2VR	42	30
2BLK	240	100			

VK3 PHONE

3HT	1230	754	3KK	178	100
3BDL	999	637	3NBP	175	100
3WP	921	558	3ZWM	172	173
3ANA	842	553	3ZJ	166	60
3AOZ	840	501	3ZYL	163	163
3ADW	794	445	3AOU	158	122
3OT	745	367	3AIE	155	76
3DF	731	548	3ZUO	148	148
3AKK	684	300	3AGH	140	57
3AFE	641	387	3NAC	133	72
3BBS	622	343	3AAW	130	80
3NDK	608	405	3NDF	123	66
3DS	598	311	3ADP	117	66
3BCK	578	305	3ZI	100	100
3LP	576	292	3OD	94	66
3ANM	570	428	3AOS	77	54
3SM	533	280	3ARS	76	61
3BIR	504	272	3AER	59	40
3ARK	443	240	3BER	53	53
3AYF	392	250	3QG	47	27
3BBH	360	221	3ZPU	46	46
3APZ	348	226	3WQ	42	20
3XF	340	187	3BMV	41	41
3ASN	292	136	3BCH	35	25
3QZ	270	154	3BIT	30	30
3ZTC	255	256	3NCQ	28	10
3ZAO	228	228	3BIS	27	20
3AH	220	127	3AAJ	26	12
3LV	219	107	3KT	24	23
3BCC	217	143	3NZ	12	12
3YQ	211	88	3ZFI	11	11
3BHU	198	201	3ARA	10	6
3WJ	197	115	3ZVI	10	10
3NB	187	709			

VK3 CW

3AYO	318	206	3BDH	252	52
3YK	648	156	3ANJ	148	38
3DG	574	150	3KS	114	30
3FC	516	139	3NAY	114	31
3XB	424	111	3AZT	108	26
3RJ	416	110	3JI	90	23
3VF	338	85	3ABR	90	20
3NK	264	70	3FG	82	23

VK3 OPEN

3WW	820	519	3ASR	262	120
3YF	393	202	3PR	134	50
3BSR	331	152	3AYL	120	55
3AMD	295	107	3NCL	57	34

VK4 PHONE

4YS	1823	749	4BF	111	30
4LP	1513	626	4LK	105	42
3YO/4	1145	418	4GM	103	48
4AVL	1116	488	4QW	102	35
4MW	1107	401	4ABG	102	58
4ADC	1107	548	4TO	95	54
4TE	1070	489	4AET	95	34
4RH	838	256	4LO	93	26
4DO	835	308	4HM	92	36
4ADR	713	304	4AZE	92	32
4ADT	705	302	4NP	91	40
4JP	703	263	4NQ	89	26
4OO	671	260	4EO	88	33
4AEV	654	264	4HW	85	33
4ADA	639	272	4ZLP	76	76
4CI	615	226	4ZIG	66	66
4BW	601	255	4EH	61	61
4PF	599	221	4ZX	59	43
4ADM	562	249	4ZCH	55	55
4NDE	539	183	4NDV	54	24
4AAK	515	200	4ZCE	51	51
4ABJ	502	201	4ZGB	51	51
4BQ	479	183	4ZAF	50	50
4RT	445	160	4ZMC	50	50
4AKT	443	212	4NAW	48	12
4EO	435	168	4ZTV	48	48
4PJ	410	202	4ZGA	46	49
4WIT	387	142	4GS	44	13
4FX	364	129	4IQ	42	40
4YL	358	117	4PL	41	41
4UJ	333	334	4TS	41	20
4NCA	309	122	4ZFR	34	54
4ZIT	292	292	4NAX	33	9
4RP	301	100	4NBZ	32	11
4NAJ	281	120	4ZPP	32	32
4AR	278	91	2CZ/4	31	11
4FU	277	100	4LR	31	9
2RP/4	269	85	4NAB	31	13
4NAK	265	110	4ZJR	30	30
4ZBC	263	263	4BZ	28	6
4APG	262	136	4DH	27	27
4VU	260	131	4MU	27	8
4PU	254	78	4TK	27	8
4ZBV	246	246	4NV	26	26
4KD	242	79	4VS	24	24
4OX	236	75	4ZFA	24	24
4CZ	225	65	4ZMD	21	21
4CY	219	78	4ZPF	20	20
4RA	197	62	4EB	18	18
4RZ	197	71	4ZCV	18	18
4ZSH	194	194	4RG	16	16
4ES	189	51	4TL	16	10
4GI	170	76	4AF	15	5
4NWD	170	77	4ACM	14	14
4CW	165	57	4XV	13	13
4FN	165	81	4PR	12	6
4AMO	163	67	4ZWB	10	10
4LE	149	45	ZL2TKW/ VK4	10	10
4ZRI	145	147	4HS	8	8
4VV	143	110	4ZBH	8	8
4DY	132	60	4MO	7	7
4ZJM	131	131	4OW	7	7
4YT	130	50	4OM	6	6
4ZHW	123	124	4ZWR	5	5
4ZNI	118	118			
4AL	114	53			

VK4 CW

4XA	1408	253	4XJ	302	55
4KX	1336	222	4PN	292	43
4LV	1018	173	4NJ	110	22
4AXJ	404	69	4HH	30	5
4FJ	326	52	4NTW	30	6
4CJ	312	55	4CN	20	7
4ARL	272	50			

VK4 OPEN

4II	2270	668	4LZ	329	119
4HE	2160	681	4LG	308	95
4UX	1343	411	4NAE	298	139
4DT	1268	583	4JH	286	63
4LT	1260	326	4QF	280	103
4AAR	1116	486	4SO	274	89
4YG	1101	381	4HX	242	150
4AGP	948	301	4ABS	164	61
4RF	906	300	4NB	150	59
4WL	830	165	4OK	92	35
4XY	788	210	4RO	69	53
4UG	402	141	4PV	59	41
4UC	485	133	check log		
4AK	366	81	4ABD		

VK5 PHONE

5QX	1807	829	5NJP	186	94
5AAA	1655	666	5ZRA	179	179
5BI	1640	688	5GW	176	81
5GY	1259	535	5EF	174	60
5MM	1066	460	5CW	172	65
5NJ	963	401	5ZAR	172	172
5HI	958	361	5RR	168	82
5MS	956	404	5NLS	168	84
5CHL	939	514	5RY	167	72
5ZK	908	435	5OZ	166	62
5PE	877	421	5WF	164	73
5FD	874	345	5NAC	162	74
5LP	866	347	5ZQ	161	100
5DV	856	428	5HM	154	60
5NX	836	387	5LC	151	61
5ZH	790	345	5ZAT	150	150
5TY	768	374	5ZIC	148	148
5QV	746	292	5ZIM	148	148
5LN	692	300	5SE	147	89
5SH	671	317	5ZLH	146	146
5VT	664	316	5NWG	143	64
5LM	608	236	5ZHS	134	134
5KR	512	339	5QP	130	103
5US	512	248	5BB	129	45
5GL	509	344	5ZRJ	127	128
5JQ	485	311	5ZBC	125	125
5NA	476	232	5NGD	124	47
5VE	468	178	5ARC	121	121
5AIB	461	200	5OC	119	60
5ZE	454	241	5CL	117	71
5NIT	450	213	5NTM	116	56
5BO	446	205	5NUV	115	60
5EJ	436	189	5ZJP	110	110
5GO	417	246	5ZNN	110	110
5NI	405	210	5GF	107	50
5QS	405	308	5ZGP	106	106
5KG	404	300	5WC	105	47
5NN	380	150	5ED	102	41
5ST	369	151	5ZBM	102	102
5ZBI	361	364	5ZAJ	101	101
5RV	355	144	5ZKK	100	100
5NXP	341	192	5ZTG	99	100
5WR	328	137	5QH	97	43
5JD	327	150	5TF	97	40
5ZVQ	324	325	5DH	96	42
5GP	319	149	5RI	94	33
5ZWR	316	316	5RJ	93	34
5SG	311	146	5IM	92	91
5ZT	308	150	5YY	89	30
5ZJG	308	308	5ZAC	89	89
5ACE	302	286	5ZGB	88	88
5DI	299	100	5QW	87	29
5NF	292	120	5XU	87	30
5NBC	288	109	5KH	86	30
5SS	283	100	5TW	79	32
5RX	282	118	5ZSB	78	78
5NPN	279	137	5WH	74	30
5IT	265	100	5DJ	70	30
5NZ	264	111	5DF	67	22
5LL	263	113	5OF	66	66
5ZB	259	103	5EP	63	30
5ZU	253	85	5TH	62	33
5NAH	248	130	5AC	61	20
5DK	247	109	5GM	61	26
5CY	237	90	5ZME	61	61
5ZJB	236	236	5TU	60	60
5BW	233	103	5NIC	60	29
5NRF	227	105	5EV	53	20
5CH	225	82	5LT	51	33
5ZBU	222	222	5NBW	49	31
5GZ	216	92	5WN	49	31
5VV	213	99	5WN	48	30
5ZSA	210	210	5YN	48	16
5ZMH	208	208	5ZR	48	16
5HN	196	95	5ZFJ	48	48
5FL	193	65	5CA	46	20
5LQ	191	62	5GU	44	44
5BG	186	70	5DO	43	14
5LK	42	22	5ZIS	26	26
5ZRF	40	40	5ZPP	22	22
5UA	37	36	5ZAY	18	18
5HW	36	12	5CJ	16	8
5AG	36	12	5CX	16	16
5GJ	34	15	5NY	13	13
5PB	34	17	5ZNJ	13	13
5ZBY	34	34	5IX	11	11
5ZBW	31	31	5ZPD	9	9
5ZBE	27	27	5KT	6	6

VK5 CW

5KL	1100	210	5HO	220	40
5OR	978	188	5NBB	202	46
5LI	838	163	5KU	174	30
5UM	670	150	5KI	168	32
5BN	492	100	5HR	154	29
5AU	310	54	5OR	144	30
5QQ	282	60	5LU	116	25
5MV	272	53	5KY	76	14
5SW	264	47	5TL	40	13
5NLC	230	51	5UE	34	6
5IU	224	50			

VK5 OPEN

5EN	1620	645	5RK	310	92
5WV	1067	450	5TQ	282	124
5IF	909	309	5FH	253	74
5MY	786	277	5ZF	223	88
5OI	781	212	5IP	196	70
5FM	681	180	5JK	127	72
5CV	470	115	5OT	67	22
5PK	432	146	5NLF	47	25
5ZSD	391	383	5ME	37	31
5RG	388	98	5RP	24	20
5RC	378	76	5EU	23	14
5ZCF	367	355			

VK6 PHONE

6AS	2531	700	8NER/6	387	117
6OR	1983	560	6DY	382	133
6TV	1758	520	6NL	363	102
6LK	1657	480	6HU	343	243
6BV	1403	401	6KC	342	87
6JP	1363	404	6DH	339	101
6HA	1327	594	6TP	334	243
6DA	1266	507	6NAO	327	114
6KW	848	284	6NBZ	325	106
6KD	818	238	6RV	316	98
6VP	810	229	6WO	296	101
6LV	701	212	6FP	291	80
6DV	592	214	6ZDE	281	283
6NAY	579	203	6OT	244	76
6ST	539	168	6EB	219	104
6AN	521	271	6BT	213	65
6VW	501	177	6JY	187	90
6WL	478	130	6DZ	182	59
6IW	455	260	6LG	180	157
6AO	451	141	6NC	170	51
6FS	451	128	6DO	168	60
6XD	400	220	6TX	166	48
6DC	394	109	6ZBD	166	169
6SH	391	215			

VK6 PHONE

6NBB	165	67	6ZKY	74	74
6CU	163	158	6TU	73	22
6ZGG	154	154	6AU	70	70
6CB	150	104	6FB	69	34
6NBK	147	54	6JH	67	20
6NAN	145	56	6SR	67	27
6ZHM	139	140	6EW	65	23
6SB	136	36	6EO	57	17
6FM	129	34	6MM	57	58
6NAM	116	48	6ZBB	56	56
6NE	112	35	6CN	52	53
6ZON	111	111	6NAZ	51	24
6GL	103	32	6NAC	43	12
6AV	102	32	6NS	36	25
6QR	100	28	6ZCU	34	34
6XY	99	35	6ML	30	30
6TK	97	25	6AT	29	9
6WG	87	28	6BY	28	18
6LD	86	22	6RO	25	6
6ZFU	86	87	6AWI	20	6
6ZEX	85	85	6KJ	19	19
6RL	84	24	6JA	17	9
6NAE	78	41	6ZKV	17	17
6NAR	77	32	6LM	8	8

VK6 CW

6WT	1302	173	6AJ	818	114
6AO	1254	164	6JF	706	100
6HQ	1252	255	6SM	550	73
6VK	1126	149	6RM	230	32
6RS	822	112	6FI	94	12

VK6 OPEN

6MA	2048	537	6EG	240	50
6HK	1669	508	6RH	231	161
6ED	1661	350	6LP	224	42
6RU	1516	372	6JK	218	78
6YL	1509	630	6NK	211	41
6JX	1331	450	6CR	160	126
6QI	1200	338	6KY	142	115
6CW	1132	420	6LJ	135	88
6IC	986	444	6WI	127	109
6BD	860	263	6WX	116	43
6PH	724	206	6AM	75	21
6ZZ	621	157	6EE	73	62
6BE	609	115	6FH	61	45
6KK	585	166	6GS	61	13
6KR	367	101	6PD	44	34
6GA	357	54	6IO	34	17
6NAG	353	106			

VK7 PHONE

7HL	1431	509	7LS	151	63
7KZ	1142	447	7MK	135	[illegible]
7HK	993	341	7JO	131	[illegible]
7MX	984	392	7CF	130	[illegible]
7KH	787	260	7PH	95	36
7GW	775	262	7ZIE	81	85
7NOW	772	317	7ZGF	62	62
7WI	691	287	7NFR	59	27
7SF	676	250	7HB	56	20
7JU	447	155	7ZKC	47	47
7DK	427	126	7AB	46	17
7SG	398	134	7JD	36	13
7EB	339	125	7IL	32	8
7TT	325	131	7TL	20	7
7BM	267	100	7ZAA	16	16
7KK	179	67	7AX	5	5

VK7 CW

7RO	1194	209	7RY	476	88
7CH	1106	180	7ZO	162	29
7HE	944	170	ZGV	24	5
7JB	520	81			

VK7 OPEN

7AZ	2224	836	7PF	273	100
7ZZ	307	49	7LZ	143	36
7AL	299	65			

VK8 PHONE

8FB	2437	629	8CW	669	175
8JD	2123	603	8NTA	272	[illegible]
8ZB	1201	336	8NRD	59	
8DI	1175	290	8ZTW	58	58
8CO	859	251	8ZTS	42	42
8CC	564	143	8ZBD	12	12

VK8 CW

8RR	1188	152	8SU	900	110
8HA	1016	125			

VK8 OPEN

8NT	1265	368	2BSJ/MM8	35	15
8NT	916	152			

VK0 OPEN

0CC	1558	208	0AC	1212	110

P29 PHONE

9DM	1649	400	9GA	382	96

P29 OPEN

9EJ	863	137	9NRP		
check log					

ZL PHONE

1AGO	144	43	4MG	617	212
1AUH	82	25	4OP	143	43
3TX	122	40	4CT	36	12

ZL CW

2MM	664	106	4HA	1228	206

ZL OPEN

1GQ	1977	438	4BE	854	228
1ACL	1038	301	4IJ	565	176
1BQD	650	196			

RECEIVING OPEN

VK2	G. Schofield	567	308
	P. Anslow DXL2-PMA	346	201
	I. Theodore DXL-NTI	292	176
	J. Watson	242	117
	R. Browne DXL2-BEQ	204	116
	C. Maxworthy DXL2-NDX	120	60
	P. Hannelly DXL2-PCH	36	18
	N. Stolznow OZL2-MUO	11	6
VK3	E. W. Trebilcock L30042	572	156
	M. J. Stephenson L30848	547	393
	E. A. Phillips L30647	302	195
VK4	B. G. Roche ORS 38670	656	251
VK5	R. Whitlord	1693	726
	A. O. Drexel	368	145
	R. G. Edmeades L50122	342	159
	R. Warrington	257	252
	J. Warrington (Mrs.)	253	254
	D. Warrington	100	100
VK6	F. H. Price L60030	1219	333
	J. D. Smith L60276	525	105
	J. Byrne	298	101
	R. D. Boyd L60136	170	65
	D. Smedley L60101	35	35
VK7	G. Mutton	555	205
P29	K. S. Viney	1517	316

CONTESTS

Kevin Phillips, VK3AUQ
Box 67, East Melbourne, 3002

The results of last year's Contest which were published in January AR showed 30 logs submitted by Australian participants.

In recent International CW contests, many unfamiliar firsts from VK1, VK4 and VK8 have been heard making a great impact on the DX fraternity. These operators would find the Commonwealth (BERU) a very rewarding activity. The scoring system is a good one — chasing bonus points apart from contact points is a great interest in itself as well as a key also to success. 10 and 15 metres are still on the improve and will be the bonus bands.

Publicity for BERU has been promised in "Break In" so there should be plenty of ZLs about as a result.

Time: 1200 GMT Saturday 11th March, to 1200 GMT Sunday 12th March.
Mode: CW only 3.5 to 28 MHz. Call is CQ BERU.

Eligible entrants are radio amateurs licensed to operate in British Commonwealth call areas. In our region, Lord Howe VK2, Willis VK4, Christmas VK9, Cocos VK9, Norfolk VK9, Heard VK0, Macquarie VK0, and Australian Antarctica, as well as VK1-8, are all separate contest areas.

Two trophies have been presented for competition between VK stations — a silver medallion for the highest VK scorer in the official RSGB results and a bronze medallion for a middle placed VK scorer based on total VK entries divided by two, that is for 34 entries, to 17th placing, for 53 entries, to 27th placing. Last year's trophy winners were VK5NO and VK7JB.

SCORING: 5 points for contest exchange, plus 20 bonus points for 1st, 2nd and 3rd contact with each call area other than one's own (there are 111 in all, with G, GW, GM etc., counting as a single area) — exotic prefixes, A2, C6, 8P, 9L, etc., are the rule rather than the exception.

LOGS: Separate logs are required for each band showing columns — 1. Date and time GMT; 2. Station worked; 3. NR sent; 4. NR received; 5. Sand; 6. Leave blank; 7. Contact points claimed; 8. Bonus points.

Each band log should be separately totalled and should include, at the end, a check list of areas worked on the band. Separate band totals should be added together and the total claimed score entered on a cover sheet, giving particulars of station, QTH, equipment, power, and a declaration that the rules and spirit of the contest have been observed.

Entries may be single or multi-band. Single band entries should claim entries on one band only, but submit details of contacts on other bands for checking only. Entries should be addressed to

O. J. Andrews G3MXJ,
18 Downsview Crescent, Uckfield,
East Sussex, England TN22 1UB.

Closing date: 15th May 1978 (by airmail, please). ■

BOOK REVIEW

RADIO AMATEURS' EXAMINATION QUESTIONS AND ANSWERS —

Compiled by the RSGB Education Committee
This book contains a set of typical questions and model answers. The questions are from past UK amateur examinations.

The standard and scope of the questions and answers are similar to the local requirements with the exception of the Regulations section.

The answers are well laid out and provide a good idea of the standard required and cover the likely topics well.

Taken with other material this book should be useful both to those instructing classes and to students. Whilst not exactly the same as the local questions there is a great deal of common ground and the contents provides a very useful guide and would be a worthwhile book.

It should be available from booksellers and WIA Magpubs shortly and is recommended.

Dick Smith's Australian CB Radio Handbook. Price $3.95.

On first receipt of this book, one was a little dubious right from the start regarding the contents.

I admit that I first read it in private where no other amateur could see me for fear of castigation and being called a traitor.

From an amateur's point of view the book tells you nothing new, but for a prospective CBer there is a complete resume of the whole CB system in Australia, and this is the primary object of the book anyway.

An information packed non-technical 128 page handbook published by Horwitz and contains answers to the questions on CB likely to be asked.

The book elaborates on: What CB is all about. Types of rigs. What to watch for when buying a rig. Licencing requirements. Australian system and U.S. system. Accessories available. Jargon, codes, data, etc. NCRA, CREST, emergency use, CB clubs. Glossary of technical and CB terms.

There is even an excellent information page on amateur radio.

With so much confusion and debate on CB at the present time, the book has made an excellent inroad to the Australian scene, and to my knowledge is the only CB book that does so. All other books on CB are related to the American system.

The only criticism one could level is the use and encouragement of the 10 code, and the proliferation of the jargon, but I guess that is something we have to live with.

To the new CBer (and who possibly may upgrade to amateur radio), I recommend this book for serious consideration.

The book is available from all Dick Smith stores and dealers, and shortly through newsagents and other CB specialist stores.

VK3UV

LARA

Ladies Amateur Radio Association

February again, and "Season's Greetings" to those who are doing exams this month, especially those YLs who are attempting either AOLCP or telegraphy (otherwise known as the P&T hurdles).

Contrary to former advertising (see January AR) this article is not about a well-known YL operator. Instead we announce the results of the VK3 LARA AGM and introduce a YL who is about to become well known, as our new State President of LARA, Heather Bedson YF/3ZEB. Heather is one of the longest-standing members of LARA in VK3 but may not be well-known outside Victoria as she doesn't yet have a licence. She has come up on air on OM Ray's call, and they work as a team to handle the paper-work of contests, such as the RD Contest. Heather is hoping to start working for a licence of her own soon. As minutes secretary over the previous months in LARA, she has done such a superb job that all previous minute-takers have been put to shame, so best wishes to Heather as she takes on the job as President.

Our new Vice-President is a well-known (if only recently licensed) YL, Mavis VK3BIR. Norma VK3AYL continues as the excessively hard-working Newsletter Producer and general correspondence handler and Heather VK3NFY is carrying on as Treasurer. Listeners to WIA Broadcast in VK3 will also hear Heather's notes on Sunday mornings as she has very kindly offered to take over that part of the publicity job from me.

On the national scene, the first edition of the newsletter for this year is in production and should be out soon/eventually (strike out which does not apply). The novice sked plans are proceeding and Tuesday has been suggested as a suitable evening for this net. Suggestions from intending participants should be directed to Mavis VK3BIR where they will be warmly welcomed.

Speaking of warm welcomes, these are extended to any YL who wishes to join our growing organisation. Writing to either Norma VK3AYL or to LARA care of the WIA in Victoria (or to your own State LARA Co-ordinator) will result in somebody getting in touch fairly soon.

33's — Kate Duncan. ■

HAMADS

- Eight lines free to all WIA members. $9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Commercial advertising is excluded. Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

FOR SALE

Alpha 374 self-contained desk top bandpass linear PA, 3-30 MHz, no tune up, instant band change, or manual tune position, uses three Elmac 8874 ceramic triodes, carrier output in excess of 1900W, continuous, duty, brand new, in factory sealed carton, $1850. James Goodger VK2JO. Ph. (02) 36 2981.

Motor Generator, Air Ministry power unit type 34 (type 30). Nominal I/P 9.3V DC, O/P (1) 220V DC at 0.11A; (2) 7.2V DC at 13A. Can be run at 12V DC input for about 250V DC out at higher than nominal output current. Almost new, in case, complete with filters, relay, etc., $10. VK3BBK, QTHR. Ph. (03) 570 7894 A.H.

Drake R-4C Rx, serial No. 19190, current model, as new condition, absolutely no scratches or marks, complete with extra 160m and 10m xtls, passband tuning, notch filter, double xtl filter system, etc. Used rarely for occasional listening, never part of active station. With original packing, manual, etc., $525 cash. Ian Cousins VK5IK. Ph. Eudunda 252.

Heathkit SB620 panadapter/spectrum analyser with handbook. IF range 455 kHz to 6 MHz, $50. R. Graham VK2BQJ, QTHR. Ph. (02) 642 0122.

Elco Tri-Band SSB/AM/CW Transceiver, 80-40-20. Model 753 with heavy duty power supply, mike, all handbooks and circuits, $270. VK3ATP, QTHR. Ph. (03) 25 6022.

"Electronics Australia" magazines from 1969 to 1973 approx., plus other miscellaneous electronic magazines and books, $10 the lot. Ph. (03) 89 4853 A.H.

Yaesu Receiver FRG7, less than 1 hour use, $280; Hy Gain Antenna, vertical self supporting 10-80m, tower section 25 ft., total height 50ft., brand new, original packing, will deliver Melb. suburbs, $260; Yaesu Transceiver FT2FB, xtals, 6 channels, as new ex deceased estate, $200. VK3SS, QTHR. Ph. (051) 47 2265.

Toroids as on p581 of 1977 ARRL handbook; take legal power 3-30 MHz, $7.55 ea. plus p&p 40c for one, 60c for two. VK3AGF, QTHR. Ph. (03) 379 6524.

Kenwood TV506 6m Transverter, for use with TS520, new condition, complete, including built-in AC power supply and original packing, $185.00. VK3KK, QTHR. Ph. (03) 469 4200 AH, (03) 652 8110 bus.

Kenwood QR-666 Comm. Rx, excellent condx, very stable freq. control, ideal sind-by Rx, owner upgrading, as new condx, $150 ONO. Terry VK2ALG, QTHR. Ph. (060) 21 3288 or (060) 25 3292 AH.

ICOM IC202 2m SSB, very little use, $150. S. Ward VK2SW, QTHR. Ph. (069) 21 2125 bus, (069) 22 6082 AH.

Rotator Cornell-Dubilier Ham II with 240V AC, control box, complete with 100 ft. of Belden rotator cable, in use 6 months, excellent condition, complete with owners manual, $200. Hy-Gain 204BA 4 el. 14 MHz yagi with Hy-Gain BN-86 matching balun and 100 ft. RG8U low loss American cable, $225. VK2JO. Ph. (02) 36 7756.

FTDX401 with matching speaker, CW filter. VK2AAC, QTHR. Ph. (02) 521 7080.

Kenwood TS-520 AC/DC Transceiver, fitted CW filter and external VFO-520, a very good rig by performance, complete with connecting cables, handbook and spare set of tubes, $575 or near offer. VK2BFJ, QTHR. Ph. (043) 32 5758 any time.

Yaesu FT100B Transceiver, good condition, complete with helicals for 80, 40 and 20m, $385; Circuit and parts for 200W linear, $75. VK3AHG, QTHR. Ph. (03) 288 2024.

QM70 28/144 SSB Transverter, never used, $100; Kyokuto 144 MHz Tcvr, FM with power supply and amplifier 25W with 2N55911, new, never been used, together with 28 el. yagi beam and ringo antenna, $400; SSTV monitor and camera (two lenses), built on Robot Boards, wants lining up, together with a heavy duty 22V+0 22— Power Supply together with all circuits etc. $450 or will consider offer. VK4AGO, QTHR. Ph. (071) 72401.

Novice Yaesu FT301S-FP301, new, owner must sell, 25W PEP output, sealed carton, $780. VK7NAB, 3 Denman Rd., Trevallyn, Launcesion, 7250. Ph. (003) 44 4172.

Estate late VK3NY: AR7 Rx with handbook, six coil boxes and sundry spare units, $60 ONO; Type 3 Mk 2 Trans/Rec, 80-40-20m, 25W CW, 10W AM, xtal cont, 250V AC, 6V DC, handbook, $40 ONO; TU-6B Tuning Unit, 3-4.5 MHz, two Var Cond (wide spaced), 15-15 and 19-116 pF, vernier dial, ceramic switch, etc.; Type 'S' Power Supply; indicator Unit, Type A1, incl. 5" CRT; Class 'C' Wavemeter; two BC966A Units; BC442A Ant Relay Unit, meter, etc.; Handbook for AT5/AR8; Vales: 902 1" CRT, RL18s, 9001, 9002, 807s, etc.; xtals: 1220, 326, 4010, 7025, 7155 kHz, two channel 45 (24.5 MHz). Offers to VK3RN, QTHR. Ph. (03) 25 5315 AH.

Coax Cable, 0.875 inch diameter, cellflex CU2Y, has tubular copper inner, high density foam type dielectric, solid ridged copper outer conductor with black plastic sheath; $2 per yard. R. Mudie VK2ZRQ, Ph. (02) 663 0171, 8 am to 4 pm weekdays only.

Kenwood TR-7200G, 10W, 2m FM repeaters 1 to 8, Simplex 40, 50, 51, as new, $180. VK2AMT, QTHR. Ph. (02) 451 4902.

Barlow Wadley Rx, slight fault, $155 plus freight. D. Deerman, 222 Parry St., Charleville, 4470.

Tower 60ft, self-supporting triangular 8 ft. sides at bottom 4 ft. top, 2 sections, strongly constructed, $60. VK3AXA, QTHR. Ph. (059) 42 7248.

SILENT KEYS

It is with deep regret that we record the passing of —

Mr. L. C. C. GALBRAITH VK2ABD

Johnson Matchbox Antenna Tuning Unit, very good condition, Midland SWR dual meters, also homebrew dummy load, compact, heavy duty, lot $100. Maurice Glover VK7MG, 17 Mona St., Battery Point, Tasmania 7000. Ph. (002) 34 3691.

Uniden 2020, matching speaker and remote VFO, first class condx, in original carton, $775. VK3TG, QTHR. Ph. (058) 52 1636.

SSTV Fast/Slow Digital Scan Converter, W6MXV design, full, half, quarter frame, video invert, and grey scale generator, $200. Stan VK3BHZ, QTHR. Ph. (03) 870 5132, bus. (060) 71 6211.

Ken KP202, hand-held FM transceiver with nicads, charger Chs. 40, 50, rpts. 2, 4, 6, 8 and stubby helical, good condx, $145 ONO. Neil Osborne VK3YEI, QTHR. Ph. (03) 763 5207.

SSTV W0LMD Keyboard PCB, complete and working (CQ Sept. '74), $95; 17" picture tube, brand new, P7 phosphor (for SSTV), $25; Kenwood TR7200 2m FM, Ch. 40, 50, 61, V, R42, 44, 46, 48, $200. VK3AHB (QTHR VK4MM). Ph. (03) 630 72[illegible] bus.

Teletypes 15SR, working order, $55, with adjustment instruction, spare parts available; 240/110V Transformers 150VA, $20. VK4AFB. Ph. (07) 356 1393.

Drake R4-B Rx, all xtls, 1.8 to 30 MHz, plus HF broadcast, excellent condition, $400. VK5RG, QTHR. Ph. (08) 276 4547.

Novice Revision Text, a text of 1000 revision choice questions with answers for the novice candidate covering theory and regulations, $3.00 posted. D. Wilson VK2ZCA/NMW, 63 Superior Ave., Seven Hills, 2147.

WANTED

VOM Heathkit Model IM-25 with ohm, DC, DC zero centre, RMS AC scales, for associate member studying electronics. Details to A. A. Paton, Box 866, G.P.O. Albany, W.A.

1C60 6m FM Transceiver. Anybody knowing the whereabouts of such a transceiver belonging to Mike Goode VK3BDL, could contact him please on Ph. (03) 99 1806 after 6.30 p.m. any evening.

Uniden 8010, remote VFO, complete with connecting cable. Advise condx and price. Terry VK2ALG, QTHR. Ph. (060) 21 3288 or (060) 25 3292 AH.

Pensioner studying for AOCP needs Rx 240V commercially made unit covering HF amateur bands only preferred. Age no bar, but should have BFO and be in working order, to $100. John Weir, 100 Wrigley St., Maroochydore, Qld. 4558. Ph. (071) 43 3023.

FT101B in good condition, reasonable price VK3AHG, QTHR. Ph. (03) 288 2024.

Radio Sets Nos. 19, 11, 31, 88, also require original accessories and power supplies, for collection. Please write or phone A. D. Johnson, 25 Verney Rd., Shepparton, 3630. Ph. (058) 21 2309 with particulars and anticipated costs.

FP200 Power Supply, cheap Triband beam. VK3AHB (QTHR VK4MM). Ph. (03) 630 7269 bus.

Xtal (1 MHz) for BC221-AK freq meter, in good order. VK2BET, QTHR. Ph. (02) 476 2933.

Needles, unused HMV "silent stylus" or "Columbia 99", to suit type 14 pick-up. VK2ZSV, QTHR.

TUITION

Morse Students. Morse cassette copying service now available. Send your C60 tape with two 18 cents stamps (service fee) plus return postage. Specify speed 4, 5, 6, 8, 10, 12 wpm. F. Santos VK2ZOU YRS Tapes Officer, 8 Cooper St., Blacktown, 2148.

Novice Theory/Regs and/or Morse Course. The Hornsby and Districts Amateur Radio Club are running this for the prospective novice or the current Limited Licensee. For more details, contact Barry White VK2AAB, on Ph. (02) 487 1428 AH.

YAESU and B'AIL

the names you look for in advanced amateur communication equipment.

Would you buy a "Rolls" at your Supermarket?

. . . then why buy your first class radio equipment that way?

Bail Electronic Services have been the Australian factory representatives and specialists in Yaesu amateur communication equipment since 1963.

Our years of handling and specializing in this equipment have enabled us to build up a fund of knowledge and technical experience, backed by a comprehensive range of spare parts and service facilities. We don't just sell a set, our concern extends throughout the life of your equipment.

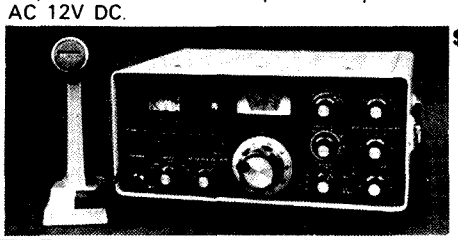
A selection of the top lines from Yaesu and Bail

FT-277R. Latest in VHF FM, just released 800 ch 2M band FT-277R with memory, Dig. readout, unique optical band change eliminates troublesome switch controls. ± rptr facility, etc.

$375.

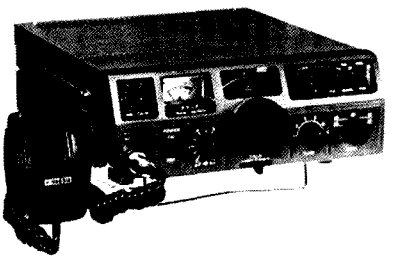
The ever-popular FT-101E Transceiver: 160-10 Mx SSB AM CW PA two x 6JS6C 260W PEP input SSB Built-in Dual AC/DC power supply.
BUILT-IN RF SPEECH PROCESSOR, Solid state except for Tx. PA and driver. IF noise blanker, FET RxRF amplifier, clarifier, built-in speaker. Export Mod 240V AC 12V DC.

$849.



FT7 — The all solid state FT7 20w, 12V mobile tcvr provides high performance on the 80-10m bands. Compact and lightweight, it supersedes the successful FT75B and includes built-in VFO, provision for CC operation, single knob tuning, NB, plus many more desirable features. Ideal for novice and O.T.

$578.



FT901DM, the ham's dream, a deluxe 160-10m Tcvr with a host of new unusual features placing it far ahead of other sets. P.A.2x6146B, Dig. and analogue readout, Freq. memory, electronic keyer, AC/DC operation, RF speech processor, variable I.F. band width, special circuitry to reduce spurious and harmonic emissions, etc!

$1575

Contact us for details of other Yaesu equipment plus the accessories required to complete your station.
All equipment from Bail's carries a 90-day warranty and complete service back-up.

JAS 7778-35

ELECTRONIC SERVICES

FRED BAIL VK3YS
JIM BAIL VK3ABA

60 Shannon St., Box Hill North, Vic., 3129. Ph. (03) 89 2213

Yaesu agents In Australia since 1963

Radio amateur equipment from B.E.S. also sold by —

W.A.	Radio Communication Services, H. R. PRIDE, 26 Lockhart St., Como, 6152	Ph. 450 4379
	WILLIS TRADING CO., 429 Murray Street, Perth 6000	Ph. 21 7609
S.A.	FARMERS RADIO PTY. LTD., 20 Stanley St., Plympton 5038	Ph. 293 2155
TAS.	G. T. ELECTRONICS, 131 Westbury Rd., South Launceston 7200	Ph. 44 4773
	PRINS RADIO, 123 Argyle Street, Hobart 7000	Ph. 34 6912
N.S.W.	Aviation Tooling, STEPHEN KUHL, 104 Robey St., Mascot 2020	Ph. 667 1650
	Amateur & Novice Comm. Supplies, W. E. BRODIE, 23 Dalray Street, Seven Hills 2147	Ph. 624 2691
	DIGITRONICS, 186 Parry St., Newcastle West 2302	Ph. 69 2040
	RIVERCOM, Sid Ward, 9 Copland St., Wagga Wagga 2650	Ph. 21 2125
QLD.	H. C. BARLOW, 92 Charles St., Aitkenvale, Townsville 4814	Ph. 79 8179
	MITCHELL RADIO CO., 59 Albion Rd., Albion 4010	Ph. 57 6830
A.C.T.	QUICKTRONIC, Jim Bland, Shop 11, Altree Crt., Phillip 2606	Ph. 81 2824 82 2864

YAESU

bail

SR

Big news from BAIL in VHF and UHF Transceivers . . .

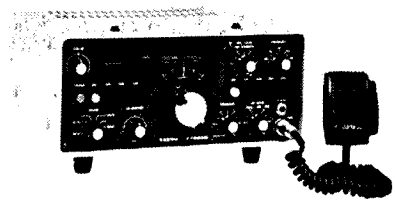
FT-221R 2M All Mode Transceiver.
Here is a compact, versatile transceiver designed for the active 2 meter enthusiast. The FT-221R features all mode operation — SSB/FM/CW/AM — with repeater offset capability. Advanced phase lock loop circuitry offers unsurpassed stability and clean spurious-free signals. Modular, computer-type construction offers reliability and ease of service. Pre-set pass band tuning provides the optimum selectivity and performance needed on today's active 2 meter band. Join the fun on FM, DX, or OSCAR, with the FT-221R transceiver. Another winner from the world's leader in amateur communications equipment. **$659** (**$749** with Dig. Readout Adaptor, a few only available).

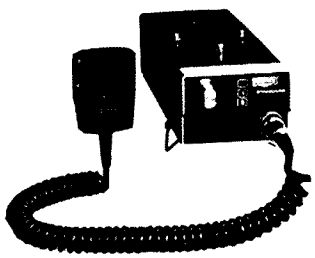
FT-277R. Latest in VHF FM, just released — 800 ch 2M band FT-277R with memory, Dig. readout, unique optical band change eliminates troublesome switch controls. + rptr facility, etc. **$375.**

SPECIAL

FT-223 2M F.M. Transceiver.
10W 23 channels, plus one "priority" channel. Inc. mic., 12 V power cable, desk stand, mobile mounting bracket and crystals for channels 40, 50 and 51 installed. Limited quantity at never-to-be-repeated price of $159 each. A real bargain!

FT-620B 6M Mobile/Base Station Transceiver.
10W solid state, AC-DC operation. The Ft-620B lets you join the action in DX on 6M. Don't miss these SSB, AM CW sets at $399 while shipment lasts.





MODEL SR-C430, 10W, 12 channel plus memory channel, Mobile FM 12V DC Transceiver for 420-450 MHz Amateur Band use. A superb compact unit. Complete with microphone, built-in speaker, snap-clip mobile mount, power cable, DC line filter, stand for base station use. Including one channel. Price **$342**.

SR-C146A, 2m FM 2W output, 5 chan. hand-held transceiver. This superior quality transceiver comes complete with a leather carrying case, and auxiliary jacks are provided for optional external microphone, earphone, antenna and battery charger. Includes built-in mic. and speaker. Whip antenna telescopes down level with top of set. Price **$248** incl. 3 channels.

SR-C432, 2.2W, 6 channel hand-held FM transceiver, with short helical flexible antenna, leather case and one channel installed. Superior construction and performance. Jacks provided for external mic., earphone, antenna, and battery charger. Includes built-in mic. and speaker. **$285**.

All prices include sales tax. Freight is extra. Prices and specifications subject to change without notice. Allow 50¢ per $100 for insurance when freight required.

Write for brochures containing comprehensive data on this equipment. Bail — quality equipment and sound service backup.

JAS 7778-36

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60 Shannon St., Box Hill North, Vic., 3129. Ph. (03) 89 2213

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TAS.	G. T. ELECTRONICS, 131 Westbury Rd., South Launceston 7200	Ph. 44 4773
	PRINS RADIO, 123 Argyle Street, Hobart 7000	Ph. 34 6912
N.S.W.	Aviation Tooling, STEPHEN KUHL, 104 Robey St., Mascot 2020	Ph. 667 1650
	Amateur & Novice Comm. Supplies, W. E. BRODIE, 23 Dalray Street, Seven Hills 2147	Ph. 624 2691
	DIGITRONICS, 186 Parry St., Newcastle West 2302	Ph. 69 2040
	RIVERCOM, Sid Ward, 9 Copland St., Wagga Wagga 2650	Ph. 21 2125
QLD.	H. C. BARLOW, 92 Charles St., Aitkenvale, Townsville 4814	Ph. 79 8179
	MITCHELL RADIO CO., 59 Albion Rd., Albion 4010	Ph. 57 6830
A.C.T.	QUICKTRONIC, Jim Bland, Shop 11, Altree Crt., Phillip 2606	Ph. 81 2824, 82 2864

amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

VOL. 46, No. 3 MARCH 1978

CONTENTS

COVER PHOTO

Gil Miles VK2KI, first licensed in 1922 and still going strong, displays his home brew valve type slow scan TV monitor, underneath is a solid state slow scan signal generator.

Photo courtesy Electronics Australia.

HAM RADIO SUPPLIERS

323 ELIZABETH STREET, MELBOURNE, VIC., 3000

Phones: 67-7329, 67-4286

Our Disposals Store at 104 HIGHETT ST., RICHMOND (Phone 42-8136) is open Mondays to Fridays, 9.00 a.m. to 5.00 p.m., and on Saturdays to midday.

FM LEAD ANTENNALESS MICROPHONE

MODEL FIRST-101 (Uni-directional Condenser Microphone)

A new professional quality uni-directional condenser microphone featuring superb sensitivity and excellent frequency characteristics. Very easy handling because of cordless microphone. Operates on just one UM-3 battery for 100 hours of continuous use. Very economical. The transmitting frequency freely adjustable within FM radio band. If using without lead antenna, sound is caught within about 50 metres, when using with reinforced antenna to jack at the bottom, range is extended up to about 100 metres.
Accessories: Battery UM-3, Wind screen, Adjusting screwdriver, reinforced antenna line, microphone stand.

NETT PRICE $33.90
Postage $1.40

HANSON SWR6

POWER METER & FIELD STRENGTH INDICATOR

Handy for checking transmitter operation. Uses bridge method for SWR measurements. Simple and accurate operation. CM method employed for RF power measurement.

NETT PRICE $22.00
Postage $1.80

ARLEC PLUG-PACK

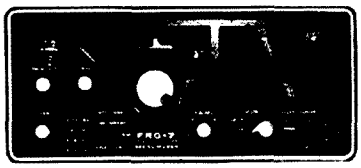
PLUG-IN POWER SUPPLY

Plugs directly into 240 volt mains supply power sockets and provides 12 volt 1 amp smoothed DC for powering low voltage and battery operated equipment — Transceivers, cassette recorders, cartridge players, burglar alarms, electric models and toys, car radios, etc. 12 Volt 1 amp SEC approved, double insulated, overload protected.

NETT PRICE $16.90
Postage $1.80

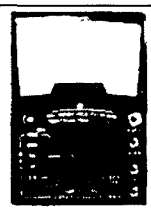
YAESU FRG-7

THE RADIO FOR WORLD-WIDE LISTENING AT ITS BEST — 0.5-29.9 MHz COVERAGE SYNTHESIZED COMMUNICATION RECEIVER



The model FRG-7 is a precision built high performance communication receiver designed to cover the band from 0.5-29.9 MHz. Its state of the art technology offers an unprecedented level of versatility. The Wadley Loop System (drift cancellation circuit) coupled with a triple conversion super heterodyne system guarantees an extremely high sensitivity and excellent stability. It provides complete satisfaction to amateurs as well as BCLs with superb performance and many features such as RF attenuator, selectable tone, and automatic noise suppression circuit.

$338



MODEL OL64 D/P MULTIMETER. Very ruggedly constructed this model is particularly suitable for workshops. It features special scales for measurement of capacitance and inductance. Diode protested movement: Specifications: 20,000 ohm/volt DC. 8,000 ohm/volt AC. DC volts — 0.25; 1; 2.5V; 10; 50; 250; 1,000; 5,000. AC volts — 10; 50; 250; 1,000. DC amps: 50 uA; 1 mA; 50 mA; 500 mA; 10 A. Ohms — 4 K ohm; 400 K ohm; 4 M ohm; 40 M ohm. Centre scale — 40 ohm; 4,000 ohm; 40,000 ohm; 400,000 ohm. Decibel: —20 to +62 dB. Dimensions: 6" x 4-1/5" x 2"; 152 x 107 x 51 mm. Inductance — 0/5000H. Carrying case available, Model C $6.90.

$32.50 Postage $2.20

E.E.I. SOLID STATE CAR RADIO

MW BAND
PUSH-BUTTON TUNING
SPECIFICATIONS:
Power Supply: 12 V DC
Receiving Frequency: MW 520KC (580M) — 1640KC (183M)
Intermediate Frequency: 455KC
Audio Output: 4.5W
Transistors: 8, diode 4
Speaker: 5" Permanent Dynamic 4 ohm
Sensitivity: Less than 20 uV at 20 N/S
Selectivity: More than 25 dB at + 10 kHz detuning
A.G.C.: More than 45 dB at 1,000 kHz
IF Rejection: More than 40 dB at 600 kHz
IM Rejection: More than 50 dB at 1,400 kHz
Cabinet Dimension: 1-7/8" (H) x 6-1/5" (W) x 4-1/8" (D)

$32.90 — Free Post

E.E.I. PORTABLE RADIO

AM/AIR VHF
SPECIFICATIONS:
Freq. Range: AM530-1600 kHz, AIR (VHF) 108-174 MHz. **Intermed. Freq.:** AM 465 kHz, FM 10.7 MHz. **Output:** 450 mW max. **Speaker:** 2½" permanent—magnetic dynamic type, 8 ohm. **Power Source:** DC — 6V (4 x UM3 Penlite) or equivalent. **Semiconductor:** 10 trans., 7 diode. **Dimensions:** 8½" (W) x 4½" (H) x 1-7/8" (D)

$18.90 — Postage $1.40

MODEL AS100 D/P MULTIMETER

This meter features double zener diode meter protection and 3½" full view easy to read 2 colour scale. It is fitted with polarity reversing switch and housed in a strong moulded case with carrying handle.
SPECIFICATION: 1000,000 ohm/volt DC. 10,0000 ohm/volt AC. **DC Volts:** 0.3, 3, 12, 60, 120, 300, 600, 1,200. **AC Volts:** 6, 30, 120, 300, 600, 1,200. **DC Amps:** 12 uA, 6 mA, 60 mA, 300 mA, 12A. **Ohms:** 2k, 200k, 2m, 20m, 200m ohm. **Centre Scale:** 20 ohm, 2,000 ohm, 20,000 ohm, 200,000 ohm, 20m ohm. **Decibel** —20 to +57 db. **Dimensions:** 7-3/5 x 5-2/5 x 2-3/5 ins. Carrying case for model I — $7.90.
Price: $52.50 — Postage $2.20.

BULK STORE DISPOSALS

AT 104 HIGHETT STREET
RICHMOND, 3121
Phone (03) 42-8136

NEW AWA-THORN TV TUNERS

Type ENR5758, fitted with 6GK5 and 6G57 valves.

$2 each plus P&P

NEW MAGNAVOX 53TS SPEAKERS

5" x 3" 8ohm, ideal for small extension speaker for communications equipment.

$1.95 each plus P&P

CAPACITORS

Variable Beehive Philips Type 25 pF, real value at

15c each or 10 for $1

VARIABLE BUTTERFLY CONDENSERS

with screw driver adjustment, available in 9-17 and 25 pF. While they last at

$2 each plus P&P

EDGE METERS

0-1 mA moemvent calibrated, 0-5 ounces. Brand new in boxes.

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amateur radio

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QSP — WELCOME ABOARD

"Think of it fellows! Here, we have been considering it *necessary for* us to carry carefully planned propaganda into the broadcast camp in order to interest some of the broadcast listeners in our game, and instead we find that there are already dozen upon dozens of them sold on brass-pounding and only waiting for someone to give them the key so that they can come in with us. They have called us and now it is up to us to deliver."

So wrote the editor in the January 1926 issue of QST. You know, in some ways little has changed in our hobby — sure, the technology today is considerably more advanced than in 1926 . . . but then again that same issue of QST had articles on 5 metre equipment and the Voaa picture transmitter which were surely "state of the art" for that decade.

The broadcast listeners mentioned in the Editorial were all apparently very enthusiastic about their introduction to wireless — perhaps not unlike many of the CBers today. Yesterday, many of us had our first taste of two-way radio communication while with the Army, Navy or Air Force or even the local Country Fire Authority. Some, of course, through everyday employment. Today, CB is by far the likeliest way that most newcomers to our ranks will have their appetite whetted.

Ex-CBers are entering our ranks with every exam.; many at the novice level — some at the limited and full licence level.

The following statistics of the number of Australian licensees as of 30th September, 1977, are from official P. and T. Department records: Full lincensees 5,043; Limited licensees 2,421; Novice licensees 697.

Further, it is believed that since these statistics were published, a further 308 Novice licences have been issued in New South Wales alone.

We should all realize that the interest in our hobby is very much on the increase. The statistics only indicate how many licences have been issued — it is known that those studying for their licence (Full, Limited or Novice) is many times the existing number of Novice licensees.

To all newcomers and especially the Novices, the institute says "welcome aboard" — we hope that you will enjoy the hobby as much as many of our "old-timers" have over the years. Hopefully, you will be able to expand your horizons even further by upgrading to the full AOCP level.

We invite all newcomers to participate in institute activities, especially the Federal Convention, the annual policy-making meeting of the Federal Council, which is to be held in Melbourne during April. It is at this Convention that the course of the Institute for the following year is set. All decisions are made by the Federal Council which consists of Councillors from each Division. These Councillors require input from members within their division. You are earnestly requested to make yourself known to your Federal Councillor — his name is shown in the Divisional Directory, and inform him of your ideas, complaints, suggestions, etc., for amateur radio for the ensuing year.

The door is certainly unlocked and open. It is up to you to enter.

P. WOLFENDEN VK3ZPA/NIB,
Executive Vice-President. ■

WIRELESS INSTITUTE OF AUSTRALIA

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Divisional information (all broadcasts are on Sundays unless otherwise stated):

ACT:
President — Mr. E. W. Howell VK1TH
Secretary — Mr. D. J. Farquharson VK1ZDF
Broadcasts— 3570 kHz & 146.5 MHz: 10.00Z.

NSW:
President — Mr. T. I. Mills VK2ZTM
Secretary — Mr. I. A. Mackenzie VK2ZIM
Broadcasts— 1825, 3595, 7146 kHz, 28.5, 52.1, 52.525, 144.1, Ch. 8 and other relay stations: 01.00Z. (Also Sunday evenings 09.30Z and Hunter Branch, Mondays 09.30Z on 3570 kHz and ch. 3 and 6).

VIC.:
President — Mr. S. T. Clark VK3ASC
Secretary — Mr. J. A. Adcock VK3ACA
Broadcasts— 1825, 3600, 7135 kHz — also on 6m, 2m SSB and 2m Ch. 2 repeater: 00.30Z (Also on Radio 3HA).

QLD.:
President — Mr. D. T. Laurie VK4DT
Secretary — Mr. P. Brown VK4PJ.
Broadcasts— 1825, 3580, 7146, 14342 kHz: 09.00 EST.

SA:
President — Mr. C. J. Hurst VK5HI
Secretary — Mr. C. M. Pearson VK5PE
Broadcasts— 1820, 3550, 7125, 14175 kHz; 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.

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President — Mr. R. Greenaway VK6DA
Secretary — Mr. N. R. Penfold VK6NE
Broadcasts— 3600, 7080, 14100, 14175 kHz, 52.656 and 2m (Ch. 2): 01.30Z.

TAS.:
President — Mr. R. K. Emmett VK7KK
Secretary — Mr. H. E. Hewens VK7HE
Broadcasts— 3570, 7130 kHz: 09.30 EST.

NT:
President — Mr. Doug Haig VK8JD.
Secretary — Mr. Henry Anderson VK8HA.
Broadcasts— Relay of VK5WI on 3.55 MHz and on 146.5 MHz at 2330Z. Slow morse transmission by VK6HA on 3.555 MHz at 1000Z almost every day.

Postal information:
VK1 — P.O. Box 46, Canberra, 2600.
VK2 — 14 Atchison St., Crows Nest, 2065 (Ph. (02) 43 5795 Tues & Thurs (10.00-14.00h).
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VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton (Ph. (08) 254 7442).
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
VK6 — (incl. with VK5), Darwin AR Club, P.O. Box 1418, Darwin, 5794.

Slow morse transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

2M SSB PORTABLE

The IC202 is the ideal 2m exciter for those long-haul DX contacts or to work OSCAR. 3 watts ssb and cw. VXO control, quality manufacture and comes complete with English manual, carry-strap, mic and VICOM 90 day warranty. Price $219.

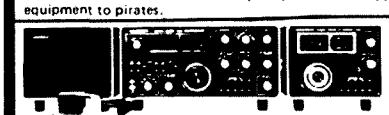
HAL Communications Corp.

The new HAL KSR3000 send/receive RTTY terminal including keyboard and video display, features scrolling, continuous, word or line transmission and firmware for word wrap-around and blankfill. Handles Baudot and ASC11 (8-level) with a screen size up to 1152 chs. List price $1499. Write (including SAE) for complete specifications.

PIRATES AND BOOTLEGGERS

Bootleggers are those importers who buy ham gear from the back streets of Tokyo and Hong Kong for resale in Australia. This equipment is usually a domestic model, lacks factory support and often has a Japanese or photo-copied English manual. In some cases the gear is production line rejects. When making a purchase ask whether your new pride and joy has been supplied through an authorised distributor.

Pirates buy their transceivers from unscrupulous dealers with no interest in the effect spectrum anarchy is having on the amateur service. VICOM policy is not to supply equipment to pirates.



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ICOM IC-22S FM transceiver

Price $279.

WHY IS THE IC22S AUSTRALIA'S TOP-SELLING VHF FM RIG?

- The 22S is reknown for quality and dependability.
- It's crystal clear — no expensive crystals required.
- Great features such as reverse repeater operation, high level of spurious attenuation, high selectivity and sensitivity.

See the review in February 1978 "Electronics Australia".

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KENWOOD TS-520S transceiver

TS820S HF digital transceiver	$1105
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TV502 2m transverter	$260
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Direction: Russell J. Kelly
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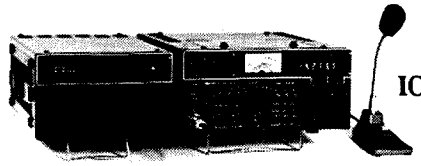

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NEW!

The fabulous state of the art ICOM IC701 solid state transceiver. The initial huge demand for this rig from U.S.A., Europe and Australia may result in delays in availability. Order your new IC701 now!

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ICOM

IC701 TRANSCEIVER $1160
IC701PS optional AC supply $239

ICOM'S DIGITAL ALL SOLID STATE HF TRANSCEIVER

ICOM IC-245 2m transceiver

• LSI synthesizer PLL • 4-digit LED readout • Transmit & receive frequencies are independently programable on any separation • Receiver front-end is a balance of low noise, high-gain MOS FET & 5 section filter • TX output: 10 W PEP • Frequency step size: 5 KHz for FM, 100 Hz (with adapter) or 5 KHz for SSB.

HELLO 6M DX

Sunspot cycle #21 in now on the up-and-up! Share in some of the fun on 6 metres DX with the ICOM IC502 ssb portable transceiver. The IC502 covers 52-53MHz with VFO control, RIT, effective noiser blanker, provision for external power and antenna and comes complete with carrystrap, mic and English handbook. Backed by VICOM 90 day warranty. Price $219

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You know you can count on hy-gain

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MidgVN 80 thru 10m	$87
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TWO METRES

ringo $49

The RINGO RANGER ARX-2 is a 2M gain omni-directional antenna with three half-waves in phase and a one-eight wave matching stub. The Ringo Ranger gives an extremely low angle of radiation for better signal coverage. It is tunable over a broad frequency range and perfectly matched to 52 ohm coex. Price $49.

4dB gain with reference to half-wave dipole.
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WIANEWS

The examinations and licensing areas are still causing concern as nothing further has been heard from the P. and T. Department. These questions took up much time at the January meeting of the Executive.

The Federal Education Co-ordinator put forward a suggestion that the Department should be aproached to approve an amateur Examinations Committee jointly with the WIA, as it was strongly believed help was needed by the Departmental examinations section. Through the good offices of VK3YJK a professional-type of Novice examination questions bank is now in being. In order that this bank can become really effective, feedback is required in relation to analysing the answers so that the statistical results can provide material for educational measurement and evaluation.

In subsequent discussions with the Controller in the RFM Branch of the Department a promise was extracted that the idea of a joint committee would receive consideration. A further discussion was held on the question of the last October Novice exam and something may eventuate from this. If an amateur education Committee were in force this would naturally have been an excellent item for the Agenda.

The licensing delays are also a matter of much concern. As members already know, this Institute has suggested, for some years now, that the systems and procedures in use by the Department should be modernised and streamlined. Less staff would then be required, in theory, to operate the licensing of amateurs in particular. The vast increase in licensing operators in other services has not helped the overall situation.

EDP

Discussions with a commercial organisation to take over our EDP and mailing service broke down, as they were unwilling to adapt any of their standard programmes for our subscription and accounting requirements. We will therefore remain with Monash for our EDP but hopefully obtaining more efficient and more economical results on transler to a more modern computer. Our programmes are currently being converted.

RECRUITING

The response to advertisements in CB magazines has been most useful. It is revealing to read of the reasons why people are switching from CB to amateur radio. It is certainly better to have many more amateurs than a multitude of pirates.

FEDERAL CONVENTION

This is your last chance to send to your Division any Agenda items you propose for discussion at the 1978 Federal Convention. ■

AR AWARDS

The Publications Committee has pleasure in advising the names of the recipients of awards for the year 1977.

HIGGINBOTHAM AWARD

Mr. W. E. J. (Bill) Roper VK3ARZ, lately editor of AR.

TECHNICAL AWARD

Mr. Peter Renton VK4PV for his article on "Filament Switching from a Distance", which appeared in the November issue.

ASJA AWARD

Mr. Max Dawkins VK3TR for his "Some Field Station" article in the March issue. ■

ANODIZING ALUMINIUM

Bruce R. Kendall VK3ZDM
10 Carter Crescent, Werribee 3030

Like to home-brew your own gear?
And give it that professional look?
If yes is the answer — then anodizing is for you!

What is anodizing and how can it help me?

When a piece of aluminium is said to be anodized, the surface is completely covered with a crystal structured coating which prevents further oxidization (corrosion) of the surface. Yes, further oxidization, because anodizing is virtually oxidizing of the aluminium surface at a predictable rate.

Any piece of aluminium that is exposed to atmosphere will oxidize of its own accord in time, depending on where it is placed and under what conditions it is exposed. Therefore this process is useful to the home handy man, the boating enthusiast, and even the radio amateur. Imagine no more corroded chassis, antenna relay boxes, etc.; the uses are endless.

To start with you will require a reasonable quality aluminium. For example, Horwood instrument cases anodize very well, aluminium with a high alloy content sometimes doesn't, and on occasions won't at all.

Anodized aluminium can be dyed with aluminium dyestuffs in almost every colour imaginable and in many different shades (Ref. 1).

Anodizing is an electro-chemical process requiring two types of acid and one alkaline substance to initiate the process. Normally these are nitric acid, sulphuric acid and caustic soda. There are several different grades of acid on the market at varying prices. For this application industrial grade chemicals are sufficiently pure. When measuring liquid, dye powder, voltage and current, reasonable accuracy should be maintained, although most mixtures will tolerate a 10 per cent error and 20 per cent in the case of power measurements.

SAFETY

A reasonable working space will be required to set up shop safely. Ample ventilation must be provided. Placing acid baths under the garage window will provide enough ventilation to exhaust any toxic fumes. A few domestic fans placed at strategic points around the room would be advantageous.

A few simple safety precautions could save you a confrontation with the XYL. For instance, nitric acid makes a nice mess of synthetic or cotton clothing very smartly, and caustic soda takes the colouring out of your Sunday best shoes. Therefore if you own a pair of woollen strides and an old woollen jumper, I would recommend these in preference to cotton football shorts. (Don't laugh, it has happened!) Overalls are OK, but tend to hole easily, as these are predominantly cotton. Incidentally, that old pair of Fletcher Jones you have hanging in the wardrobe will make an excellent acid proof garment.

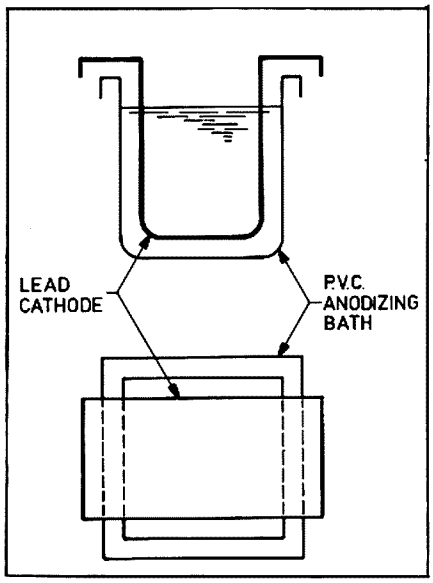


FIGURE 1

A pair of safety glasses for mixing acid would be an obvious advantage, and remember when mixing acid, add acid to water, DO NOT ADD WATER TO ACID! If you have ever done this you will know that violent reactions occur, sometimes for the worse.

CONTAINERS

To have a reasonably streamlined system you will require four containers, one for the caustic soda, one for the nitric acid, one for the water rinse and another for the sulphuric acid anodizing bath. If dying is going to be incorporated in the process one more container for each additional colour will be required.

What size containers you use will depend on what size work you anticipate anodizing. A cheap and readily available container is available to all OM's and XYL's with a relatively new family in junior's old or present babies' bath. Any containers that are used should be fairly solid and sturdy and be of PVC or porcelain construction.

PVC Is preferred to other plastics as some are susceptible to acid and will even dissolve on contact. The sulphuric acid anodizing bath must be lead (Pb) lined. A visit to the local plumber or sheet-metal supplier should bring results here. A piece of lead sheet about 10 gauge (1/8 in.) thick, a little shorter than the bath length, covering the entire bottom and extending up both sides of the bath will be ample (Fig. 1). This is the CATHODE (—).

As this is an electro-chemical process, some form of power must be provided. A DC power supply capable of providing between 9 and 12 volts at a peak current of 30 amps will be ideal.

AC ripple filtering is not critical but should be adequate as with all electroplating processes. A variable voltage battery charger with 5000 uF electrolytic across the rectifier will suffice.

The following table indicates current required for various metal areas.

144 sq. in = 15A.
96 sq. in. = 10A.
48 sq. in. = 5A.
9.6 sq. in. = 1A.
(Or in metric units 645 mm per A.)

When working out the area and current requirements the following must be taken into account: A panel has two surfaces, the front surface, which is to be clean and has the required sanded or brushed finish, and the rear surface, which can be in any dirt free condition. Therefore a panel measuring 5 x 5 in. has a surface area on one side of 25 sq. in. Seeing we have a front and a rear surface, 25 + 25 = 50 sq. in total. From the table we approximate 5 amps.

Three baths will be required for this process, as mentioned before.

The caustic soda bath consists of 6 pounds or 2.17 kg of caustic soda crystals mixed with 12 gallons or 54.5 litres of water.

Nitric acid bath: 50 per cent nitric acid, 50 per cent water.

Anodizing bath: 15 per cent sulphuric acid, 85 per cent water.

The chemicals should be mixed 24 hours before use to allow time to cool and stabilise.

Dyeing is the next step and as mentioned previously, the colours and shades available are limited only by your imagination. One small point here, always stir the dye before placing the aluminium in the bath as the powder components will settle on the bottom after a few hours.

PROCEDURE

STEP 1. Take the piece of aluminium to be anodized and sand with the grain of the aluminium using 400 grade Wet or

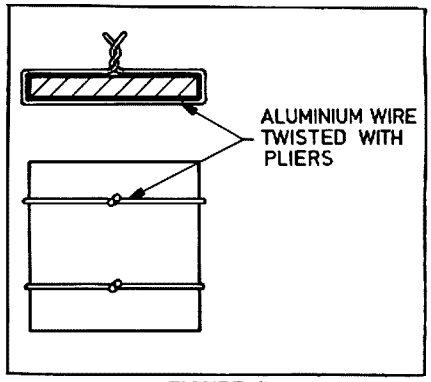


FIGURE 2

Dry sandpaper until all major scratches have been removed, keeping both the aluminium or wet and dry damp with plenty of water. Alternatively, sand blasting can be used if this facility is available, but the anodized finish is not as good and tends to go a greyish colour.

After sanding, take a pad of steel wool and a tin of Vim or Ajax from the XYL's kitchen cupboard and proceed by applying some more water to the aluminium panel and a reasonable coating of Vim or Ajax. Wet the steel wool and rub with the grain until all scratches have been removed, then rinse under water.

STEP 2. At this point we have a clean surface ready to be wrapped in wire. Aluminium wire of approximately 12 gauge (or 2.5 mm) will do nicely. Assuming a 5 in. x 5 in. panel again, place two pieces of wire flat on the bench about 4½ in. apart. Place the panel (clean face down) on the two pieces of wire and fold both ends of both pieces back over one another (Fig. 2), and twist together so a good firm connection can be maintained (Fig. 3). To maintain a good electrical connection right through the process a further twist in the wire (Fig. 4) is desirable. A word of warning, aluminium wire breaks under excessive bending. Experience will be the best teacher in this instance.

STEP 3. Surface Etch. Take the two pieces of wire left protruding from the bound aluminium panel and twist together at the top so as to form one connection point. Take the aluminium panel by the end of the protruding wire and place into the caustic soda bath for one minute approximately. A piece of PVC tubing or wood may be placed across the bath and the aluminium wire hooked over the tubing to save tired arms. After one minute, remove the panel from the caustic bath and rinse in a bath of water. After rinsing place the sheet in the nitric acid bath for 30 seconds.

The caustic soda gives a mild etch and takes any surface dirt out of the pores of the aluminium. The nitric acid acts as a surface cleaner, removing dirt etched out by the caustic leaving a near perfectly clean and positively grease-free surface to be anodized. After the 30 second etch, rinse clean in water. Do not touch the aluminium surface after it has been removed from the nitric bath as this will result in contamination of the surface due to body oils, etc.

STEP 4. Take the piece of PVC tubing, place it across the anodizing bath and submerge the panel about half way between the bottom of the bath and the liquid surface, hooking the wire over the tubing as before. Connect the negative lead of the power supply to the lead cathode lining the tank and the positive lead to the aluminium wire, making the panel the anode.

Check that the panel is not touching the lead liner and make sure the power leads are firmly connected (alligator clips with a 50 amp rating are suggested).

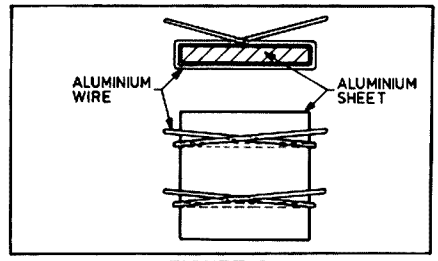


FIGURE 3

Throw the power supply switch and turn the voltage up to 10 volts (9-12V). Again, using a 5 in. x 5 in. sheet we would expect currents of approximately 4-7A to register. This will vary due to acid consistency and temperature.

The bath should be left for 40 minutes, checking the voltage and current every 10-15 minutes, adjusting when required.

Depending on the temperature of the acid, a white smokey effect will appear in the anodizing bath after the power is switched on, this is normal in this process.

An air purge line lightly bubbling in the bath will keep the acid agitated and cool during the process.

After the 40 minutes has elapsed, switch off the power supply and remove the power leads. Lift panel from bath, allowing excess acid to run off.

At this point a decision has to be made, to leave the aluminium clear with a protective finish or to colour the surface with one of the many dyes mentioned in Ref. 1.

If a clear finish is desired rinse the aluminium in very hot water to seal the surface.

However if a dyed surface is required, rinse in cold water, this allows the pores to stay open and accept the dye.

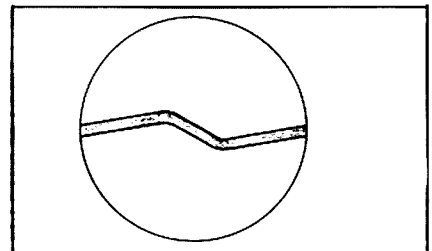
STEP 5. After panel has been rinsed in hot water nothing more need be done, the aluminium is anodized; but if a dyed surface is required two more simple steps need to be taken.

Firstly, loosen the tie wire slightly to allow the dye to run under the wire. Then place the aluminium in the dye bath (stirring before suspending) in the same manner as with the anodizing bath. The aluminium must be left in the dye for a good 20-30 minutes. Then remove from dye bath and rinse under the hot tap, sealing the dye into the surface.

After rinsing, hang the panel up to dry for a few minutes and allow hot water to steam off. It will be noticed that a powdery surface is present; remove this by taking a piece of paper towel or old clean rag and wipe in the direction of the aluminium grain.

To bring a rich strong colour to the surface, apply a thin smear of glycerine or machine oil to the surface and remove excess with a paper towel. Store in a plastic bag.

Well, there it is, anodizing in a nutshell, the way the professionals do it. As mentioned before, the uses are endless. One that comes to mind is anodizing heat sinks



INSET VIEW OF ALUMINIUM PANEL SHOWING WHERE TIE WIRE HAS BEEN BENT WITH THE NOSE OF A PAIR OF PLIERS TO GIVE EXTRA TENSION.

FIGURE 4

black, BUT be careful, anodizing forms an insulating coating on the surface, therefore if electrical connection is needed, the surface will have to be filed through.

Ref. 1. "Aluminium Dyestuffs", by Durand and Huguenin. Australian Agents, Sandoz Australia Pty. Ltd., 675-685 Warrigal Road, Chadstone 3148. Tel.: (03) 568 1033.

One final word concerning acid waste disposal. The Melbourne and Metropolitan Board of Works Trade Wastes Department will provide the necessary information. They can be contacted by ringing 62 0221, ext. 4721, or by writing to 625 Little Collins Street, Melbourne 3000.

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HF Mobile Transceiver FT-7

The all-solid state FT-7 mobile transceiver provides high performance on the 80 through 10 metre bands. The operator may select upper or lower sideband or CW operation, and the compact package provides many features engineered for convenience while mobile. A single knob provides all transceiver tuning, and the state-of-the-art noise blanker minimizes impulse-type noise such as that found in mobile applications. Inbuilt speaker, with provision for external speaker or phones. 500 KHz coverage on 10m. The FT-7 is designed for operation directly from your car's 12 volt battery. Dial and meter attractively illuminated in colour. Mic, mobile mount, power cable inc.; also tilt stand for base station operation. **Priced at $578.**

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- MOS FET receiver front end
- Receiver offset tuning
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- Single-knob tune-up eliminates fumbling around panel searching for load and plate controls.
- Extremely compact size for installation under dashboard
- Matching AC power supply with provision for crystal controlled operation available.

*Availability and price of these items TBA.
Prices and specifications subject to change.

Manufacturer's technical data

GENERAL

Frequency coverage: 80m 3.5–4.0 MHz, 40m 7.0–7.5 MHz, 20m 14.0–14.5 MHz, 15m 21.0–21.5 MHz, 10m 28.5–29.0 MHz installed; any 500 KHz segment between 28.0 and 29.7 MHz available as option.
Emission: LSB, USB (A3j), CW (A1)
Input power: A1, A3j, 20 watts DC
Carrier suppression: Better than 50 dB below rated output
Unwanted sideband suppression: Better than 50 dB @ 1000 Hz
Spurious emission: Better than −40dB
Distortion products: Better than −31 dB
Transmitter frequency response: 350–2700 Hz −6dB
Frequency stability: Less than 300 Hz drift from a cold start; less than 100 Hz over a 30 minute period after warm-up.
Antenna output impedance: 50 Ohms nominal
Microphone input impedance: 500 Ohms nominal

RECEIVER

Sensitivity: 0.5 μV for S/N 20 dB
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IF rejection: Better than 50 dB
Selectivity: −6 dB: 2.4 KHz, −60 dB: 4.0 KHz
Cross-modulation: Better than 60 dB immunity at 20 KHz off a 20 dB input signal typical.
Audio output: 3 watts @ 10% THD
Audio output impedance: 4 Ohms
Power requirements: 13.5 VDC ±10%, 234 VAC 50/60 Hz (with FP-7 or FP-4 power supply)
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PLENTY OF PARKING AT REAR

MODIFICATIONS TO THE YAESU FT100B

Geoff Wilson VK3AMK
7 Norman Ave., Frankston 3199

The following is a list of modifications which I have made to a Yaesu FT-100B transceiver, as has been my policy with previous modifications to commercial equipment there are no external changes or additional controls fitted. This isn't always the easiest way but saves a good piece of commercial gear from unnecessary disfigurement and helps to retain a higher resale value.

INTERNAL SPEAKER

Most FT-100Bs sold locally were fitted with an internal "X" bracket to reinforce the transceiver when used mobile. By carefully removing this bracket and shaping a baffle plate from aluminium to fit on to it a small speaker was mounted over the driver tuning controls between the PA cage and the front panel and the "X" bracket replaced. Make sure that the speaker can be removed if need be to peak the driver coils and the receiver front end. This modification proved very worthwhile, especially for portable and mobile operation and the existing holes in the top of the case give quite acceptable quality audio. The addition of a small jack on the rear panel allows use of an external speaker and automatic switching of the internal speaker when an external one is used. To play it safe and prevent RF feedback bypass the leads to the external speaker with a 0.01 uF.

ACCESSORY SOCKET

The existing nine pin socket on the rear panel was modified along the same lines as FT-101 accessory socket. The filament circuit to the driver stage was left intact but the filament supply to the PA stage was re-wired so that a link was required on the nine pin plug to complete the circuit. The existing wiring to the socket was removed (except the provision for switching external amps, etc.) and terminated inside the transceiver on a tag strip. Next 150 volts, 300 volts, 500 volts and the bias rail were brought to the socket for use with an external transverter if required. A low level RF output was provided by connecting a 10 pF 500 volt capacitor to one 6JM6 grid and to a small coaxial connector behind the PA.

USING PTT DURING VOX OPERATION

The circuit was modified to that shown in Figure 1, this allows the PTT switch to hold VOX on if required.

CW/TUNE MONITOR, BREAK-IN CW

The FT-100B was certainly not designed with the CW operator in mind, the lack of a keying monitor makes CW very awkward and an external monitor requires switching when SSB or AM is used. To operate

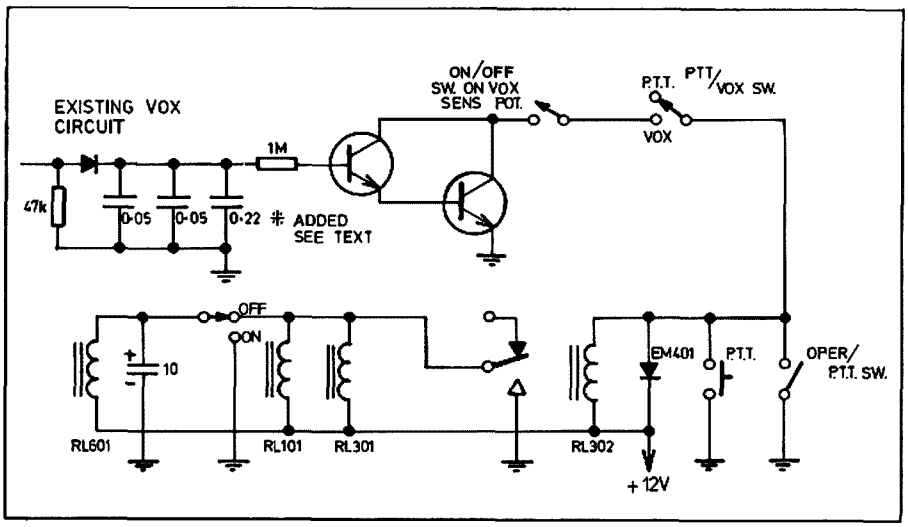


FIGURE 1

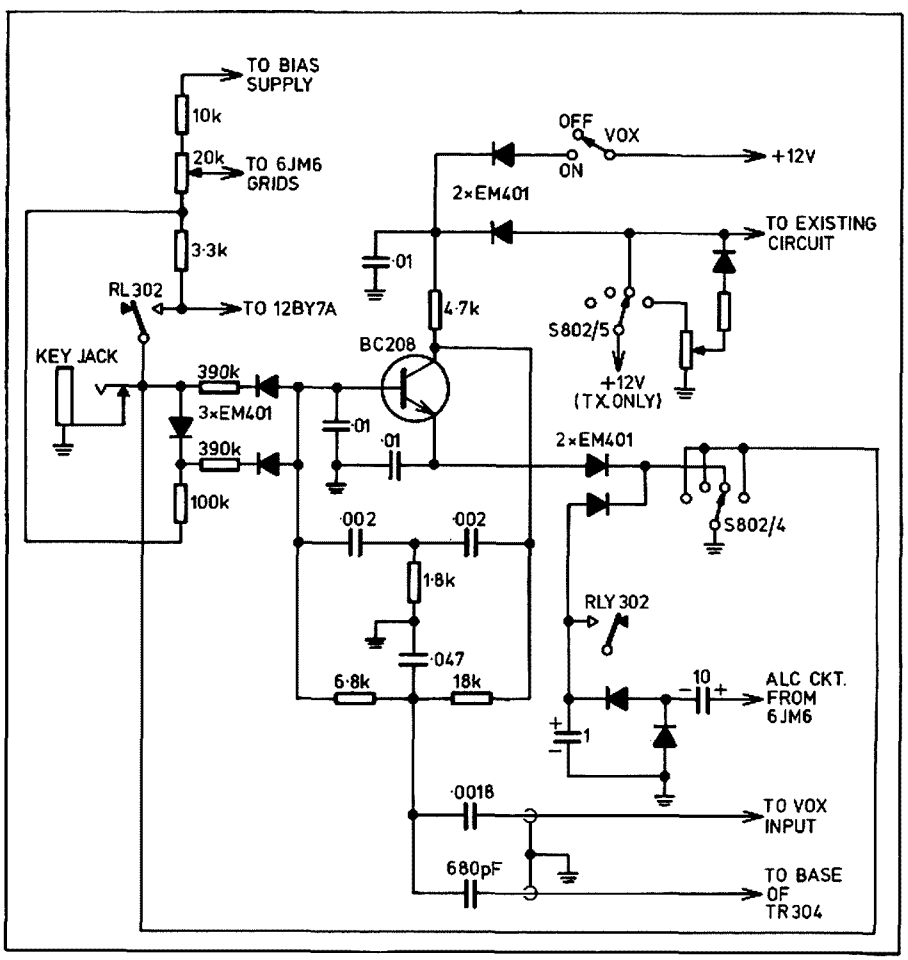


FIGURE 2

on CW the Operate/PTT switch (slider type) have to be placed in the Operate position before keying can be started and then returned to PTT to bring the receiver back on. The alternative is to operate the key with one hand and the microphone PTT switch with the other. Naturally enough the slide switch would have a very short life if CW was the main mode used.

Firstly a keying monitor was added and this proved to be a great improvement over the former system. Further investigation showed that it was possible to use this monitor to trigger the VOX and the final outcome was a workable break-in system. Before attempting to make any modifications I would strongly suggest a very careful study of both the transceiver circuit diagram and the actual circuit components. Unlike the FT-101 which is much neater with its plug-in boards, the FT-100B circuit is more difficult to follow around the looms, switches, relays, etc. Rather than giving a step by step description, I would refer anyone making the modifications to the circuit in Figure 2 and when combined with the original circuit the operating and physical details will be more apparent. Actual layout isn't particularly critical and in my case additional parts were mounted on tag strips. Shield and bypass if necessary the leads going to the VOX and receiver audio amplifier stages to prevent RF feedback.

A BC208 is used as the audio oscillator. By using existing switches isolated by diodes the 12 volt supply is either cut off or the transistor biased off in all conditions except the CW/TUNE mode. Before doing this modification the circuit must first be changed as shown in Figure 1. The output from the oscillator is fed to the receiver audio stage and the level is preset; when the transmitter is operated in the CW or TUNE mode the bias is removed and the oscillator turned on. In the TUNE position the tone is a handy reminder that the transmitter should only be operated for short periods to prevent damage to the finals. This feature is found in the FT-401 and similar models but is notably lacking in the FT-101 series. One feature should be carefully noted with this modification. If the VOX switch is in the ON position and the plug from the key is removed from the key jack while the transceiver is in the CW-TUNE position on receive, the transceiver will lock on at full input. This may result in damage to the final tubes, especially if the antenna has been disconnected, however under this condition the CW monitor will operate and indicate a transmit condition is occurring thus providing an audible alarm.

In addition to the modifications shown in Figure 2 the following minor modifications were also necessary (refer to transceiver circuit). A 1.2 k ohm resistor was connected from the junction of R237, R238 and C232 to earth. Remove the existing link between this point and the junction of R312, R313 and C316. Feed this point from the 12 volt positive rail via 470 ohm resistor. A 0.22 uF capacitor was added to the RC network in the VOX circuit (across the pair of 0.05 capacitors) to increase the hold-in time of the VOX. This may have to be individually adjusted to suit operator's tastes. Less C will make the relay pull in more quickly when the key is first closed but will also drop out again very quickly. More C will increase the time before the relay pulls in due to the increased charge time but will also hold the relay closed after the key is opened until the charge on the C decays.

The VOX circuit is wired through two switches (VOX ON/OFF and SW. POT. ON VOX SENSITIVITY CONTROL), this gives an added safety factor in case the VOX is accidentally left on.

To operate break-in advance the sensitivity potentiometer to mid position or slightly further and the transmitter should key almost as soon as the key is pressed. ■

ADDITIONAL OPERATING NOTES FOR G3LLL FT200/FT250/TEMPO-ONE RF CLIPPER

J. Holding, G3LLL

The following details may be of help to purchasers of the G3LLL RF clipper.

ALIGNMENT (Note: Some cores may be sealed with wax. If so heat with fine tip of soldering iron before attempting adjustment.)

Tune to calibrator signal at 21.1 MHz with clipper switched in, and peak L103 and L104 for maximum "S" meter reading. Tune carefully across the signal and note any excessive peaks or troughs in the response, and if necessary slightly re-adjust L103 and L104 to even the response out. Re-check the response by tuning to the calibrator signal on the 20 and 80 metre bands. If the response is any less even on these bands reset trap coil L1 (see picture page 20 FT.200 manual) so as to even out the response and prevent any tendency to oscillation on these bands.

CARRIER CRYSTAL FREQUENCIES

Carrier crystal setting is more critical on receive than it is on transmit when using the clipper, and occasionally it may be desirable to adjust TC.101 or TC.102. Set for best receive audio quality with the clipper switched in.

TRYING IT OUT

80 metres is not the ideal band to test clippers on as signals are usually strong. By all means ask for quality reports but only expect a really noticeable improvement in readability when your signals are below strength 5. ■

TRY THIS

WITH THE TECHNICAL EDITORS

OP-AMP TESTER

Ever built up a circuit using one of those new-fangled op. amp. I.C.'s and found that it didn't work? Was it the circuit or that multi-legged bug that was at fault? Perhaps you gave up and still don't know. Well here is the good news. Build this circuit and you can check all 709 or 741 type op. amps. The bad news is that you need to wire in three sockets to accommodate all three package configurations. Ah well, life wasn't meant to be easy.

The circuit was developed by A. R. Owens and published in CQ-TV No. 96, November 1976. The circuit provides indications of the op. amp.'s state of health as follows:

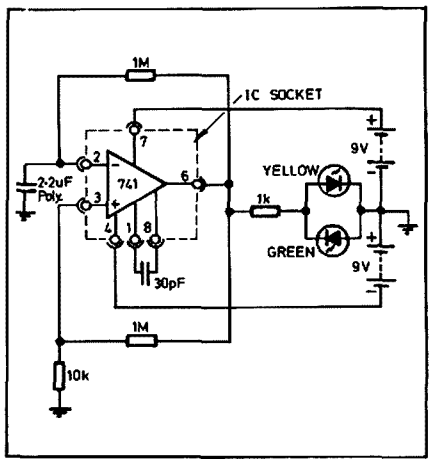


FIGURE 1

Both LED's flash alternately, equal period, 2 second rate — amp. OK.

Both LED's flash alternately, but periods unequal — amp. amplifies but has unequal leakage currents.

One LED lit — input fault.

Neither LED lit — output fault (or battery flat).

No switch is provided as the current drain from the battery is zero until an op. amp. is pushed into the socket.

VK3AFW. ■

WITH THE BOWER BIRD "FREAKS"

A. Shawsmith VK4SS
35 Whynot Street, West End, 4001

It is the private or amateur collector who has been, is and quite likely will remain the strongest force in the preservation of early wireless. Bitten by the "bug", it is his persistent efforts that unearth so many facts and relics of the past, before they are lost forever in the land of the limbo.

As most are aware, we, in this country, for better or worse follow USA trends. In the States, these past few years, there has been a large upswing in the number of bona fide collectors of early wireless and electronic gear. It is encouraging to observe the beginnings of a similar happening here.

The Antique Wireless Association (AWA) of America, with a membership of several hundred is probably the largest single group of private collectors in the world. They are mostly OT amateur and commercial wireless operators. The Association maintains a large museum, which is one of the finest of its kind.

One USA "Who's Who" lists almost 600 private collectors along with their particular interests (as distinct from business houses, museums, etc.). This number could probably be safely multiplied several times, as many, for personal reasons, keep their names off registers — and seldom, if ever, advertise.

Most collectors get started by accident. Aunt Martha's tattered and musty old cathedral has finally gone on the blink, after years of humming and rattling and she wants it fixed. It turns out to be nearly as ancient as the old girl herself: everything in its cockroach-marked interior looks mummified and gargantuan by modern standards. You notice that the cabinet is no flimsy affair but solid oak, ornately finished. Maybe you're no longer turned on by the modern modular units — anyway, you decide to restore and keep it and tell Aunt Martha a white lie by saying it's had its day.

A lay friend drops by with something lumpy wrapped up in half a newspaper, "Dunno exactly what it is but it's been kicked around the garage for years". The object turns out to be a 1920 loose-coupler, built along classical lines. It's complete with variable condenser, glass closed and with fones to match. You realize what an elegant piece it would be, with its brass gleaming, coils cleaned and the redwood base repolished: you can't wait to get started on it. You're hooked and new horizons are about to appear — and the following doggerel might apply:

"Once the 'bug' has really bit
— protest: but that's the end of it.
Nothing now, the fates proclaim
Can ever be again the same."

One has only to read such USA newspapers as "The Collector's News", "Antique Monthly" and others, to realize that if a thing — any old thing at all — has a physical dimension, then there's a collector for it. The scope seems absolutely endless. The same applies within the framework of electronics: the problem is one of a surfeit of choices.

Fin Stewart, Feulcombridge, N.S.W. Australia — Pictured is Fin in a corner of his large museum, believed is be the largest in the southern hemisphere. Although his speciality is early tubes and lamps, he does have a fine collection of broadcast receivers and related equipment. Photo by courtesy of O.T.B., USA.

Some collectors set their sights at the widest possible angle and collect all phases, from the early telegraph to the 1950s. Most, however, develop a particular interest and stick to it. Pre-WWII commercial B/C sets are a popular item and in this field alone, the divisions are many and varied. Some concentrate on eras, or on one or other of the hundreds of specific makes, in an endeavour to obtain all the models produced. Others simply go for the variety of cathedrals available, while others again stick to battery type only. Then there's the "Spark" enthusiast who wants the rare 1900-1915 gear. Old disc devotees like to give their 78s authenticity by playing them through "hi-fis" of the same period. Others make test instruments their thing — the more ancient, the better.

Certain collectors have a passion for component parts, odd spider-wound and honeycomb coils, variocouplers, tubes, Victorian shaped AFTs, condensers, etc. These they display to the best advantage, rightly claiming that such parts are hidden in most cabinet receivers and seldom, if ever, seen.

Specialists narrow their interests to and expand their knowledge in tubes and valves, globes, meters, headphones, telephones, telegraph and associated equipment, morse keys, etc.

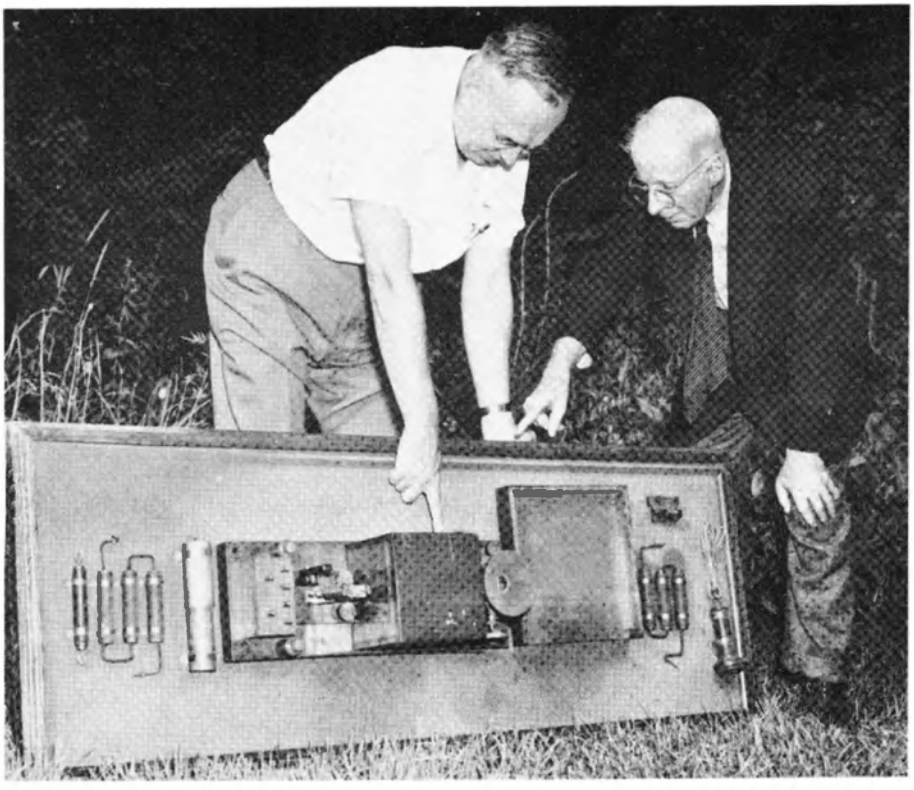
Hornspeakers seem to have a fascination for one and all. They stand anywhere, as a symbol of the first "talking" sets. Their varying shape, style, size and performance has been described as poetic to weird. A glance through McMahon's Vintage Radio Book will confirm this.

Since the first crude earpiece was constructed, hundreds of different types and makes have come on to the market. Pinned to a board in the museum of AWA, USA, are over fifty different headsets, all of which were produced within a span of a few years, in the 1920s. They are displayed to show the diversity that existed, even in those days.

It may surprise most readers to know that in the USA alone, over 1000 patents have been taken out for morse keys — mostly different in design. This number could probably be doubled, as many more were put on the market, plus the types made and used in the Armed Services in WWII. Add to this the number produced elsewhere in the world and the total become such that any avid magpie for morse keys could only hope to obtain a fraction of what is available in his lifetime.

Our newly-gained influence has altered the life style in most households. Ham shacks have come in out of the cold, from sheds and corners under the house, to an indoor's habitat. Most hi-fi enthusiasts

WORLD'S RAREST RECEIVER LOST



Is this the most famous of them all? It is claimed that this LF COHERER RECEIVER was the one used by Marconi on Signal Hill, In 1901, when he received the now famous three dots (letter "S') from the UK across the Atlantic.

Marconi is supposed to have placed the set In the care of a friend, George Clark (OM at right in dark coat). When George died in 1956, all his historical equipment was dispersed and the whereabouts of what could be the world's most famous receiver is now a mystery.

Photo by courtesy of AWA, USA.

manage to set up a separate den, complete with their equipment and wall decor. Collectors, too, try to show off their bits and pieces to the best advantage — or should do so, as early wireless and other gear has a tremendous visual appeal and an even bigger talking point. A half dozen such adornments spread around a shack that is already covered with rare QSLs, certificates and other decor, will win out over the latter every time. Even the totally uninitiated seem to be charmed — particularly if the stuff works. Many pieces of early gear were handsome instruments, craftsman or individually made, with much attention given to quality and aesthetics, the like of which will never be seen again.

The esoteric language of the collector can be quite confusing to the layman. It is well understood what is meant by certain words:—

MINT, in the world of philately, means new (and once a new stamp has been hinged, it then becomes UNUSED); In the wireless collector's book, it could indicate something that has had considerable use for many years but still looks and works as new.

The one word most abused and over which so many are confused is ANTIQUE. Any object has to be 100 years old to earn this distinction. Some morse keys and telegraphic instruments qualify, as they date back to 1848 — but, as wireless started with Marconi, around 1900, there is, in theory, no such thing as Antique Radio. Yet every day there are advertisements to the effect "Sell B/C GENUINE ANTIQUE". This does not mean the seller is out to deceive, as by common consent dealers and collectors seem to have set 50 years, not 100 years, as their own standard of antiquity. It must be admitted, however, that this shortened period probably has commercial advantages. ANTIQUE is an evocative word — and consequently likely to enhance sales.

WIRELESS is a term that came into being at the turn of the century and continued until the early commercial broadcasting days in the late 1920s. The word RADIO then began to have common usage.

VINTAGE, in its loosest application, could mean any time prior to 1950. So, gear designated as such denotes little unless followed by a date or circa.

CLASSIC Is another that creates confusion. Some collectors regard any equipment over 25 years old as a classic. Others apply it in the sense that it means any piece, of any period, that's outstanding in workmanship and performance. Then again, there are those who tag it to custom or specially built equipment of high quality, as against that which is mass produced.

Unless there is a need to be specific, or definitive, it Is probably best to use the word EARLY rather than the above terms and so avoid misunderstanding.

How and where to unearth the goodies, at a price the amateur hip pocket can stand, is a subject of endemic discourse among those of the cult. Their persistent efforts to run a particular piece to ground would draw comment from Sherlock Holmes. Collectors habitually snoop antique stores, trash and treasure displays, flea markets, disposal shops, junk yards, swap meets, auction marts, pawnbrokers, town dumps, etc. — eternally hoping that something new will turn up. Were it simply a matter of placing an ad. in the local news and then going around picking up the rarles, the game would lose its savour and challenge and half of them would drop out.

Club membership is probably the best way to spread your word around. An advertisement placed in the right paper or magazine, from time to time, is likely to produce results. A reliable overseas source is another must: here, the USA offers the greatest possiblilities.

The private collector usually prefers to trade, or swap, rather than to sell. In the world of musty, rusty and dusty early components, parts and other gear, a level of supply and demand loosely prevails and so sets the value or price of a certain article. However, at best, this is widely variable and most swaps are made on individual needs. It is necessary only to own two or more genuine pieces of gear, older than 25 years, to be welcomed into the ranks.

It is to the credit of "bower bird freaks" that most play the game honestly and will help any beginner to get started. However, in every activity there are con men — those who are prepared to pass off a bitzer as a pedigree pup. Box numbers under nom-de-plumes, offering plums for sale, should be treated with caution. Most are OK but it Is the favourite ploy of the fly-by-night operators: so, Caveat Emptor! (Let the buyer beware!)

The cardinal sin in the business is to dope up some piece of equipment and pass it off as genuine: putting a modern chassis into an antique cabinet is the most common lark. Another gross error is crude or bad restoration work. At its worst, it can render a valuable article fit for the scrap heap. This is the one area where the old cliche really does apply, "If it's worth doing, do It well". Of course there are tricks in every trade. Two In common use are inserting tiny AFTs into old ones that are U/S and doing likewise with valves or tubes. These modifications can be regarded as legitimate or bastard, depending on the availability, or otherwise, of the parts in question.

Harold Burtoft VK2AAH at work in his museum restoring an early battery B/Cast wireless of the 1920s. Harold's large museum was recently shown on TV. It includes old Phonographs and other unusual instruments, besides the many and varied pieces of valuable wireless gear. The museum is open for inspection by appointment only. See story inside.

Photo by courtesy of A. Shawsmith VK4SS.

The destruction of so many valuable pieces from our early heritage is sad. To the uninitiated, treasure soon becomes trash and is disposed of to the junk room downstairs, to the garage, or to the outhouse. There, it may be stripped piece by piece, or simply gathers dust; finally, maybe after many years, its remains are consigned to the city dump. There is a continual loss in this way. The bulk of equipment produced pre-WWII is now on the seabed, or under the sod — and what's left on top already seems to be spread thinly indeed. Many pieces deserve a better fate than a common or unknown graveyard: they would enhance even the most elegant room or shack.

Henry Ford was known to enjoy chopping his own firewood because, he said, "This way it warms me twice". (He is also reported to have said "History is bunk".) Collectors do even better, for they are thrice rewarded — the finding, restoring and displaying is a threefold labour of love.

What makes a "bower bird freak"? This is a good question. There's a little of it in all of us — a hang-over from our primitive past, when it was imperative to hunt and hoard. The instinct still persists in a civilized form. What of the present upsurge of interest — is it just another passing fad or fancy: does affluence have some part in it? We can now afford certain indulgencies, for the first time ever. Is it due to nostalgia and a craving for the familiar and possibly more secure past? Whatever the real reason, the genuine private collector serves his community well: his efforts and contributions have enhanced displays in museums the world over. ■

FREQUENCY PROGRAMMING FOR THE ICOM IC22S

Bruce Riley VK3ZSR
15 Salisbury Street, Wangaratta, Vic. 3677

This programme computes the diode layout for the Australian 50 kHz channelling 2 Mx band plan for the Icom IC22S, and gives an Australian version of the table normally published with the owners' handbook.

Copies of the original program written in FORTRAN IV, may be obtained from the author at the above address (please include SAE).

To program a particular frequency, insert diodes in positions indicated by the figure 1.

In Duplex A mode, receive is 600 kHz higher.

In Duplex B mode, transmit is 600 kHz higher.

N, centre column, is the decimal equivalent of the binary number which is set into the diode matrix. ■

FREQUENCY MHz	N	DIODE MATRIX D7	D6	D5	D4	D3	D2	D1	D0
144.45	2	0	0	0	0	0	0	1	0
144.50	4	0	0	0	0	0	1	0	0
144.55	6	0	0	0	0	0	1	1	0
144.60	8	0	0	0	0	1	0	0	0
144.65	10	0	0	0	0	1	0	1	0
144.70	12	0	0	0	0	1	1	0	0
144.75	14	0	0	0	0	1	1	1	0
144.80	16	0	0	0	1	0	0	0	0
144.85	18	0	0	0	1	0	0	1	0
144.90	20	0	0	0	1	0	1	0	0
144.95	22	0	0	0	1	0	1	1	0
145.00	24	0	0	0	1	1	0	0	0
145.05	26	0	0	0	1	1	0	1	0
145.10	28	0	0	0	1	1	1	0	0
145.15	30	0	0	0	1	1	1	1	0
145.20	32	0	0	1	0	0	0	0	0
145.25	34	0	0	1	0	0	0	1	0
145.30	36	0	0	1	0	0	1	0	0
145.35	38	0	0	1	0	0	1	1	0
145.40	40	0	0	1	0	1	0	0	0
145.45	42	0	0	1	0	1	0	1	0
145.50	44	0	0	1	0	1	1	0	0
145.55	46	0	0	1	0	1	1	1	0
145.60	48	0	0	1	1	0	0	0	0
145.65	50	0	0	1	1	0	0	1	0
145.70	52	0	0	1	1	0	1	0	0
145.75	54	0	0	1	1	0	1	1	0
145.80	56	0	0	1	1	1	0	0	0
145.85	58	0	0	1	1	1	0	1	0
145.90	60	0	0	1	1	1	1	0	0
145.95	62	0	0	1	1	1	1	1	0
146.00	64	0	1	0	0	0	0	0	0
146.05	66	0	1	0	0	0	0	1	0
146.10	68	0	1	0	0	0	1	0	0
146.15	70	0	1	0	0	0	1	1	0
146.20	72	0	1	0	0	1	0	0	0
146.25	74	0	1	0	0	1	0	1	0
146.30	76	0	1	0	0	1	1	0	0
146.35	78	0	1	0	0	1	1	1	0
146.40	80	0	1	0	1	0	0	0	0
146.45	82	0	1	0	1	0	0	1	0
146.50	84	0	1	0	1	0	1	0	0
146.55	86	0	1	0	1	0	1	1	0
146.60	88	0	1	0	1	1	0	0	0
146.65	90	0	1	0	1	1	0	1	0
146.70	92	0	1	0	1	1	1	0	0
146.75	94	0	1	0	1	1	1	1	0
146.80	96	0	1	1	0	0	0	0	0
146.85	98	0	1	1	0	0	0	1	0
146.90	100	0	1	1	0	0	1	0	0
146.95	102	0	1	1	0	0	1	1	0
147.00	104	0	1	1	0	1	0	0	0
147.05	106	0	1	1	0	1	0	1	0
147.10	108	0	1	1	0	1	1	0	0
147.15	110	0	1	1	0	1	1	1	0
147.20	112	0	1	1	1	0	0	0	0
147.25	114	0	1	1	1	0	0	1	0
147.30	116	0	1	1	1	0	1	0	0
147.35	118	0	1	1	1	0	1	1	0
147.40	120	0	1	1	1	1	0	0	0
147.45	122	0	1	1	1	1	0	1	0
147.50	124	0	1	1	1	1	1	0	0
147.55	126	0	1	1	1	1	1	1	0
147.60	128	1	0	0	0	0	0	0	0
147.65	130	1	0	0	0	0	0	1	0
147.70	132	1	0	0	0	0	1	0	0
147.75	134	1	0	0	0	0	1	1	0
147.80	136	1	0	0	0	1	0	0	0
147.85	138	1	0	0	0	1	0	1	0
147.90	140	1	0	0	0	1	1	0	0
147.95	142	1	0	0	0	1	1	1	0
148.00	144	1	0	0	1	0	0	0	0

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ICOM

MAKE THE COMPARISON AND SEE WHO HAS THE WINNER ...

	ICOM IC-211	TRIO TS700S	Yaesu FT221R
• The most flexible tuning system on a 2 meter base station			
— Fast flywheel tuning	Yes	No	No
— Features *2* completely *independent* VFO systems *built in* with memory storage, standard at no extra cost	Yes	No	No
— VFO style tuning with synthesized stability and accuracy	Yes	No	No
— Programs virtually any repeater split. (No extra crystals necessary.)	Yes	No	No
— High speed electronic tuning advance on SSB	Yes	No	No
— Switched AGC speed control on front panel	Yes	No	No
— Tuning knob locks electrically—no accidental frequency changes in mobile operation	Yes	No	No
— RIT automatically releases on QSY	Yes	No	No
— Operates on FM, USB, LSB and CW	Yes	Yes	Yes
— Capable of external key-board frequency control	Yes	No	No
• State-of-the-art electronics featuring LSI technology	Yes	No	No
• Large *instantaneous* digital Led readout (no waiting for counter update on QSY)	Yes	No	No
• Completely solidstate	Yes	Yes	Yes
• AC/DC power supplies built in	Yes	Yes	Yes
• Separate discriminator and S meters	Yes	No	No
• SWR bridge built in	Yes	No	No
• Variable power output control on front panel	Yes	No	No
• **Fully broad banded over 4 MHz (no peaking/ switching required over 4 MHz)**	Yes	No	No
• Front panel dimmer switch	Yes	No	No

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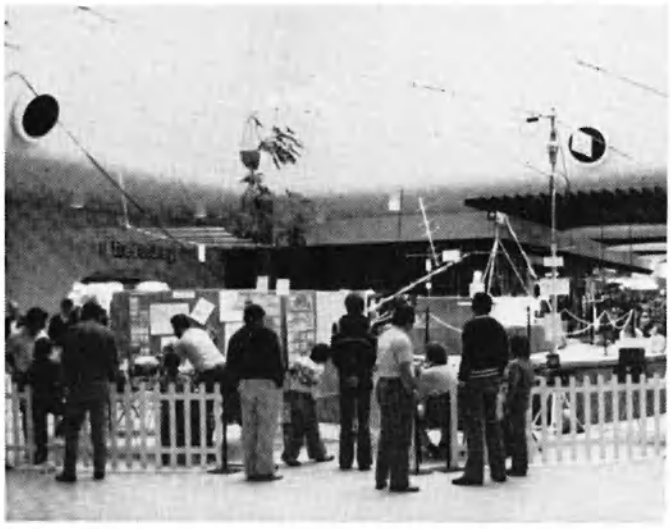
SHOW TIME IN THE WEST — FROM PERTH



VK6 Division display in the Garden City Shopping Centre, Booragoon, October 1977, was a big success. The morse code section was voted a "must" for future displays. The display was a goer with Saturday morning visitors. — Photos courtesy VK6NE

THE RON WILKINSON ACHIEVEMENT AWARD

As foreshadowed in WIANEWS in December 1977 AR, a new WIA Award has been made possible through the generosity of Mrs. Mary Wilkinson, widow of the late Ron Wilkinson VK3AKC. Her donation of $1,100 to fund this Award has been Invested In Government Bonds so that the annual Interest will meet the costs of the annual award insofar as this is possible.

The winners of the Award will be announced each year in the March issue of AR for the reason stated In the announcement below. The details of this Award were prepared by an Executive Sub-Committee composed of Mr. P. Wolfenden VK3ZPA/NIB, Executive Vice-Chairman, Mr. G. F. Scott VK3ZR, Education Co-ordinator, and Mr. B. Bathols VK3UV, Editor of AR. The recommendations of this Sub-Committee were approved by the Executive, slightly modified (award name) by Mrs. Wilkinson, and not disapproved by the Divisions.

The joint winners of this Award for 1977 as selected by the Executive are Wally Green VK6WG of Albany and Reg Galle VK5QR of Enfield, South Australia, for their 1296 MHz record-breaking contact as reported in AR for March 1977.

Left: Reg VK5QR adjusting 2304 MHz dish.

Below Left: VK5QR in his shack.

Below Right: Presentation of certificate to Reg by VK5 Div. Pres., Colin Hurst VK5HI.

Photos by Christine M. Mahony.

DETAILS OF THE RON WILKINSON ACHIEVEMENT AWARD

1. **NAME:** THE RON WILKINSON ACHIEVEMENT AWARD.
2. **FREQUENCY OF AWARD:**
   The Award is to be made annually during the month of March — nominal date 3rd March and relates to the previous calendar year insofar as this is practicable.
3. **REASON FOR AWARD:**
   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.
4. **THE AWARD:**
   The Award is to be funded from the interest from the donation by Mrs. Wilkinson, supplemented from Institute funds if required.
   The Award is made up of —
   2. $50 cash.
   1. A certificate.
   3. Books from "Magpubs' to the value of $50.
   4. WIA subscription paid for 1 year.

   In the event of a joint Award, then each party will receive —
   1. A certificate.
   2. WIA subscription for 1 year.
   3. A proportionate amount of cash and books from "Magpubs".
5. **METHOD OF SELECTION:**
   1. The Award will only be available to amateurs from VK call areas.
   2. Preference will be given to WIA members.
   3. Individual amateurs may nominate or make a personal application to the President of their Division by 31st October each year.
   4. The President of the Division is then to forward the most meritorious applications/nominations to the Executive by 30th November, only after satisfying himself that the applications/nominations are worthy of consideration.
   5. The Executive will nominate the recipient of the Award by 31st January, subject to Federal Council agreement if considered necessary.
   6. The Award will be announced in Amateur Radio for March. The nominal Award date is 3rd March each year — the birthday of the late Ron Wilkinson VK3AKC.
   7. In the event of no nominations forthcoming, the Executive may select a recipient ("may not shall").

CERTIFICATE

This is being designed and prepared. A condition is that it will contain a list of all nominees year by year. A facsimile will be published as early as possible. ■

WICEN EXERCISE— RED CROSS MURRAY RIVER CANOE MARATHON

Between Christmas and New Year a canoe race is run between Yarrawonga and Swan Hill. The event is run by the Red Cross and the canoeists have to paddle 400 km over five days.

Since December 1972 the essential safety communications have been provided by a team of Amateurs operating a WICEN net. The net consists of a portable control station with other portable and mobile stations which moves down the river keeping up with the canoe race.

The race is organised by the Victorian Division of Red Cross and the WICEN group from Victoria provide the operators for the WICEN net.

For the December 1977 race 30 Amateurs took part and provided a self-contained HF and VHF control station, VK3AWI, as well as four portable HF and VHF stations at control points along the river. Mobile stations with both HF and VHF were used to provide mobile relay stations for VHF mobiles temporarily installed on power boats. These power boats provide assistance to canoeists on the river and require communications to arrange first aid and evacuation of canoeists.

The team of operators arrived in Yarrawonga on Boxing Day; mostly without incident except for Kevin VK3AUQ, who found that Subarus don't run too well on mixed oil and water.

The weather is usually fine and hot but on the first day there was light rain and a stiff breeze. The conditions prompted John VK3ZCX to don his trusty overcoat and some wit dubbed him "The Flasher", which stuck for the duration.

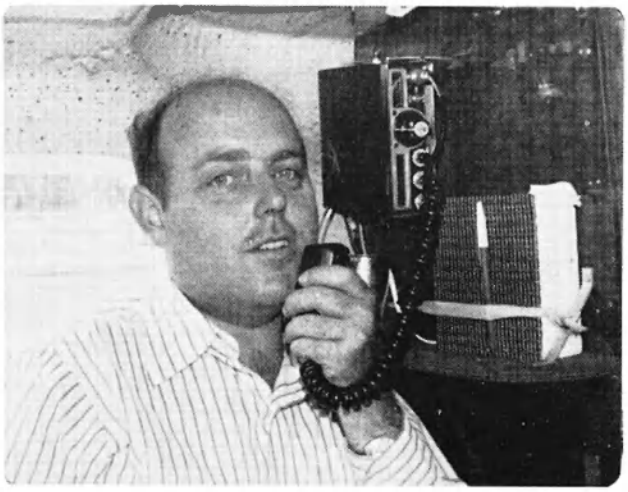
On the final day Morrie VK3BMD, Inspired no doubt by the amber fluid, took to the water with one of the organisers and paddled a canoe called Fosters. A pretty good effort as they paddled the full 76 km for the day.

The marathon winds up with a barbecue on New Year's Eve in Swan Hill and a good time is had by all as they unwind.

Those taking part in the 1977 marathon included VK2AGO, VK3s AAE, AED, AEJ, ANX, NFY, ALX, AUI, AUQ, AVJ, AYL, CCT, BGM, BJM, BMD, BER and BIR and family, NB, ZCX, ZIM, ZIW, YBS, YCQ, YJE, YJM, NDD, ZJS.

An enjoyable time was had by all taking part. If you would like to take part in the next marathon John Payne VK3AED would be pleased to help you. He may be contacted via the Victorian Division Rooms at 412 Brunswick Street, Fitzroy.

VK3AUI.



VK3AUI installed in safety boat RAJ II.

River bank check point, VK3AAE/VK3YJM.

Safety patrol boats, VK3AUQ in boat.

Peter VK3ANX and Martin VK3YJM manning a check point.

ATV NEWS

KEVIN CALLAGHAN VK3ZVJ
PETER COSSINS VK3BFG

The British Amateur Television Club is currently celebrating the 100th edition of CQ-TV by introducing a new award for transmitting and receiveing fast scan high definition television. The following Is an extract from CQ-TV, November 1977.

THE CQ-TV AWARD

Transmitting Award

For pictures transmitted which have been successfully identified by another station, claim 2 points per kilometre. If the contact becomes a successful 2-way exchange of pictures the 10 bonus points may be claimed by each station regardless of distance. Careful logging of transmissions is essential.

Receiving Award

For any picture positively identified, claim 2 points per kilometre. If any contacts are on 23 cm or above, the points should be doubled.

The award is divided into 3 grades —
Bronze 1,000 points.
Silver 5,000 points.
Gold 10,000 points.

A station may be worked only once per day, commencing 1st November, 1977.

Certificates are available for this award and may be upgraded with silver and gold seals.

Applications, including return postage and log details, complete with call sign, date of QSO, band, location of station worked and points claimed, contacts made other than from the home station to be clearly marked, should be made to —

John L. Wood G3YQC,
54 Elkington Road, Yelvertoft,
Northampton, NN67LU.

QSL cards are not required but logs should be checked and signed by one other licensed amateur.

Note that VK3s would qualify for a bronze award for 2 contacts to VK7EM and that Winston (or any other VK7) could notch up a gold in a couple of good nights. It would be nice to show the Gs how it is done.

Ian VK3ALZ has kindly furnished me with an updated version of his cathode modulator. The new model is much improved and includes sub-carrier audio. I will provide complete details of this in a later edition of AR.

Activity on 1296 MHz is on the increase in Melbourne. Les VK3ZBJ, Ian VK3ATY, Ron VK3AHJ, Ian VK3ALZ are already transmitting and receiving pictures with a number of other stations in the planning stages. Edition 4 1977 VHF Communications has an article on a solid state transverter for 1296 that would be ideal for stations with IF modulated television transmitters. The unit is rated at about 200 milliwatts in television service and would be a good exciter to get you on the band.

On Monday evening, the 30th of January, the monumental television contact of the decade occurred in Melbourne. VK3ZVJ initiated a transmission on 426.25 MHz. This transmission was received at VK3ZBJ and re-transmitted on 1290.25 MHz. VK3ZBJ's transmission was received at VK3AHJ, who re-transmitted the signal to VK3ATY on 581.6 MHz. VK3ATY then re-transmitted the signal on 1290.25 MHz. Unfortunately VK3ZVJ had no receiving equipment to close the loop. ■

TECHNICAL CORRESPONDENCE

The Editor,
Dear Sir,

Please note that the postscript on page 13, January 1978 AR, is erroneous (the $50 part).

I was misquoted, and I wish to apologize to Norm Wilson VK4NP for any inconvenience this may cause.

FURTHER: A minor misprint was that the 5058 stores 1024 8 bit words. This should be 1024 *bits*.

Also any number of 5058s can be added one after the other to expand the storage capacity.

H. G. Kociemski VK2BIT. ■

AMATEUR SATELLITES

Bob Arnold

VK3ZBB

As mentioned last month Charlie VK3ACR is now maintaining a weekly liaison with Harry JA1ANG, and his contacts have already proved valuable to Dave Hull VK3ZDH operator of the Melbourne command station.

Harry writes "Season's Greetings to All. Welcome to you, Charlie VK3ACR. Our thanks go to David VK3ZDH for making the introduction. Now that we have a link with Melbourne, we feel more secure than before. David is responsible for Project Australis of AO5 fame, also he runs the telecommand station in Melbourne. Needless to mention, without his unselfish telecommand activities AO6 would never have 'lived' so long".

"He will be commanding AO8 for us as soon as AO'D' becomes AO8. Although details have not been announced by AMSAT yet, it looks like AO8 will be operated in Mode A during the week and on Mode J over the week-ends and I am sure David will be kept busy in telecommand chores in conjunction with other command stations such as VESAT and G3YJO. Thanks, David, for your hard work."

Harry's letter gives us a further update on AO"D" which has now completed Thermal Vacuum Tests at COMSAT Labs. in Maryland, USA. Several anomalies were noted and these will be corrected by W3PK and helpers at AMSAT headquarters. Painting of the satellite is now being undertaken at ARRL so everything should be in order for launch on March 5th, 1978, roughly the date you will be reading these notes.

AO"D" will be launched at 1730-1800Z aboard a Delta rocket together with LANDSAT-C and NASA's PIX satellites. Further orbital details were given in AR November 1977.

I hope all OSCAR operators will have received news via Divisional broadcasts of the new operating schedules for AO7.

Effective 1st January, 1978, the sequence is BBA BBA ————, this is detailed in the orbital data attached. While on orbital data, my apologies for errors in the February predictions — I know my maths are weak, now I know I cannot read a calculator correctly!

JAMSAT has a 28 MHz pre amp available in kit form or "wired and tested". The unit uses one MOSFET and operates on a 9 volt battery. The price of the kit is $US6.00 (or other currency equivalent) post paid airmail. Please write to JAMSAT, P.O. Box 117, Tokyo Central Post Office, Tokyo, 100-91, Japan, for attention of JR1SWB.

A second book on OSCAR has recently been published. This is entitled "Getting to Know OSCAR from the Ground Up" and is available from ARRL, Newington, CT.06111, USA, at $US3.00 and also from The Technical Book Shop in Melbourne at a much higher price.

The book consolidates a series of articles which have appeared in QST and covers virtually every topic one needs to know about the present and future satellites launched under the auspices of AMSAT.

As the various chapters in the book were originally published as articles in separate editions of QST, there is inevitably some repetition but this does not detract from the general usefulness of the publication, in fact, it tends to reinforce important topics which may otherwise be missed.

The sections on "Finding OSCAR" and "How to Use OSCAR 7 Mode B" are clearly written and the whole book is well illustrated with drawings and photographs.

A particular section refers to "The OSCARLATOR", and a coloured map is available to assist in predicting OSCAR orbits. Unfortunately, this map is for the Northern hemisphere and is of little use to operators in Australia but the same methods adopted for locating OSCAR in the North are applicable to the Southern hemisphere if one is able to obtain a suitable map centred on the South Pole.

In my review of last month of the German publication, I mentioned the absence of practical information on antennas; these are more comprehensively covered in the ARRL book and the photographs clearly illustrate the types of installation which can be constructed using conventional rotators and relatively simple Yagi antennas.

Although Australian amateurs have not been in a position to listen to or use educational and experimental programmes conducted through the OSCAR series of satellites, there is a chapter on this subject which clearly illustrates what has been done by those who have been involved in this type of presentation. Many amateurs are interested in the Phase 3 satellite which, through its elliptical orbit, will give much greater coverage than the series to date and some detail on the Phase 3 satellite, together with a diagrammatic representation of the on-board equipment, is included.

An index is provided and this will be handy for those who may have already read articles in QST magazine. A most useful book for those interested in the use of OSCAR 7 and subsequent satellites.

OSCAR SATELLITE STATISTICS

These statistics taken from the AMSAT news letter compare the first six OSCAR series and the Phase 3 spacecraft with one another. It can be seen that the spacecraft grew in complexity as the state of the art advanced.

An interesting factor is the "plateau" that shows up during the phaseover from Project OSCAR to AMSAT between OSCAR 4, Australis-OSCAR 5, and AMSAT-OSCAR 6.

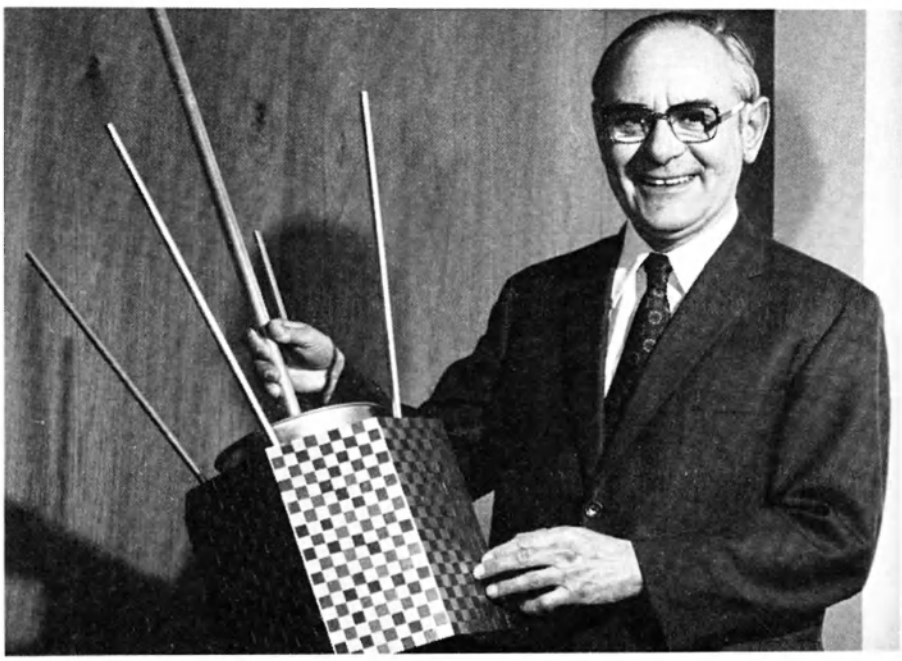
OSCAR 7 PREDICTIONS

MARCH 1978

Data	Mode	Orbit No.	Time Z	Long. °W
01	A	15050	00.23	61
02	B	15063	01.17	76
03	B	15075	00.16	60
04	A	15088	01.10	74
05	B	15100	00.10	59
06	B	15113	01.04	73
07	A	15125	00.03	57
08	B	15138	00.58	71
09	B	15151	01.52	85
10	A	15163	00.51	69
11	B	15176	01.46	83
12	B	15188	00.45	68
13	A	15201	01.39	81
14	B	15213	00.39	66
15	B	15226	01.33	80
16	A	15238	00.32	65
17	B	15251	01.27	78
18	B	15263	00.26	63
19	A	15276	01.20	77
20	B	15288	00.20	62
21	B	15301	01.14	75
22	A	15313	00.13	60
23	B	15326	01.07	74
24	B	15338	00.07	58
25	A	15351	01.01	72
26	B	15363	00.01	57
27	B	15376	00.55	70
28	A	15389	01.49	84
29	B	15401	00.48	69
30	B	15415	01.43	83
31	A	15426	00.42	67

APRIL 1978

Date	Mode	Orbit No.	Time Z	Long. °W
01	B	15439	01.36	81
02	B	15451	00.36	66
03	A	15464	01.30	79
04	B	15476	00.29	64
05	B	15489	01.24	78
06	A	15501	00.23	63
07	B	15514	01.17	76
08	B	15526	00.17	61
09	A	15539	01.11	75
10	B	15551	00.10	59
11	B	15564	01.05	73
12	A	15576	00.04	58
13	B	15589	00.58	71
14	B	15502	01.52	85
15	A	15614	00.52	70
16	B	15627	01.46	84
17	B	15639	00.45	68
18	A	15652	01.40	82
19	B	15664	00.39	67
20	B	15677	01.33	80
21	A	15689	00.33	65
22	B	15702	01.27	79
23	B	15714	00.26	64
24	A	15727	01.21	77
25	B	15739	00.20	62
26	B	15752	01.14	76
27	A	15764	00.14	61
28	B	15777	01.08	74
29	B	15789	00.07	59
30	A	15802	01.01	73



Bob Arnold VK3ZBB with his half scale model of Oscar 7.

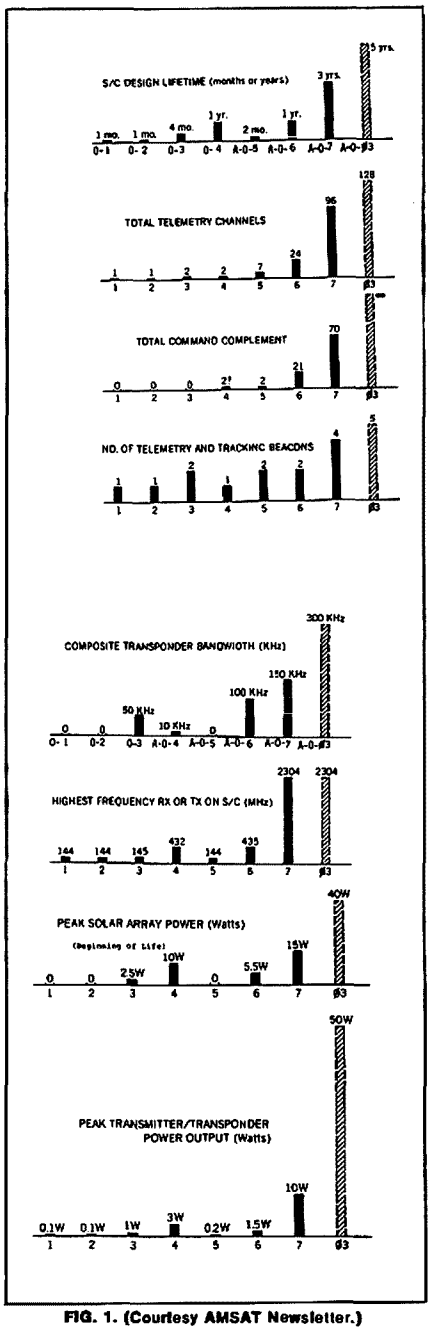


FIG. 1. (Courtesy AMSAT Newsletter.)

DO'S AND DON'T'S FOR SATELLITE USERS
(By courtesy of AMSAT Newsletter)

Don't turn on your carrier, whistle, send CW or otherwise **UNTIL** you can hear the satellite as evidenced by the beacon. If you have a poor downlink and a good uplink, as the vast majority of European users have, the chances are that you will be blotting out someone's DX QSO who can hear you — and how!

Don't run more than 100W e.r.p. at any time, you will push out those who are playing the game, and give them grounds for irresponsible operating also.

Don't call that rare DX station you have already worked if others are calling him, or you will be preventing them having a chance.

Don't call stations in your own area at horizon times, as they have but a few seconds daily in which to work the distant ones, but most of any orbit to work you.

Don't call CQ incessantly. A short burst is quite enough, then listen, otherwise you are depressing AGC and using up battery power unnecessarily. Many of the rare ones are crystal controlled, and you will need to **listen** for them, and they won't get in any way if everyone is transmitting.

Don't transmit SSB in the lower half of the satellite input segment, nor CW in the upper, or you will upset the common mode operation scheme. Also, keep 5 kHz clear of the beacon frequencies.

Don't transmit off schedule, nor on any Wednesday, unless you have specific permission to do so, otherwise you will be wrecking others' attempts at valuable work.

Do be aware of the other guy's horizon, as he may be trying to get those on the limit.

Do pay maximum attention to your receiving system, as when it is good enough you will hear returns from even 100 mW e.r.p. Mode B uplinks, and hence work a lot more DX, and run less power yourself. Attention to higher gain, lower angle and less noise on your downlink is cheaper and far more productive than anything else you can do.

Do tell other stations who are not qualifying for the above conditions, **fifty times if necessary**, as they will not cease their bad practice unless they are helped to realize that it is unethical.

Do listen attentively on the frequency that you are considering using, until you are sure that another station is not already there.

Do use the outer limits of the passband, thus avoiding the already overcrowded centre, and encouraging others to spread out, too, to avoid unnecessary QRM.

Do listen to codestore, bulletins, news items and the nets, and benefit by applying the updated operational information heard.

Do keep clear of specific frequencies where rare or weak ones are known to be, and do not sit there and call CQ hopefully, listen instead.

Do move off a frequency where you have answered a CQ or a call, as it is the original caller's frequency, and he may be crystal controlled.

Do let people know if you are crystal controlled by adding "CC" or "Xtal" with your call, so that they can comply with the above.

Do try to be patient enough to listen for and work the weak ones, as it is possibly their first OSCAR QSO.

Finally, **do** try to have meaningful QSOs via OSCAR, e.g. by spreading the word on new stations, schedules, and items of common interest, rather than merely exchanging a few numbers. Names and QTHs are a common courtesy on all amateur QSOs, so why not on OSCAR? ■

DIVISIONAL NOTES

MODERN CONDENSED VERSION

VK2

Welcome to **Divisional Notes** in AR. Greetings to other States from VK2.

VK2 members are reminded that the 1977-78 Annual General Meeting is on Friday, 31st March, 1978, at the registered office, 14 Atchison Street, Crows Nest, N.S.W., from 20.15 h. Further details in the Minibullelin.

Easter time is Urunga time — check with Amateurs on the VK2 North Coast for details. Further information via broadcasts.

Work has been under way since late last year to re-establish the transmission of the Division's morning broadcast (11 a.m. Sunday) from our Rural site — VK2WI. For some time VK2AWI — Crows Nest — has been used for HF transmissions with poor results. As equipment is obtained and installed most of our HF transmissions will radiate from VK2WI. The programme will continue to originate from VK2AWI.

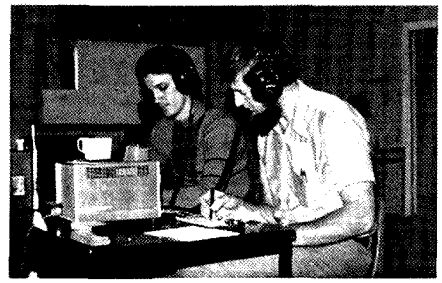
The Division now conducts a **RTTY** broadcast on HF bands in addition to the present voice session. VK2RTTY; Frequencies (some or all) 80 m = 3545 Transmission time — 0030 GMT Sunday. Call sign kHz, 40 m = 7045 or 20 = 14090; Duration ½ hour. Transmission points — various members of the RTTY group. For communication with the VK2 RTTY Group write to: RTTY Secretary, C/- 14 Atchison Street, Crows Nest 2065. The Federal RTTY Committee is also in VK2 — Chairman, Charlie VK2BXX, address as above.

73 de VK2ZTM ■

VK3

A trial Novice exam is to be held Saturday, 15th April, at a central location in Melbourne to be advised to applicants in addition to the time.

The trial exam in 1977 and this one are intended to improve the degree of preparation of candidates for the official exam in May. In the 1977 series the pass rate for those who entered for the trial exam was about twice the average Novice pass rate. Many candidates said they would not have passed the official exam if they had not first sat for the trial exam because of decreased nervous tension (especially in the morse), specific preparation for many question types and advance familiarity with the routines in use.



More sending test in progress. (Graeme Scott VK3ZR(R), one of the morse examiners.)

In the trial exam the answer papers are returned to candidates after being marked, thus helping to pinpoint weaknesses.

Send your full name, address and telephone number, plus $1.00 postal order or cheque (made out to YRCS) to YRCS Trial Novice Exam, 11 Vista Avenue, Kew 3101. First come first served. ■

QSP

WANTED

Members willing to put something back into their hobby. Come forward and get involved with your Division's Council and its various committees, or at the very least support, promote and publicise the WIA on the air and at your local Club meetings. Don't forget that WARC 1979 is now only one year away.

JACK HUM

All the OTs will know G5UM, contributor for many many years to amateur radio and RSGB activities. Bob Arnold VK3ZBB was in the UK late last year and sent in a cutting from the Leister Mercury of 29th October, containing an article describing Jack's activities during the 50 years he had been licensed and a local celebration to mark the occasion. "Uncle Mike" is a Life Vice-President of the RSGB and is still active on the air and a very keen VHF-UHF Microwave user.

TURKISH OSLs

A letter of 10th January from the Turkish Amateur Radio Society (TRAC) QSL Manager, Halit Yetkin TA1HY, advises that many QSL cards arrive for unknown calls at the QSL Bureau, PO Box 699 Karakoy-Istanbul. His letter listed the present known and active stations as TA1HY and TA1ZB (TA1 being European Turkey) and TA2HIA (TA2 is Asiatic Turkey). A list of past and sporadically active stations was enclosed with that letter and has been copied to VK QSL Managers.

WPX

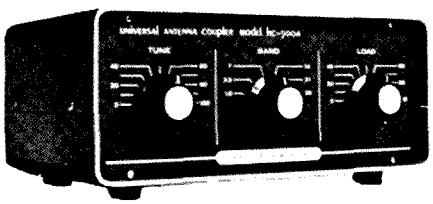
What does this mean? Worked Prefixes. It is a CQ Magazine Award (see CQ May 1976, for rules) based on collecting contacts with as many different prefixes of stations as possible. Thus: VK2 is one prefix, VK3 another, VK8 another, JA1 another, and so on. The WPX Honour Roll published in Dec. '77 CQ lists only on VK. He is VK3AHQ with a score of 809 prefixes confirmed in the CW section; top score in this section is 1312 prefixes, 1443 in the SSB section and 1675 in the mixed section. Incidentally, the only ZL in the Honour Roll is ZL3NS, scoring 874 in the SSB section.

bail — Antennas and antenna accessories

Universal antenna couplers

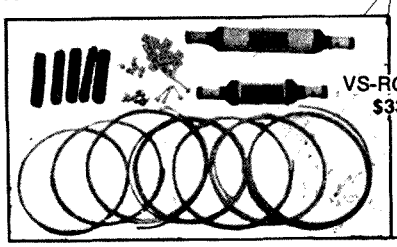
Extremely important, especially with modern all-solid state transceivers, is the maintenance of a very low SWR to avoid destruction of costly high-power P.A. transistors. An antenna coupler enables precise adjustment with almost any antenna.

HC 500A — 160-10m, up to 500w pep $119

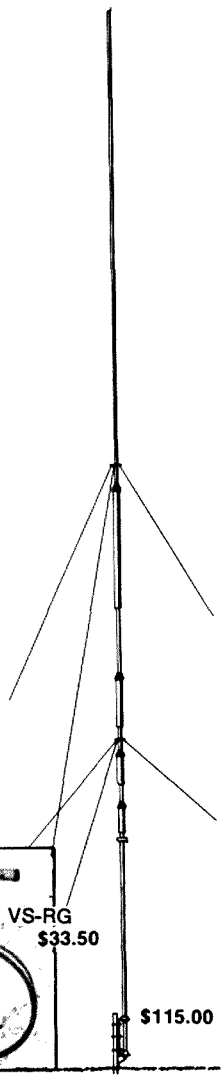


(also available — not illustrated)
HC 2500 — 160-10m, up to 2.5kw pep **$256**
HC 500 — 80-10m, up to 500w pep **$112**
HC 250 — 80-10m, up to 200w pep **$92**
KW E-ZEE Match — 80-10m, up to 400w pep **$109**
FC 301 Yaesu — 160-10m, up to 500w pep **$195**

SWR AND POWER METERS
VHF ANTENNAS
HF MONOBANDERS
HF DUO BAND
HF TRIBAND BEAMS



VS-RG
$33.50



$115.00

HIDAKA'S VS-41/80KR

for 10 thru 80 Meters

- **An Individually Tuned High-Q Trap for Each Band**
- **Takes Full Power**
- **Rugged Total Performance Construction**
- **Easily Installed Using Minimum Space**

Now . . . a modestly priced easily erected all-band vertical that delivers outstanding omni-directional performance on each band . . . HIDAKA'S Model VS-41/80KR. It is ruggedly constructed of heavy gauge, taper-swaged aluminium . . . uses four separately tuned High-Q air dielectric traps . . . each trap factory tuned to provide maximum performance 80 through 10 meters. Uncompromised performance for short haul or DX communication is ensured by the low angle radiation pattern developed by the VS-41/80KR. SWR is 2:1 or less on all bands. If mounted in an elevated position a radial wire system should be used. An accessory TRAPPED radial wire kit is available, the Model VS-RG. The VS-41/80KR comes complete with Terelyne guying cord.

TECHNICAL DATA

Power Rating	1 kw AM, 2 kw SSB
Feed Line Required	50-70 ohm coax
Minimum Ground Required	8ft. Ground Rods
Overall Height	28.4 ft.

ANTENNA ACCESSORIES

LA-1, Lightning Arrestor, for installation in standard 52 or 72 co-axial feedline, designed to Mil. specs.	**$76.00**
LA-2, smaller size co-ax arrestor	**$4.95**
BN-86, ferrite Balun, 2 kW, for Beams and Doublets	**$30.00**
VS-BN ferrite Balun 2 kW for Beams and Doublets	**$26.00**
VS-BN4, similar VS-BN, 300 ohms	**$26.00**
BA-1 ferrite Balun 2 kW 1:1, light weight	**$22.00**
HN31 Dummy Load Cantenna Kit 1 kW oil cooled (oil not included)	**$45.00**
FF-50DX Low Pass Filter, 3 Section, 1 kW	**$39.00**
LP-7 TVI Filter low power	**$14.00**
KW Electronics L.P. Filter, 5 Section, 1 kW	**$59.90**
TV-3300 Drake L.P. Filter, 3 Section, 1.5 kW	**$39.00**
TV-42 Drake L.P. Filter, 3 Section, 300 W	**$25.00**
TV-476 Hy-Gain L.P. Filter, 150 W	**$19.00**
TV-75 Drake High-pass filter	**$22.00**
Porcelain Egg insulators	**50 cents**
WIDE RANGE of Co-axial cable and connectors in stock. K-20 70 ohm Twin feeder	**36 cents** per yd.
Multi-band dipole traps centre insulator, 80-10m bands per pair, complete with insulator, KW **$38.00**, Western	**$35.00**
590G B & W co-ax. switch, 5 posn., rear entry	**$39.90**
CX-3, 3 position co-ax. switch, side entry	**$12.00**
KW 3 position co-ax. switch, side entry	**$28.00**
ASW-1, Western 5 position co-ax. switch, side entry	**$33.00**
RS-107 Transceiver tester	**$68.00**
RS-501 Ant. Impedance bridge, inc. 1 osc.	**$72.00**
Extra Osc. for RS-501	**$16.00**

ROTATORS

Emotator:

103LBX Similar to CD-44	**$148.00**
502CXX Similar to Ham II	**$219.00**
1102MXX Heavy duty	**$325.00**
1211 Mast clamp for 103LBX	**$18.00**
1213 Mast clamp for 502CXX	**$29.50**
300 Mast Stay bearing for above	**$32.00**
301 Tower top bearing	**$32.00**
VCTF-7, 7 core cable (for 1100 series)	**$1.20** per m
VCTF-6, 6 core, for 102 & 501	**$1.00** per m
1103MXX Extra Heavy Duty	**$339.00**
1215 Mast clamp for 1102/3	**$45.00**
Flexible coupler	**$32.00**

Prices and specifications subject to change without notice.

JAS7778-44

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Distributors in all states and N.T.
FRED BAIL VK3YS
JIM BAIL VK3ABA

C.A.R.E.

(Community Amateur Radio Events)

TRIAL BY SEA

On December 24th, 1977, a 35 ft. Duncanson yacht left Sydney Harbour with seven people on board, bound for Lord Howe Island. About 48 hours later they were to find themselves in a dangerous and frightening situation 200 miles at sea, their sole means of shore communication being with amateur radio stations in N.S.W.

The yacht "Gandalf" was (and still is) a well found 35 ft. GRP yacht, fully equipped for long offshore races. She had just completed a racing season and with owner/skipper Don (VK2NFF) and a crew of four men and two women, was off for a holiday. Her usual ship-to-shore radio had been augmented for this trip by an Atlas 210X and skeds had been set up on 3.55 MHz with Ken (VK2BKE) on the Island and Eric (VK2NAV) in Sydney.

After two days hard sailing the yacht was 250 nautical miles along the track, was laying the Island and moving well in heavy seas under reefed main and working jib. Skeds had been kept with VK2NAV and VK2BKE but contact had been lost with Sydney Radio.

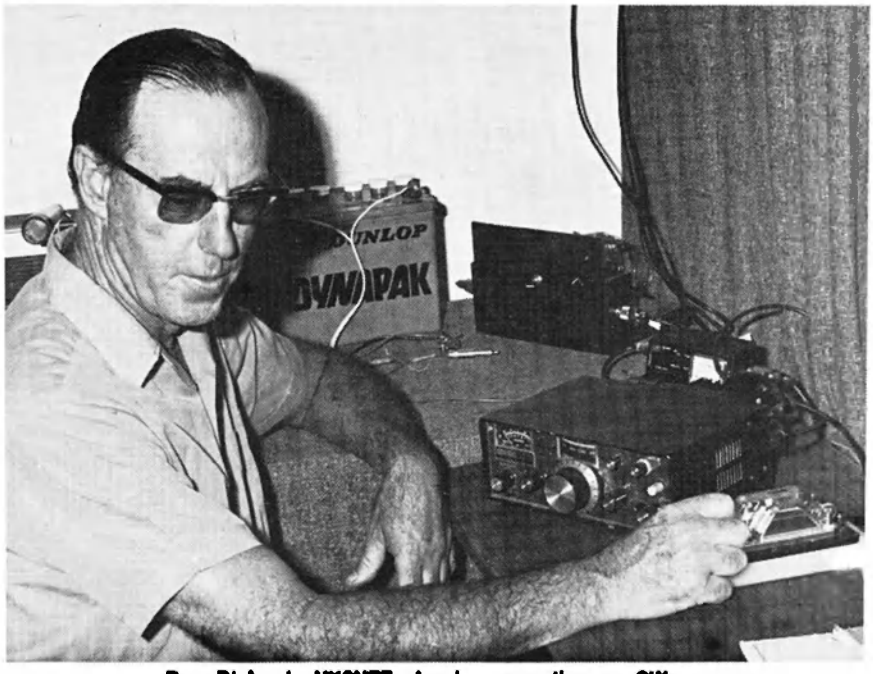
On the evening sked on Boxing Day a message was received from the yacht that she had sprung a leak and was returning to Sydney. The tube carrying the rudder gland and bearing had broken away from the hull. Temporary repairs had been made but she was leaking badly and continuous hand pumping was required to control the water level. VK2NAV advised the Police and they in turn advised Sydney Radio. Messages to and from the yacht were then passed via the amateur net to Sydney Radio and on to Marine Ops. Canberra.

Within about 12 hours of the accident occurring Eric (VK2NAV) experienced bad QRM and contact was maintained through Alan (VK2NFO/P) who was holidaying at Pt. Macquarie. The Hornsby Radio Club network was put into operation and maintained contact on 3.555 MHz until the morning of December 28, when it became necessary to move off the 80 m band on to 7.050 MHz. Regular skeds were maintained on that frequency until p.m. on Wednesday 28th, when the yacht was able to make contact again with Sydney Radio. For the last 24 hours or so VK2NFF on the yacht used CW due to microphone failure.

For a period of almost 48 hours — that is from p.m. on December 26th to p.m. on December 28th regular skeds were kept through the Amateur Radio network. This enabled the yacht to report its position, course and speed, and advise any deterioration in its situation due to weather, pump failure or further damage. Weather reports were passed back to the yacht and this enabled the crew to be prepared for any sudden change in the weather pattern. The value of this information was dramatically demonstrated during the night of 27/28 December. A strong southerly front was predicted — the same front that caused most of the retirements in the Sydney-Hobart yacht race. The knowledge of this accurate prediction enabled the yacht to be prepared for the change and no further damage occurred. However, it was not possible under such circumstances to make for Sydney and a course was set for Newcastle, where the yacht arrived during the morning of Thursday, December 29.

Extracts from Telex message from Hornsby District Amateur Radio Club to RFMD, Sydney, give a synopsis of the incident.

> "Yesterday morning (27 December) notification was received from Police that a message had been received by an amateur radio operator (VK2NAV) concerning a vessel taking water out to sea from Port Macquarie. The amateur operator on board the vessel is VK2NFF. The vessel is GANDALF VJ5244. Contact with the ship was maintained by amateur radio due to problems with his solas transceiver. The frequency used has been 3550-3555 kHz until this morning (28 December, when it became unworkable. Control station at the time (VK2DI) re-established contact with the ship on 7050 kHz. Regular skeds are being maintained on or about this frequency. The Hornsby Club Station (VK2APF) has been "activated" as the control station at this time. Other amateur stations are being allocated this task as required. Messages are being handled between the vessel and Marine Operations Centre via Sydney Radio's facilities as they are telephoned in by the amateur stations concerned. A local VHF net is also operating in Sydney on 147.25 MHz (primary) and on 147.35 MHz (secondary). This is for co-ordination purposes. . . . (vessel) managed to establish contact with Sydney Radio yesterday afternoon on maritime frequencies at about 0500Z. As such, the amateur nets and skeds with him were concluded at 0730Z (28 December), and all stations resumed normal operation. . . . participating net stations in contact with VK2NFF during the entire operation were — VK2NFO/P, VK2NAV, VK2ANF/P, VK2AAB, VK2NOB, VK2NOA, VK2NBT, VK2NJM/P, VK2NAW, VK2APF, VK2APF/P."



Don Richards VK2NFF showing expertise on CW.

Don VK2NFF has contacted most of the stations involved and has asked that his thanks be passed to all stations concerned for their assistance and support. He also stated that many operators commented on the ability of CW to be read and understood under conditions when voice communication would have been time-consuming and possibly inaccurate. Also, of course, following the microphone failure, communication would not have been possible without the use of CW.

From Don Richards VK2NFF. ■

IARU NEWS

The main item of news this month is the overseas visit by the Federal President, David Wardlaw VK3ADW, during February to attend, by invitation, a meeting of the IARU International Working Group in Geneva.

This visit will enable those attending the IWG to see something of the large ITU Conference — in this case the Aeronautical Mobile Conference. This will be valuable for those who will be attending WARC '79, including David Wardlaw himself.

Using his same flight ticket, David Wardlaw will also visit the RSGB in London, and Japan, Korea and Singapore on the return leg. Incidentally, it is reported that the number of licensed amateurs in Japan is now 465,000.

Some interesting VHF news comes in the Jan. 1978 issue of the IARU R1 journal. The French 50 MHz beacon FX3VHF was heard twice in Eastern Canada by VE1ASJ during June 1977. A Canadian 50 MHz beacon VE1SIX is now reported to be operational. The sporadic E tests of FX3VHF were switched to TEP in August and the beacon signals were logged in October by ZE2JV some 8137 km to the South. The signals were also heard later by ZE1JJ. The FX3VHF beacon runs 70W RF into a stack of two 6 el yagi arrays giving an ERP of 1 kW and the frequency is now 50.104 MHz (was 50.1 MHz).

The IARU R1 VHF sporadic E propagation Co-ordinator is F8SH. He gave a talk on the subject on the occasion of the 50th anniversay of ARI (the Italian amateur radio society) as also did Dr. J. Rottger, DJ3KR. Close collaboration is being maintained with CCIR Working Group 6 at it is thought that increased amateur participation in scientific studies such as VHF ionospheric propagation research, will be one of the main assets in keeping our frequency allocations and in eventually getting new ones, such as the 50 MHz band in Region 1 (and of course 50-52 MHz in Australia — to conform with the Region 3 Amateur allocation of 50-54 MHz).

Comments were that the 1977 Summer Season seems to have seen a record VHF sporadic E activity in the European area and generally around the world. Distances of 8500 km have been covered on 50 MHz between Japan and California.

Reports on these long distance contacts have steadily increased but it is not known whether this is due to the increased number of observers or to an increase in the activity of sporadic E itself. Possibly, both apply. More research, more observations and more reports are required to detect possible recurrence patterns and to relate these to other geographical or solar phenomena.

RECIPROCITY — AUSTRIA

The fees, in Austrian Schillings, for a Class C (max. 100W) reciprocal licence in Austria are 120 for 1 month, 150 for 2 months, 180 for 3 months. Up to the end of October 1977 a total of 857 visitors' licences were issued in Austria — 755 were for DL calls, 1 VK and 3 G calls.

EME

K2UYH earned the world's first WAC for EME OSOs on 430 MHz (his VK contact was VK2AMV). Since then six others have done so, W1JR, SM5LE, PA0SSB, K3PGP, I5MSH and VE7BBG. Experiments

are now being carried out on the 1215 MHz band but although this band may turn out to be even better suited to EME QSOs activity is extremely low.

10 Mx BAND BEACONS

From the same issue of the R1 journal comes a list of 10m beacons which may prove interesting to those who are keen on 10 metre contacts.

Frequency kHz	Station	Remarks
28202.5	9J2BBB (Lusaka)	05.00-06.00Z 15.00-16.00Z
28205	DLOIGI	
28207.5	N4RD	Englewood, Fla.
28310	3B6MS	
28213.5	ZD9GI	Gough Island
28215	GB3SX	Sussex
28217.5	VK2WI	(planning)
28220	5B4CY	
28222.5	YU?	(planning)
28225	VE3TEN	Ottawa
28227.5	FX3TEN	(planning)
28230	ZL2MHF	Mt. Clinie
28232.5	VP8?	Falkland Is. (planning)
28235	VP9BA	
28237.5	LA?	(planning)
28240	PY1CK	Rio de Janeiro
28242.5	ZS?	(planning)
28245	A9XO	Bahrain
28247.5	EA2OIZ	Unofficial

250, 260, 265 and 270 in planning for W, VK5, VK6 and VK8.

Also listed are 118 beacons in Region 1 on other bands — 2 on 70 MHz, 57 on 2 metres, 34 on 70 cm, 17 on 1296 MHz, 3 on 2304/5 MHz, 1 on 3456 MHz and 4 on 10.1 GHz.

ODDMENTS

Sundry lists and pieces from Worldradio of Dec. 77. — Ron W8ILC has worked over 180 countries on SSB, mainly on 20 and 80m bands, using a 1 watt, yes 1 watt, rig into a 4 el. 20m monobander and a simple 60m antenna.

Harry Dannals W2HD, President of the ARRL, made these comments about WARC 79 in a Convention speech: "Our challenge is that we must make sure that amateur radio is held in high esteem. We must make sure that people know of our good works. It is necessary for us to tell our story. Don't hide what we do. Tell it loud and tell it often. The people of this nation should know of and have pride in Amateur Radio".

In that newspaper's Dx column is reproduced the Russian morse code and phonetics for those interested in copying Russian CW or SSB.

The list is like this:

English letter (morse the same)	Russian phonetic
A	Anna
B	Boris
C	Tsaplya
D	Damitri
E	Yelyena
F	Fyodr
G	Gregori
H	Khariton
I	Ivan
J	Ivan Kratkl
K	Konstantin
L	Leonid
M	Mikhail
N	Nikolai
O	Olga
P	Pavil
Q	Shchuka
R	Raman
S	Semyon
T	Tetiana
U	Uiiana
V	Zhena
W	Vasili
X	Znak
Y	Eri
Z	Zenaida

The five additional CW letters in Russian are: Dash Dash Dash Dot — Chelaryek (Ch), four dashes — Shura (Sh), dot dot dash dot dot — Eh — Eborotnaya (E), dot dot dash dash — Yuri (YU) and dot dash dot dash — Yakov (YA). For the SSB enthusiast the Russian numerals are given as 1 — Edinitsa, 2 — Dvoyka, 3 — Troyka, 4 — Chetryorka, 5 — Pyatka, 6 — Shestyorka, 7 — Semyorka, 8 — Vosmyorka, 9 — Devyatka and Zero — Nol. Since we do not possess cyrillic typefaces it is not possible to reproduce the 31 Russian letters but beware, many of them differ from the English.

NEW IARU MEMBER

ORARI, the Indonesian amateur radio society, has been elected as the 99th member society of IARU. ■

LETTERS TO THE EDITOR

Any opinion expressed undar this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

The Editor,
Dear Sir.

WANTED KNOWN.

Would you drive 15 miles to save yourself $15? 572B/T160L are $40 Tax Exempt in Melbourne, Sydney and Adelaide. 6JS6C, 6KD6 and 6146B are all 30-40 per cent cheaper than the current advertised price charged by Amateur Equipment Retailers. Free enterprise breaks monopolies and brings prices down to the true level. Write to VK3OT at PO Box 414, Hamilton, about these and other spares for amateur gear available for the asking from reputable supply houses in Australia.

Using service, mateship and playing on your ignorance, Amateur Retailers are charging you anything from 40 to 100 per cent above the retail price you can pay for spares. As an amateur and experimenter, you are allowed Tax relief on ALL spares used for transmitter purposes by a simple statement and your call sign on the bottom of the invoice.

The retailers you are dealing through no doubt get them for that price but add their exaggerated percentage to cover their costs.

Cut the crap. An FL2100b linear retails for $510 in Sydney at present from a little known outlet. Here in Victoria it's now $578, having just gone up by another 40-odd dollars.

Since 1976, when a similar device was $400, they have gone up by $178 which is nearly 50 per cent. Giving our rate of inflation and the devaluation at a maximum, the extra percentage shows, and every increase is passed along to the amateur not withstanding.

It's about time we all jacked up and stopped buying from the locals for the reasons above.

73, Steve Gregory VK3OT

[Retailers have to live, pay taxes, rents, power and the lot — caveat emptor is the name of the game.—Ed.]

Royal Flying Doctor Service of Australia
(S.A. and N.T. Section) Inc.

The Editor,

January 16th, 1978

Dear Sir,

May I refer to an article appearing under the heading C.A.R.E. in your January 1978 issue which described in rather dramatic style a fairly routine accident at Maria Bore. Stirring stuff indeed!

While it is not my intention to denigrate the assistance rendered by VK2IK I must take him to task for his insinuation of slackness on the part of the Royal Flying Doctor Service Base at Port Augusta suggested by his words that they were "just not on watch".

Perhaps a few facts may be of some interest to the amateur fraternity and also anyone contemplating travel in the more remote areas of the Outback.

1. Bases do not keep a continuous manned watch on assigned frequencies but conduct medical, telegram traffic and ancillary services such as School of the Air at scheduled times during the day on specific frequencies. Details of schedules should be obtained from the various Bases.
2. All Bases can be alerted 24 hours per day 7 days per week by the transmission of a suitably encoded SSB signal for a minimum period of 10 seconds. Usually different Day and Night alarm frequencies are used. The successful triggering of the Base decoder is indicated by tha automatic transmission of a netting tone on the alarm channel and at the same time control of the Base equipment is extended to personnel on stand-by.
3. The various RFDS Bases throughout the Commonwealth provide communication for over 7,000 fixed and mobile Outposts. In general normal commercial operating procedures are used, including the international phonetic alphabet, upper-sideband SSB in universal. Some frequencies are shared by widely separated Bases and the 2020 kHz "natter" channel is common to all RFDS networks. Procedures are subject to strict regulation and frequently monitored by the Radio Branch, do not expect the operators to encourage rag-chewing.

Yours faithfully,
Graham Pitts VK5GE, Technical Superintendent,
RFDS (S.A./N.T. Section) Inc.

P.O. Box 92,
Colac, Vic. 3250

The Editor,

2nd January, 1978

Dear Sir,

One reads with interest, and possibly some measure of amusement, the two letters submitted by Mr. Leonard J. Shaw as published in the January issue of AR.

The letter from VK4KU in the same issue provided a perfect counterveiling viewpoint, and one trusts Mr. Shaw has read it.

In his letter to the Editor, the above gentleman used the expression "like it or not" on four separate occasions; and this would seem to symbolize the whole approach of the CB movement. It is undeniable that thousands of people bought and operated 27 MHz gear when it was completely illegal to do so. The travesty of Government which permitted this situation to go unchallenged is now expected meekly to comply with demands for the 27 MHz band in perpetuity, etc. One hopes not; and if the Radio Communications Act due to be brought forward this year is implemented, some measure of discipline may be restored to our use of the airways.

Mr. Shaw asks whether Mr. Yates "knew the difference between a 3rd harmonic and E major" during his early interest in radio. Possibly he did not, but the tremendous difference is that Mr. Yates had to demonstrate that he indeed did, and know a great deal else also, before he was issued with a licence and allowed to own and operate transmitting equipment.

Most of us appreciate that not all CBers are tarred with the same brush; and that amateur ranks may well be reinforced in future from among the more responsible CB enthusiasts. But from my own point of view, my observations to date strengthen my belief that 60 per cent of the CB operators belong to the same fraternity which causes most of the carnage on the roads; and who bring the same reckless and irresponsible approach to their CB operations. What does it matter to them that they cause endless TVI and other interference? What do they care for laws and regulations which don't suit their book? The answer is that they "couldn't care less" and therein is an answer to Mr. Shaw when he suggests we "get off our backsides and help".

Any CBer who wishes may take the Novice exam, and any of them seeking help to achieve this end would certainly obtain it.

But it is unrealistic to expect help for people who consistently disregard the rights of others, who flagrantly breach the law, and who, all round, do not appreciate the fact that they are the only people who have made available to them a scarce and precious resource, namely space in the radio spectrum, without first having to submit to the discipline of study, and qualify themselves by examination.

The foregoing has not mentioned the snide encouragement of illegality by some importers and retailers of equipment. It was they who orchestrated the whole cacophony in the first instance, by widespread advertising of CB equipment while its use was still illegal. Now, they embark on advertising designed to tempt the ignorant and irresponsible into further lawbreaking, which will ultimately bring CB into greater disrepute than they have already earned for it.

Mr. Shaw avers that to refuse to accept such advertising breaches the law, and that it is the

task of Government to move towards prohibition.

Yet when the Government produces an RB14, some sources advise that its provisions should be ignored where they run counter to individual wishes.

You can't have it both ways.

D. C. Stalker VK3KJ. ■

P.O. Box 81,
Albion, Old. 4010

The Editor,

18th January, 1978

Dear Sir,

I write drawing your attention to an error which appears in the footnote to an article on the subject of 1 K serial memory for RTTY by Henry VK4ZAP, which appeared in January AR.

The material referred to in the note was available from me, but at a cost of $5 not $50. Only 50 copies were printed and stock is now exhausted; no re-print of the data is anticipated.

Norman Wilson VK4NP. ■

5 Kilborn Court,
Kilsyth, 3137

The Editor,

18th January, 1978

Dear Sir,

I attach hereto a letter which I have forwarded to the various persons listed below, and a copy is forwarded to you for possible attention by the Institute.

I feel that this is a deplorable situation that exists at present, and as stated in the letter, is encouraging "Piracy" within the Amateur Bands. It is a matter which, I feel, may be of interest to, and worthy of attention by, the Institute.

Yours faithfully,

P. D. Greenham.

Copies of attached letter forwarded to:—

(i) Mr. R. Crowe, Superintendent of Postal and Telecommunications, Melbourne.
(ii) The Editor, "Melbourne Age" newspaper.
(iii) Local Member of Federal Parliament.
(iv) Secretary WIA.
(v) The Editor, "Amateur Radio".

Dear Sir,

"The Postal and Telecommunications Department has an examination twice yearly for 'Novice Amateurs'. This is a series of examinations covering Basic Radio theory (1 hour), Regulations regarding Amateur Radio (½ hour) and the sending and receiving of Morse Code at a rate of 5 words per minute. After notification from the Department that one has passed the three examinations, one then applies for a Licence to operate an Amateur Radio Station.

I sat for the Examination in October 1977, and was notified of my success on 21/11/77. I applied (and paid for) my Licence to operate on 23/11/77, after personal attendance at the Department's office on that date. At that time I was informed that because of the workload imposed on the Department with Licensing of 'CB' radios, that a delay of four to six weeks would exist before the issue of my licence.

On the 14th January 1978 I caused enquiries to be made at the Department, as no licence had been received and the following facts were explained to me:—

(a) The Government ceiling on Commonwealth Staff has depleted the actual staff at the Department.

(b) Overtime work by Departmental workers has been banned.

(c) That the workload of the Office Staff has been increased considerably since the Licensing of 'CB' Radio.

(d) Workload at the present time is overtaxing the Staff, and they are working as best they can under the circumstances.

(e) That the present delay in Amateur Licence issuing is 14 weeks.

It appears to me unusual that the issue of an Amateur Licence, or piece of paper with a Call sign written on it, can take fourteen weeks to ferret its way through the obvious inevitable red tape system of Government Departments when, from information received from New South Wales, many amateurs in that State received their Licences before Christmas. That Victoria has a more hectic time with 'CB' and other duties than New South Wales seems to me to be ludicrous, to say the least.

Whilst I can (to a degree) appreciate the frustration of staff within the Postal and Telecommunications Department operating under a heavy workload, I wonder at the actions of the Government and indeed the Department in basically encouraging "Piracy of the Air Waves" on the Amateur Bands, as has occurred on the Citizen Band Radio spectrum.

I now know the feeling of frustration and annoyance when, after attending Night School for six months to learn Radio Theory and sitting for, and passing, the required examinations to qualify for an Amateur Licence, then the purchasing of equipment with which to operate from, that all I can do is sit and look at it because of a red tape 14 week delay in Licence Issue. A Shooter's Licence can be obtained immediately after a test and examination, so why the fourteen week delay for an Amateur Radio Licence?

Surely this situation is such that in time 'Piracy of the Amateur Radio Bands' will be second only to that seen on 'CB' today, with only 30 per cent of operators licensed. This matter must be brought to the Government and public notice in order that Staff can be supplied to the Department and, in fact, the Department itself in Victoria be made more efficient to complete the issue of licences in a period somewhat less than the present fourteen weeks."

P. D. Greenham. ■

25 Berrille Road,
Beverley Hills, 2209.

The Editor,

25/1/1078.

Dear Sir,

I wonder whether you would like to print under "Dear Editor" the enclosed translation of a letter which we may consider as an addition to the "IARU NEWS" on reciprocal licensing printed in AR January 1978, page 25-26.

it is nice to see that the DLs have found so much positive understanding and support at the official level.

vy 73s

Hans F. Ruckert VK2AOU.

TRANSLATION

Letter from: Deutscher Amateur Radio Club EV. 12/1/1978.

"Dear OM Ruckert VK2AOU,
Thank you very much for your letter of 9/9/1977. My reply was delayed due to discussions with the Postal Department, the results of which I wanted to include now.

The question of guest licences for visitors to Australia was actually not so much the point of our last inquiry, but much more the general recognition of amateur licences issued by the Federal German Repblic. This question arose several times in connection with amateurs migrating to Australia.

You wrote in your letter that amateurs staying longer than 12 months or who migrate to Australia have to repeat the complete identical licence examination, this means that the examination has to be conducted in English.

There are now quite a range of country to country reciprocal agreements, which were concluded between the Federal German Post Office and the national offices of other countries, which led to reciprocal acknowledgement of respective amateur licences. During a discussion with the authorised officials of the FTZ (West German licensing authority) it was confirmed that Australian amateur licences are fully recognised (as legally equal to German licences). This is so, if Australians stay longer (over 12 months) or permanently in West Germany, e.g. Australian licence holders will obtain the German licence without having to pass an examination. This ruling stands even now without a reciprocal licence agreement between these two countries. One may say that the West German Postal Authority has already done its part of a reciprocal licence agreement, and there is nothing else for them to do in this case.

As you know there are a large number of foreign radio amateurs in the Federal Republic of West Germany who came from many countries. They received a German licence immediately, based on their licence of their home country, without having to sit for an examination. Some of these people have now lived in Germany for 10 years or longer. They are the full licence holders with DJ0 calls. DC5 calls are issued for the C-licence (limited VHF licence).

It would definitely be considered a very appreciated gesture of the Australian authorities if radio amateurs who migrate to Australia could obtain the equivalent amateur licence without having to sit for an examination again.

Should the Australian authority wish to enter into an official reciprocal licence agreement, the West German Federal Postal Department would be very happy to do so. Perhaps you may have the opportunity to talk to OM Dodd again with regard to this matter, and the Australian Telecommunications Department may be informed about the West German position, too, and asked to make a move.

I thank you very much for your efforts.

vy 73

Karl Diebold DJ1BM (Manager DRAC).
Philip Lessig DK3LP (1st Vice-President DRAC).

Australian amateurs wishing to operate in West Germany (DX or relay) should ask for a licence application form by writing (air mail) one month prior to their departure to:

DARC — International Affairs,
3507 Baunatai, 1
Lindenallee 6
West Germany. ■

The Editor,

12th August, 1977

Dear Sir,

I am writing on behalf of the Hunter Branch of the Wireless Institute of Australia, regarding the AR Special 1977 Federal Convention Report which appeared in AR for July and in part the item regarding the 70 cm UHF Band Plan.

I feel that members of the WIA and interested persons should be aware that the Hunter Branch did submit through the N.S.W. Division of the WIA, an Agenda item regarding the original 70 cm Band Plan as published in the Mini Bulletin February 1976, however, the Hunter Branch feels that this present Band Plan is unsatisfactory to the present and future 70 cm Tranceivers which are currently operating in Australia.

Currently in the Hunter Branch, there is a number of Standard Radio of Japan Transceivers, ICOM IC31 Transceivers and Selwa Transceivers, the performance of which is adjusted to operate between 432 and 435 MHz. The Hunter Branch expresses the wish that the input and output frequencies of proposed 70 cm Repeaters should be reversed, making the input to the Repeater high and the output low where the Receivers are tuned for maximum sensitivity and that the Main Simplex Channels should fall between 433 and 435 MHz.

A number of tests have been carried out using this equipment and it has been found that the present Band Plan is unsuitable to the present Transceiver receivers, however, the Transmitter can be moved on an operational basis from 434 to 438 MHz and the power output will drop 2 dB. One can afford the loss in power, but one cannot afford the loss in Receiver sensitivity.

The Hunter Branch therefore recommends that members closely look at the European Region 1 UHF Band Plan which is much more suitable in the operation of Simplex frequencies and Repeaters with the present type of equipment that is currently in operation. We feel that it is not too late at this stage that a long hard look should be given to the 70 cm Band before we get ourselves into the chaotic mess that we have experienced with the 2 metre Band over the last five years.

Currently there are five stations operating Simplex on the frequency of 435 MHz in the lower Hunter Valley. The Hunter Branch would be interested to hear from other areas regarding this matter.

Yours faithfully,
Rodney C. Prout VK2CN,
On behalf of the Hunter Branch.

EDITOR'S NOTE:
It is understood that this matter is currently under investigation by the N.S.W. Division Repeater Group. ■

VHF-UHF AN EXPANDING WORLD

Eric Jamieson, VK5LP
Forreston. 5233

AMATEUR BAND BEACONS

VK0	VK0MA, Mawson	83.100
VK1	VK1RTA, Canberra	144.475
VK2	VK2WI, Sydney	52.450
	VK2WI, Sydney	144.010
	VK2RHR, Mittagong	144.120
VK3	VK3RTG, Vermont	144.700
VK4	VK4RTL, Townsville *	52 440
	VK4RTT, Mt. Mowbullan	144 400
	VK4RBB, Brisbane	432.400
VK5	VK5VF, Mt. Lofty	53.000
	VK5VF, Mt. Lofty	144.800
VK6	VK6RTV, Perth	52.300
	VK8RTU, Kalgoorlie	52.350
	VK8RTW, Albany	52.950
	VK8RTW, Albany	144.500
	VK6RTV, Perth	145.000
VK7	VK7RNT, Launceston	52.400
VK8	VK8VF, Darwin	52.200
JA	JA2IGY, Nagoya	52 500
KG6	KG6JDX, Guam	50.110
KH6	KH6EQI, Hawaii	50.104
ZL1	ZL1VHF, Auckland	145.100
	ZL1VHW, Waikato	145.150
ZL2	ZL2MHF, Upper Hutt	28.170
	ZL2VHP, Palmeraton North **	52 500
	ZL2VHF, Wellington	145.200
	ZL2VHP, Palmeraton North	145.250
	ZL2VHP, Palmerston North	433 250
ZL3	ZL3VHF, Christchurch	145.300
ZL4	ZL4VHF, Dunedin	145.400

* Ian VK4ZIG advises the Townsville beacon is again operating but this time at a temporary location on 52.440. So far no reports of it being heard.

** The ZL2VHP beacon is certainly still operating on 52.500 despite having been advised in writing it was on 52.250! (Reported in these columns last month.) I have heard it myself on 52.500 and so have a number of other operators, so the frequency stays at 52.500 unless more positive advice is received from New Zealand, after all, there is nothing much more positive than actually hearing the beacon here in VK5 on 52.500!!

TWO METRES AND UP

Instead of the usual launching into six metres for this time of the year, this month we will take a look at 144 MHz first. Great things have been occurring there and also on 432 MHz, so I asked David VK5KK to write me a summary of happenings because he has more opportunities of being around on the bands during the summer than I. However, I can support him directly in most of what was achieved, at least on 2 metres, since the rather dramatic upgrading of that band at this QTH. Anyway, this is David:

"On 10-12-77 a tropospheric opening occurred between Adelaide and Albany, signals peaked on 2 metres around 1200Z. VK5KK worked VK8XY, VK6WG and VK6KJ with signals between 5 x 9 and 5 x 9 plus 20 dB. The Albany beacon on 144.500 had been heard since 2300Z with signals peaking to S9 at 1200Z. At 1245Z VK6XY was worked on 432.1 MHz peaking 5 x 9 plus 10 dB. At 1300Z VK6WG was worked at plus 20 dB. At the same time VK6WG fired up a signal on 1296.12 MHz, and worked him crossband, his signals averaging 5 x 2 with quick QSB. Receiving equipment at VK5KK consisted of a 3 foot diameter parabolic dish at 5 feet above ground. A diode ring mixer converter mounted at the feed with a TS700A receiver as IF on 144 MHz. The distance is 1160 miles, some 10 miles further than the present two-way record. Signals remained until the morning (2230Z) and faded out.

"On 14-12-77 a tropospheric opening occurred into VK3 and VK7 on 2 metres. Also under the same conditions VK3OT and VK3BEH were worked on 6 metres at 5 x 9 signals (360 miles). Also VK3ZBJ and VK3YII in Melbourne were heard working the south-eastern VK5s. VK3OT, VK3AXV and VK3BEH were worked on 2 metres. At 1325Z VK7ZIE (Devonport) was worked on 2 metres, signals both ways 5 x 5. At 1350Z VK7ZAH (Launceston) also worked 5 x 5. Distance 665 miles. VK7ZIE again worked at 1408Z 5 x 6.

"On 15-12-77 the conditions prevailing the previous night still existed, though not as good. At 1103Z worked VK3BEH then VK3AXV, VK3OT and a cross-band (52—144 MHz) contact with VK3AXV. All signals between strength 4 and 9.

"On 16-12-77 a very weak opening occurred between Adelaide and Albany on 2 metres. Worked VK6XY at 1235Z at 5 x 2 peak at 1246 and disappearing 1259Z.

"On 26-12-77 a short opening between Adelaide and Albany via what was probably sporadic E. At 0435Z worked VK6BE at 5 x 6 both ways but by 0440Z signals disappeared. The Albany beacon on 144.5 remained at S1 until 0830Z. At the same time of the opening, six metres from Albany were very strong. General weather conditions and the pattern of the signals did not seem correct from later observations for it to be a tropospheric opening.

"On 1-1-76 a tropospheric opening occurred into VK3. At 0845Z worked VK3BEH then VK3OT and VK3AXV on 2 metres. At 1190Z worked VK5NC (Mt. Gambier on 432.1 with 5 x 9 signals (260 miles). At 1320Z worked VK3ZBJ 5 x 6 both ways on 2 metres, also VK3YII at 1345Z. At 1405Z worked VK3ZBJ on 432.1 cross band to 2 metres, signals on 432 5 x 1, 420 miles. At 2013Z worked VK3OT on 144.1.

"On 2-1-78 at 0745Z worked VK3AXV then VK3OT, VK3ZBJ and VK3ZQV on 2 metres. At 0900Z worked VK3ZQV on 432.1 with signals peaking 5 x 9 plus 10 dB. Power used at both ends 10 watts PEP. Distance 530 miles completely over land. Also worked VK3ZBJ (5 x 4), and heard VK3YFU in Melbourne, 5 x 1. Also worked by VK3ZQV were VK5ZPW and VK5MT. VK3BIY/P (on Mt. Skene, 80 miles NW of Melbourne, 5155 ft. a.s.l.) worked 5 x 6 on 144.1 and heard VK5KK on 432.1 at readable strength but no contact. Other stations contacted from VK5KK OTH were VK3ZDW, VK3CI, VK5ZCH, VK3YII, VK3LT, VK3VL, VK3BV, VK3ZEF and VK3BEH. Also heard was the Gippsland repeater VK3REG at 1100Z to at least 1430Z, distance over 600 miles.

"On 8-1-78 the band opened to Albany on 2 metres. Signals also appeared on 432 and 1296 MHz, and were favouring Adelaide and points further south. The first two-way contact on 1296 MHz for the season occurred between VK5QR and VK6WG with good signals both ways. VK4NY was also heard in Albany, but not worked.

"On 10-1-78 band open to Albany with signals mainly favouring further south. VK6XY only station worked 5 x 2 both ways.

"On 11-1-78 the band was still open to Albany with stronger signals than the night before. At 1000Z VK6KZ/P (at West Cape Howe, 19 miles west of Albany) successfully worked VK3ZBJ (Frankston) on 432 MHz at reasonable strength after first contacting on 2 metres. Distance 1526 miles, which appears to be a new two-way world record for 432 MHz. 1296 MHz was tried unsuccessfully at both ends. Worked by VK5KK on 2 metres were VK6WG and VK6KZ/P, both 5 x 2.

"On 12-1-78 the signals had reached their peak, having dropped out of the VK3 area. Worked on 2 metres were VK6WG, VK6KZ/P, VK6BE and VK6KJ. Also on 432 MHz worked VK6WG and VK6KJ, heard VK6KZ/P but not worked.

"Equipment used for the new 432 MHz record; VK6KZ/P, FT101E to solid state transverter, 10 watts output, antenna uncertain, but 13 el. used in 1976. VK3ZBJ: 80 watts PEP from solid state amplifier."

On the question of whether the contact between VK6KZ/P and VK3ZBJ becomes a world record hinges the doubt expressed overseas that the original claims for record of 2540 miles by W6NLZ and KH6UK in 1959 has not been proved, and the present listing according to QST appears to be around 1210 miles, this being so, then the recent contact easily exceeds that distance.

When one looks at the map of the world, and I hope you will do so as the result of my next comments, there are few if any places in the world situated along the favourable west-east path which have many chances of extending existing records, other than that presented by the path between VK6 (mainly at Albany) and extending firstly to VK5, then on to VK3, VK7 and finally ZL. Here along the west-east path are situated amateurs of compatible nationalities, similar band usage, similar overall interests, similar power limitations, etc. Overseas contacts need to be made between stations of different nationalities, and over considerable distances, but in many cases with no activity allowed at one end. Whilst we have been rather slow to take up the challenges offered, I feel the future is a great one for VK and/or ZL to wrap up world records on 432, 1296, 2304, 3300 and 10000 MHz. On present standings. 50 or 52 MHz distance will be hard to beat, and 144 MHz looks to have been extended to 5000 km already, and will no doubt go further, and it may be difficult for VK to participate in this one, as there seem to be no areas of real 144 MHz interest other than perhaps to Japan which will exceed 5000 km. Anyway, whatever happens in the Stakes for world records, there is little doubt the amateurs will make them, and VK could well be sharing the prizes! It's up to you boys in Albany, I tear, to hold up the starting end, where the signals finish is anyone's guess, but you will surely share the contacts.

FIRST 144 MHz OUT OF VK8

On 16-1-78 at 0203Z VK5ZHS/8 in Alice Springs, N.T., worked VK4AZE in Bundaberg on 144.1 MHz SSB, and later worked VK2BXT (Moree) and VK2YDY, also Moree. VK5ZSH/8 used an IC202 into a five-eighth wavelength ground-plane! Furthermore, signals were 5 x 9 plus! At 0314Z VK5ZSH/8 worked VK2BXT on 2 metres FM simplex using a 2 watt hand held Ken. KP202 transceiver, signals 5 x 5, distance 1100 miles. At 0230Z VK5ZSH/8 heard a short call from VK5ZWR in Adelaide on 144.056. The return call (attempt) was only heard by VK5KK and lasted a few seconds. Most probable explanation is a small amount of spill-over, distance being some 250 miles closer.

VK8ZGF also operated on 2 metres SSB and FM, using an IC202 into a QQE06/40 running about 100 watts into 10 el. yagi at 40 feet. He worked a total of 6 different stations, VK4ZRO (Brisbane, 1200 miles), VK2YDY and VK2BXT (both Moree and 1100 miles), VK4AZE (Bundaberg, 1150 miles), VK4ZIT, Brisbane, and VK2ZAY, near Gunnedah, 1200 miles.

It was predominantely a strong east-west type opening operating at around the maximum hop distance for Es. The night before the VK3RTG beacon on 144.7 MHz was copied in Sydney and Brisbane. Six metre conditions all over the continent were unusually good. Many stations were vainly trying to make the distance from both the southern States and also Darwin and Kalgoorlie, but no other contacts apart from the above occurred. From general comments it seemed that after 0230Z (interesting?) the only signals heard strongly were from northern VK2, the band closing at 0410Z.

The opening was discovered by chance after a Bundaberg amateur who works at the Bundaberg aerodrome rang up VK4AZE with the suggestion it may be worth a look on 2 metres towards Alice Springs since Bundaberg Tower was copying Alice Springs tower on 122.1 MHz at good strength. Hence after great contusion on the 6 metre calling frequency (some will never learn to QSY) VK4AZE managed to get through to VK5ZSH/8 and eventually work on 2 metres.

It is the first time VK8 has worked out on the State on 2 metres via terrestrial propagation. A rather unique occasion, not only from the point of view of the first VK8 QSO, but unusual Es conditions, perhaps the best for at least 10 years! It would then come as a surprise to say that up until 16-1-78, Es on 2 metres had been extremely poor and as far as 6 metres is concerned a year well below average, perhaps, from the views of several people, the worst in six years!

On 17-1-78, the day after, both 6 and 2 metres were extremely quiet. This, as in the past years, is fairly typical, in some cases the band does not recover for a week or more. Usually conditions in the past few years have built up on 6 metres until finally bursting on to 2 metres. The peak would only last a period of several days then suddenly die.

Again my thanks must go to David VK5KK for the resume of happenings for that rather rare

occasion of VK8 2 metre DX — maybe II will travel south next time!

NEWS FROM VK6

I was pleased to receive a lengthy letter from Walter VK5KZ, who normally resides in Perth but makes an annual pilgrimage to Albany to bolster the VHF operation from that area. The following notes are taken from his letter and are interesting because they outline activity in VK6 in general and Albany in particular.

"Activity outside of Perth is fairly limited on 144 and 432 MHz SSB. However, weekly skeds with Wally VK3WG in Albany (approximately 400 km) on 144 MHz are usually successful, with Bernie VK6KJ and Aub VK6XY occasionally joining in. Bob VK6BE is not well situated for QSOs to Perth. 432 MHz is a long way down over the same path. Fred VK5MZ at Busselton (160 km) is a regular on 144 during these skeds with Albany on Saturdays (0700 WAST).

"Best contacts from Perth on 144 and 432 have been Colin VK6ZCC in Carnarvon (800 km), who has worked a number of Perth amateurs including Don VK6HK and Phil VK6ZKO. Others have made it only on 144 MHz. The most intriguing fact about 144 MHz DX is that the Perth/Adelaide path has only been worked twice. The late Rollo VK6BO worked VK5GL on 30-12-51 and VK5QR on 9-2-52. Despite all the improvement in equipment and rise in activity these remain the only two occasions confirmed two-way contacts occurred. Reports of hearing beacons exist but nothing else.

"In Perth activity on 1296 MHz is slowly increasing, with myself VK6KZ, Don VK6HK having two way capability, and others including Phil VK6ZKO and Frank VK6FW and Bob VK6ZFY moving in that direction. As far as I know no one is pursuing activity in bands higher than 1296 although Don VK6HK is muttering about 2304.

"Don VK6HK, by the way, deserves special mention for his tower. The 20 m crank up tilt over tower is loaded for 160 metres, and supports wire antennae for 60 and 40 metres. There is a tri-band beam for 20, 15 and 10, separate beams for 52, 144 and 432 MHz, and a corner reflector for 1296! (. . . What, no FM? . . . 5LP.)

"In Albany Wally VK6WG is the home constructor par excellence! Not only is he skilful electronically, but his lathe work and mechanical construction are a tribute to fine craftsmanship. He electroplates most of his VHF/UHF chassis and inductances as well as antenna feeds with silver. Wally's current project is 2304 MHz and has a 2 m dish for that band as well as the 1 m dish for 1296. Showing his ingenuity is the fact that his basic exciter for the 2304 chain is that famous standby the 522.

"Albany is something of a mecca for VHF/UHF enthusiasts in summer. Ross VK6ZED, Steve VK6ZBW, Phil VK6ZKO have been frequent visitors as well as myself. This year I added 1296 Tx/Rx capability with a 1 m dish. Highlights of the 1977-78 season from Albany were undoubtedly the 144 contacts at 1316Z on 8-1-78 with Michael VK3ZQV 128 km east of Melbourne for what should be a new W.A. record for 144 MHz, and the 432 MHz contact to Les VK3ZBJ on 11-1-78 at 1017Z with signals 5 x 3 both ways. I was operating from Torbay Hill about 20 km west of Albany. Also worked on 144 SSB over the period 8-1-76 to 12-1-76 were VK3OT, VK3AFW, VK3ZDW, VK3AMH, VK3ZY, VK3AUV, VK5MC, VK5NY, VK5RO, VK5SV, VK5ZPS, VK5QR, VK5RP, VK5MT, VK5ZK, VK5ZWR, VK5KK and VK5ME.

"I would like to comment that the Ross Hull rules must have been written by HF enthusiasts. The idea of call areas to distinguish points scores shows complete lack of understanding of VHF. VK6 amateurs can NEVER aspire to win the Ross Hull trophy. Despite enthusiastic efforts by particular individuals in the past only once has the trophy come to W.A., to the late VK6BO in the days when the contest was 50 MHz only. I would like to see the points per distance as the main basis for scoring. I would also like to see separate national awards for each of the VHF/UHF/SHF bands as an alternative to (or additional to) the lumping together of all bands. This would encourage more activity on the lesser used UHF and SHF bands. Finally, I support you strongly in your efforts to get 50 to 52 MHz back. I see no reason why this frequency band could not be shared with commercial services on a non-interference basis as are bands such as 7 and 1215 MHz."

Thank you, Walter for your interesting letter. I support you in all your comments in the last paragraph, as I am sure most others will, particularly in regard to the Ross Hull scoring!

A letter from Roger VK2ZTB encloses a clipping from Wireless World November 1977, which reads, "The long rumoured Russian intention of setting up an amateur satellite system ('RS') has now been confirmed with the registration by the USSR of details with the ITU. RS will be based on three of our satellites carrying active transponders (uplink 145.8 to 145.9 MHz, down link to 29.3 to 29.4 MHz) with 'maximum' communication distances of 6000 km. The intended orbit has an inclination of 82 degrees and will be circular at about 950 km height with a period of 102 minutes. 144 MHz transmissions should be possible with powers of about 10 to 15 watts to aerials of 10 to 12 dB gain. The system is due in 1977-78 and the first launch could be as early as October.

"The next Amsat-Oscar launch may be February 23, 1978. The ARRL has recently introduced a 'DXCC' award for Oscar operation. Pat Gowen G3IOR, with over 90 countries worked through Oscar, appears nearest to qualifying."

Roger also reports that both the beacons and repeaters in the Sydney area are to be upgraded, the repeater is in the process of complete reconstruction. Th 6 metre beacon has been rebuilt, and now runs 20 watts output and has an A50-12 in the final, which will later be lifted to 50 to 60 watts output. A 28 MHz beacon is under active construction, also a 432 MHz beacon.

Graham VK8ZCJ sends along his usual letter and remarks on how thrilled he was to work Ken YJ8KM for the first time, making it the 9th country for him on 6 metres. Signals were up to 5 x 5. Jeff VK8ZGF in Alice Springs also worked Ken.

Graham said when compared to last year conditions for 1977-78 had been quite poor in Darwin, despite having worked VK1 to VK8 inclusive, JA1, 2, 4, 6, 9 and 9 plus ZL3 and YJ8. He believes ZL TV was heard about twelve times in Darwin but only ZL3 worked.

On 30-12-77 Graham worked Ken VK6ZFQ on Koolan Island, a distance of about 530 miles, which is short skip for Darwin. Ken told him he was watching TV from Indonesia on our Channel 10 (210.75-215.75) and that it had also been available nearly every night during October at solid noise free strength for hours on end, in full colour. There is apparently a two metre FM net in Djakarta, where the TV signals come from, but no contacts have been made. Ken works Ron VK6FM in Derby nearly every night on two metres SSB over a path of 60 miles. Thanks, Graham.

I have received a letter from Ian VK4ZIT, who supports the move to regain 50 to 52 MHz although he points out it will be of little use to him, being only 2 to 3 miles from Channel O. He also reports retiring the old 5 element yagi used on 6 metres, and replaced it with a sterba curtain array for that band. At the moment it has temporarily "shrunk" to a Lazy H shape!! But the trick is that the end of this array points at Channel O, which puts the main lobes at 30 degrees and 210 degrees. Whilst not well placed therefore for JA, it is all right for VK3 and 5 and the central Pacific, and hears considerably less garbage from Channel O as a result. So it looks like the old amateur ingenuity coming to the fore again. I also note Ian is still threatening to build a linear for six metres!

Kerry VK2BXT in Moree writes to confirm news of his contacts to VK7ZAH, VK7DA and VK7JG on 2-1-78 (reported as late news last month), and also his working of VK8ZGF and VK5ZSH/8 at Alice Springs, all on 144 MHz. The fact that it pays to listen was proved when Kerry points out his contacts on 2 metres to VK7 were not pre-arranged on 6 metres, but as he always listens on 144.1 when operating on 6 metres, he heard some CW and on going back to QRZ was rewarded with three subsequent QSOs. That's the moral, boys, always monitor calling frequencies if in the shack doing other things, but if operating at least listen an another band as well.

Steve VK3OT has also written confirming again the various contacts as outlined at length at the start of these notes by David VK5KK. He also reports a good opening on 6 metres to VK3 on 15-1-76, culminating in VK4ZRF hearing the VK3RTG beacon on 144.700 at S3 at 1030Z.

3D2CM is now on 6 metres running 50 watts to 5 el. yagi from University of South Pacific. VR4DX in Honeara, Solomon islands, willing to set up on six metres this coming year if at the end of his tour of duty in 1980 he can dispose of gear . . . requires second-hand FTV650 or similar for loan or buy — can anyone help? P29BB in Lae interested in 6 metre contacts to VK.

Steve also comments on the low level of Ross Hull activity this year, and thinks that unless the rules are changed there will be less and less participation. (Perhaps the Ross Hull contest should be turned over to me, maybe I could rejuvenate it with some constructive thinking as time proceeds . . . 5LP.)

A message from John VK5MG advises Stewart VK0SW and Graham VK0GM are at Casey Base, and Graham will be setting up to work Oscar mode A and B, and should be ready by the time you read this. He is also going to see if Graham can verify the existence of the VK0 beacon.

On 29-11-77 3GCR commenced regular transmission on 103.5 MHz FM from a station located at the Gippsland Institute of Advanced Education at Churchill. Power about 20 watts. It is intended to eventually increase the power to 1 kW and to locate the transmitter at Mount Tassie. Transmissions will be in stereo. Broadcast times are 6.30 to 11 p.m. local time . . . thanks to Eastern Zone News Bulletin.

The above station could be a useful pointer to 144 MHz operation for those within a 500 to 600 mile range of the station, this particularly when power is increased to 1 kW. I am sure the operation of the station will be of immense interest to VK5 2 metre operators.

Before I close I must satisfy Roger VK2ZTB, who in his letter said he was awaiting my synopsis of band conditions for the 1977-76 summer season. I would, therelore, have to say six metres started off fairly good over most of the country, then look a horrible flop in most areas throughout the fortnight or so leading up to Christmas, good around Christmas, then variable until the end of the year. Since the New Year there has been a considerable upsurge in interesting contacts on 6 metres, and the Es conditions generally have remained even if in a on/off basis for the greater part of January, and if I dare predict, I suggest they may go on being available in such a manner throughout February into March when I believe we might again have some good long distance conditions about the end of March to mid-April. There are enough interesting stations around now to keep the genuine six metre operators at their gear much more than in the past, that way more contacts overseas are going to be made. So, the season finished well but as of writing hasn't finished yet!

144 and 432 MHz have excelled themselves at different times, and it seems likely we will see a continuing interest in these bands as more and more stations realise you can still work a very long way on both those bands if conditions are right, and conditions are right more often than you think, it only needs some dedicated operating to get the results. So, first part of season not too good on these two bands, latter part excellent! As a matter of interest at my own QTH the Albany beacon on 144.500 was audible on 12 out of the first 13 days of January, at strengths varying from S1 to S9, path distance over 1200 miles.

Closing now with the thought for the month: "Most of us can easily do two things at once, what is all but impossible is to do one thing at once."

73. The Voice in the Hills. ■

QSP

MARITIME MOBILES — US

According to Ham Radio October 1977 amateur maritime mobile stations aboard US vessels on the high seas (not in foreign territorial waters) will be permitted from 12th September to operate on any frequency that amateurs are authorised to use in that ITU region where the ship happens to be located.

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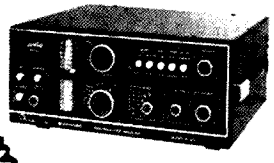

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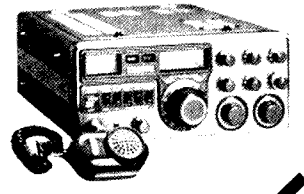

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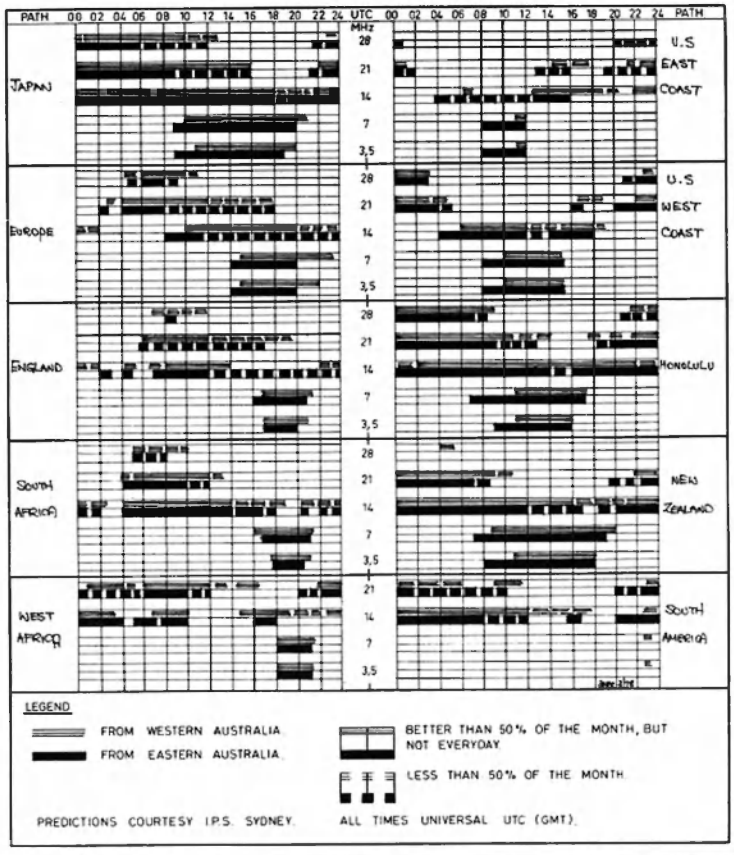

INTRUDER WATCH

Alf Chandler, VK3LC

Before mentioning anything about my overseas trip I wish to pay tribute to my stand-in, Ivor VK3XB, for the sterling job he did in my absence, and also correct an anomaly. The January IW column was his effort and not mine as denoted. His approach to our Administration left nothing to be desired, and I am sure has accomplished much.

In November 1977 AR a letter from Mr. N. W. Lavelle VK3ABH seems to criticize the working of the IW, and I refer you all to the reply by Ivor in the February issue.

While I was away I made it my business to enquire into all aspects of the IW in both region 1 and in region 2, and I found that a great deal is being done and has been accomplished in both regions in preparation for WARC 79. This fact and the extent to which the regional co-ordinators were getting co-operation from the members of their respective societies made me quite ashamed of the meagre support that I get from region 3 members. A few WIA members in Australia send in observations, but very very few.

In region 2 the co-ordinator K6KA processes about three thousand reports monthly, while in region 1 the European societies forward their summaries to Colin G3PSM, the regional co-ordinator, who compiles a world summary each month called "The IARU Monitoring System Summary" and prefaced by "for the protection of the exclusive Amateur bands", co-ordinating all regional reports in one document averaging 16 to 18 pages with 63 reports to the page covering 3500 to 29700 kHz. These summaries are forwarded for action by all interested societies, 33 in all, and for information to another 32.

Harking back to region 2, the USA, Canada and several South American societies contribute, and the complete region 2 summary is sent to G3PSM monthly as I do for region 3. My summaries recently have dwindled to less than one page per month, a sad reflection on the ability of the Australian Amateur to realize the significance of something that may affect him in the future.

While in England the XYL and myself enjoyed the hospitality of Stan G5XB and his XYL Mary. Stan is dedicated and very active with IW affairs, and is the UK co-ordinator. He has the entree to the Home and to the Foreign Offices as well as to the BBC monitoring station at Baldock and the Telecommunications monitoring station. Alerts are handled by both of these stations, an instance being when the Russian pulse transmissions were first detected both monitoring stations took fixes to ascertain where the signals were coming from, and by comparison and co-operation pin-pointed the locations of three transmitters in the USSR. I questioned Stan about the RTTY read-outs that I forwarded to the RSGB in 1973 and he told me that he was mainly responsible for alerting through my submissions the stations TCX, the British Embassy station in Ankara, Turkey transmitting on 14.080 MHz and KJG in Yugoslavia on 14.285 MHz These stations were subsequently removed from our bands.

Unfortunately, because of a mishap to my XYL we could not visit Colin G3PSM, but I did have a lengthy telephone conversation with him. He is at the moment, as well as compiling monthly summaries as per above, busy making a computerized comprehensive summary of all reports that have been submitted over the past few years. This he expects to be of inestimable value to the delegates at WARC 79, but what a document it will be!

It gave me great satisfaction to know that, although my reports are not up to the quantity of the other regions, they are greatly appreciated, and this alone spurs me on to endeavour to make members realize their responsibilities in this the Intruder Watch in Australia.

For handicapped amateurs either transmitting or listening, the Intruder Watch could be a very rewarding occupation. ■

VK/ZL CONTEST RESULTS FOR 1977

Thanks to all those operators who participated in last year's Contest.

From checking of overseas logs, many VK and ZL operators gave contest numbers to many DX stations. This really is what the Contest is about — activity of the DX stations towards VK/ZL.

Many DX stations need contacts for various awards, diplomas, etc., and besides, VK/ZL operators often pick up a rare country or two. Some DX-Peditions and other stations preparing for a major world wide contest use the VK/ZL as a practice run.

The 1977 Contest was the first with new scoring methods. I have noted comments in the logs about them, and realize that some amendments are necessary to explain them more fully.

Now a few comments from the logs:—

VK — new method does not encourage all band operation, particularly on 1.8, 3.5; 4XA: have a nice time sorting the logs; IFT: use of prefixes as a multiplier seems a very good idea; 4KX: not a single CW sig. on 1.8 for 18 hours, like being in solitary confinement; 4RJ: there had been no publicity before the Contest; 1FT: a lot more interest if prefixes were added, points added and then multiplied for the final all band score, otherwise operators will concentrate on one band only — 2XT; and from —

ZL — scoring by prefixes is very ambiguous; 2MM: scoring simply, systems of scoring by prefixes not all that good; 4 x 4 YY/W6 a winner, as a 4 x 4 prefix, but should be really scored as a W6 for difficulty, also VE/W, etc.; 1 AIZ: working all

bands does not seem to do much to pick up a good score, but of course is a better test of operator and station over a range of conditions.

So it seems that for the 79 Contest it will be all bands QSO points, multiplied by the total prefixes worked, which will line it up with many other contests.

The queries raised about prefixes is best answered by example: JA1, JG1, JF1, W1, WA1, WB1, UK2, UP2, UR2 equals nine (9) prefixes. This should help sort out the Russian prefixes, as well as sorting out the new call signs appearing on the bands. It should help to overcome the problems of new operators trying to place an unfamiliar call sign against a country.

ZL1AXB's score of 160,000 is very commendable and ZL3GQ for 149,713 on CW is also very good. Now, VK operators, look at the Band winners for VK and ZL. Overall the Kiwis beat the VKs, eight certificates to four, so a more concerted effort for 1978 is needed to challenge the ZLs.

As to publicity, all major overseas societies, magazines, clubs, plus an extensive list of individual operators are posted a set of rules. Indeed, one of the ways we promulgate the rules is by a copy of the next year's rules being posted out with the Contest Certificates.

Quite a few logs were re-scored, and entrants may note quite a few changes in their revised scores. To their joy, almost without exception, the scores have been increased.

Thanks to all those who entered a log, and to the many who exchanged serial numbers with overseas operators, thanks also.

The overseas portion of the results will follow.

Good luck and good DX. See you again in 79.
Neil VK6NE ■

VK — PHONE

Call	160	80	40	20	15	10	Total
VK1							
FT	—	—	16	47905	16077	1647	65645
LF	—	—	—	1764	304	—	2068
VK2							
XT	21	20	1035	101850	44965	576	146467
APK	—	—	666	60402	47560	—	108622
BJL	—	—	25	71012	6072	100	77209
WC	—	—	38829	—	—	—	38829
BAM	—	4	—	9296	1500	—	10800
ABC	—	—	—	5757	—	—	5757
VK3							
AH	—	—	9	111896	6888	—	118793
ABH	—	—	—	56511	3069	42	59622
AFW	—	1	2	4056	29400	20	33481
ANA	—	—	1	12710	494	—	13205
WW	—	—	—	10043	693	—	10736
QK	4	2	936	594	4292	—	5828
SM	—	1	1	4275	—	—	4277
AMD	—	—	—	1044	798	9	1851
	—	—	1	225	568	165	979
	36	—	—	—	—	—	36
VK4							
OK	—	—	680	87173	53184	247	141284
UR	—	—	—	43032	10498	2660	56190
AGP	—	—	—	2280	2552	—	4839
TE	—	2	—	2280	2552	—	4839
DO	—	—	—	—	3780	420	4220
PJ	6	5	1	3045	320	11	3389
VK5							
SW	—	—	—	25700	6480	—	32180
NGD	—	—	—	—	18630	2576	21206
IT	—	—	—	2150	—	—	2150
VK6							
II/P	—	—	1	74867	15741	2	90611
NE	—	—	192	54194	7752	4260	66398
BV	—	—	—	16908	12211	—	23119
NBZ	—	—	—	—	10258	1380	11638
VK7							
BC	—	—	—	20662	1612	—	22474
NFR	—	9	—	—	9	—	18
VK9							
XW	—	—	—	11832	168	1320	13320
XI	—	—	—	24	—	—	24

VK — CW

Call	160	80	40	20	15	10	Total
VK2							
APK	—	—	3212	50836	34866	—	88914
BJL	—	—	—	47160	968	36	48164
AQF	—	—	25	24634	2170	500	27329
VK3							
QI	—	—	52959	—	—	—	52959
QK	—	—	40680	—	—	—	40660
MR	—	—	—	—	32922	—	32922
MJ	—	30	3564	23540	858	588	28580
VF	—	—	17346	—	1248	—	18594
AMD	—	12	100	1147	100	—	1459
XB	—	300	—	—	—	—	300
RJ	60	—	—	—	—	—	60
NAY	—	4	—	—	—	—	4
VK4							
XA	15	80	2546	62928	16968	3920	86457
DO	—	—	—	—	7590	—	7590
QK	—	112	210	3588	—	—	3910
UR	—	—	—	266	—	—	266
KY	—	—	—	—	—	195	195
VK5							
SW	—	—	—	99180	4590	—	103770
MD	—	—	156	19089	2112	—	21357
QQ	—	—	—	13104	—	—	13104
BS	—	—	49	1271	180	—	1500
RK	—	—	—	210	—	—	210
VK7							
BC	—	—	280	32574	1012	16	33884
RY	6	24	1	2948	—	—	2979
JB	—	—	—	1368	360	1	1729
VK9							
HA	—	—	—	—	—	33500	33500

ZL — PHONE

Call	160	80	40	20	15	10	Total
ZL1							
AXB	—	—	—	160080	—	—	160080
AKY	—	—	—	8541	65250	—	73791
BOQ	—	—	32712	—	—	—	32712
AIZ	—	12	5959	10668	8704	300	25643
BQD	—	1080	—	—	—	—	1080
AQO	64	—	—	—	—	—	64
AUW	45	—	—	—	—	—	45
ZL2							
ACP	—	—	4794	117872	18848	—	141514
AH	—	—	1	15700	851	—	16552
BDF	—	—	—	528	—	—	528
ZL3							
GG	—	—	34128	—	—	—	34128
ABC	—	—	—	1131	400	—	1531
ZL4							
OX	—	—	—	33750	5240	—	38990
IJ	—	4	1	10191	5616	—	15812

ZL — CW

ZL1							
AXB	—	—	—	83340	—	—	83340
AIZ	—	204	8500	12408	7526	4257	32895
HV	2	4	25	18100	506	—	18637
AFW	—	—	304	6867	6888	2046	16105
AUW	72	—	—	—	—	—	72
ZL2							
BR	—	20	3280	64950	12236	1	81687
AGY	—	—	—	68208	—	—	68208
LA	12	64	1216	45045	30	—	46367
AYP	—	—	14274	—	—	—	14274
ACP	—	—	8880	—	—	—	8880
MM	—	—	—	2668	9	—	2677
ZL3							
GQ	221	2244	28476	71910	45188	1674	149713
BK	—	16	1248	36850	16224	4	54342
ABC	—	—	—	800	—	—	800
ZL4							
GG	—	—	—	6534	48	—	6582
OP	—	—	—	1785	—	—	1785

BAND WINNERS — PHONE

Call	160	80	40	20	15	10
VK						
3CM	36	—	—	—	—	—
2XT	—	20	—	—	—	—
2WC	—	—	38829	—	—	—
3AH	—	—	—	111896	—	—
4QK	—	—	—	—	53184	—
6NE	—	—	—	—	—	4260
ZL						
1AQO	64	—	—	—	—	—
1BQD	—	1080	—	—	—	—
3GG	—	—	34128	—	—	—
1AXB	—	—	—	160080	—	—
1AKY	—	—	—	—	65250	—
1AIZ	—	—	—	—	—	300

BAND WINNER — CW

Call	160	80	40	20	15	10
VK						
3RJ	60	—	—	—	—	—
3XB	300	—	—	—	—	—
3QK	—	—	40680	—	—	—
5SW	—	—	—	99180	—	—
2APK	—	—	—	—	34866	—
8HA	—	—	—	—	—	33500
ZL						
3GQ	221	2244	28476	—	45188	—
1AXB	—	—	—	83340	—	—
1AIZ	—	—	—	—	—	4257

CONTESTS

Kevin Phillips, VK3AUQ
Box 67, East Melbourne, 3002

CONTEST CALENDAR

March

4-5	ARRL DX Phone Contest
4-5	YL-OM CW Contest
11-12	Commonwealth Contest
11-12	Trieste DX Contest
16-19	ARRL DX CW Contest
25-26	CQ WW WPX SSB Contest
25-27	BARTG RTTY Contest

April

1-2	Polish "SP" CW Contest
1-2	Tennessee QSO Party
1-3	ARCI QRP QSO Party
8-9	Swiss "H22" Contest
11-12	DX to W/VE YL CW Party
15-16	Polish "SP" Phone Contest
15-16	Common Market Contest
22-23	Bermuda Contest
22-24	ZERO District QSO Party
25-26	DX to W/VE YL Phone
29-30	Dutch "PACC" Contest

TRIESTE DX CONTEST

Starts 0000 GMT Saturday, March 11, and ends 2400 GMT Sunday, March 12. This contest is between 13 stations and the rest of the world. Contest is for single operator stations and SWLs only. All bands 10 to 80, both phone and CW, are permitted. Exchange only a signal report, 13 stations will also *give 2 letters identifying their province.* For scoring, multiply total number of QSOs by the sum of different provinces worked on each band. The same station may be worked on each band for QSO and multiplier credit. SWLs must report the call of the 13 stations as well as the station being worked, scoring same as transmitting stations.

Awards — Certificates to all participants, and a plaque representing the 14th century seal of Trieste City to the top scoring station in each DXCC country.

Send logs by May 31 to Trieste DX Radio Club, PO Box 1342, 34110, Trieste, Italy. (Award winners are expected to cover mailing charges, 10 IRCs.)

CQ WW WPX SSB CONTEST

Starts 0000 GMT Saturday, March 25, ends 2400 GMT Sunday, March 26. The rules are the same as for last year. Briefly the rules are as follows: Contacts between stations on different continents count 3 points on 14, 21 and 28 MHz, and 6 points on 7, 3.5 and 1.8 MHz. On the same continent but not the same country, 1 point on 14, 21 and 28 MHz, and 2 points on 7, 3.5 and 1.8 MHz. Contacts are permitted between stations in the same country for the purpose of obtaining a prefix multiplier, but have no QSO point value.

The multiplier is determined by the number of different prefixes worked. Each prefix may be counted once only, NOT once per band.

Exchange RS report plus a serial number starting at 001. Single operator stations may use only 30 of the 48 hours available. The 18 hours of non-operating may be taken in up to 5 periods. To be eligible for awards, a minimum of 12 hours operating must be shown. There is no limit for multi -operator stations, but 24 hours are needed for award eligibility.

Send logs by May 10 to CQ WPX SSB Contest Committee, 14 Vanderventer Ave., Port Washington, N.Y. 11050 U.S.A.

RD CONTEST AND ETC.

I am still recovering from going through all the logs for the last contest. My apologies for the

lateness of the results — it occurred due to many things, not the least of which was a much more thorough check on duplicate contacts and scoring than is usual. I wonder how many people have noticed that the results published do not necessarily agree with the logs submitted. There are many comments yet to be read, and some of them may appear in a later issue. Many wrote that they enjoyed it, and the record number of entries supports this comment.

Next month should have the Ross Hull results out, and also some certificates out to those who are waiting patiently for them.

Till next month, 73. ■

HAMADS

- Eight lines free to all WIA members. $9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Commercial advertising is excluded. Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

FOR SALE

Ken KP202 Transceiver, charger and manual, $140; Snooker Table, complete (3 cues), $140; both new condition. VK3BAV, QTHR. Ph. (03) 598 8665.

Hy-Gain TH6DXX Beam, $215; 2m 11 el Yagi, $25; Mldy IV.N 40-10m trap dipole, $45. VK3CH, QTHR. Ph. (03) 560 5150.

Transmitter SSB H/B 80-40-20m enclosed 6 ft. steel cabinet, final PR 4X150B 200W O/P, $90. VK3BDY, QTHR. Ph. (03) 338 2105.

FL2100B, new, unused in box, warranty current, $550 firm; Marconi UHF Wavemeter TF643B, 20-300 MHz, 4 plug in ranges, sensitive and accurate, $25; Partly complete 2m linear 4/125A tuned lines, 3 ft. table rack, 2000V DC supply, regulated screen supply, 2 hrs would complete, $100; AWA A510 2-10 MHz QRPP wireless unit with hand generator and all connecting cables, spare Tx, $50; Admiralty Morse Key No. 7681, $5 new; 52 MHz FM(?) C42 37-60 MHz with all cables and power units, $50; 3 Scalar 5/8 whips and bases, new, in plastic, $25 lot; Fuji 23 Ch. AM CB, suit noivce, $25. VK3OT, QTHR. Ph. (055) 72 3166 day.

Yaesu FT221 all mode transceiver, will exchange for small mobile HF rig, Yaesu FT75B plus DC, PSU, Swan, etc. or sell. VK4PM, QTHR. Ph. (074) 62 1021.

Hustler 4 BTV trap vertical antenna, had very little use, $115 ONO, Inc. 80m resonator. Ph. (053) 31 1138.

FT75B with mobile power supply, 2 months old, $415 ONO. VK2ZKF/NGQ, QTHR. Ph. (049) 51 4024 AH.

Portable 6-band, short wave Rx (Sanyo), SW 2 MHz to 28 MHz, 4 bands, MW 510 to 1600 kHz, FM 87 to 108 MHz, only 6 months old, still brand new, has telescopic aerial, optional AC or DC and many other features. Sold with AC power cord. Price $45. John Brereton, 27 Kent Ave., Brahma Lodge 5109, S.A.

Lafayette HA-600A Rx, excellent condition, $150 ONO, Trapider GDO with all coils, $45, RAK 2m 5/8 ant. with magnetic base, $15, unused. VK3BCN. Ph. (03) 347 9415.

Oscilloscope Roband, five inch crt. DC to 30 MHz, in working condition, 22 cm high, 43 cm wide, 58 cm depth, 14 kg weight, $200. VK2ZOF. Ph. (02) 344 5571 after 5 p.m. weekdays.

House Block, 28.8 pers., situated on top of rise at Calliope, approx. 10 miles SE Gladstone, Old. Water and power past block. Calliope has an easy lifestyle which would suit anyone trying to get away from it all. Situated within easy access to main highways, ideal site for a Dx location. The nearby area is booming industrially and this land would be a good investment. Good fishing and boating areas close at hand. $5,700.00 ONO. Enquiries VK4NAX, 23 Drummer St., Toolooa Estate, Gladstone, Qld. 4680.

Rextone PB Car Radio (AM only), 12V neg. $40.00, exc. cond., "Power" portable AM, FM, SW receiver, covers BC, Marine, VHF air and PS bands, FM BC, $40. Graeme Scott VK3ZR, QTHR. Ph. (03) 89 4645.

Drake R4B Rx, good condition, less than half new price, $300; Yaesu FT200 transceiver with power supply and spare valves, handbook and original packing, $350. VK5AS, QTHR. Ph. (086) 82 2899 bus.

RTTY equipment (Creed), 6S/5M auto-transmitter, 7P/N4 perforator, both units in excellent condition. Supplied with 20 rolls of tape and complete documentation, $100. VK5JE, QTHR.

FTDX100, good cond., full wkg. order, all cables and h'book, $450, ONO. VK3YQ, QTHR. Ph. (03) 859 3604.

SBTV Slow Scan Monitor, similar to Robot 70A, $220. Stan VK3BHZ, QTHR. Ph. (03) 870 5132 or (060) 71 7244.

Collins S-Line Equipment 32S-1, 516F-2, 312B-4, 30L-1, fitted with 4 x 872B tubes. Includes spare tubes for exciter with 4 x 6-46s, 5R4GY and 5U4G rectifiers. Well maintained by one owner since new, cables and instruction manuals included. Package deal $1,000, cash and carry. VK6RU, QTHR. Ph. (09) 385 9684.

Yaesu FT200 Transceiver with FP200 power supply, mint condition, plus 14AVQ vertical antenna, $450. VK2RL, QTHR. Ph. (02) 908 2982 A.H.

Yaesu FRG7 Rx, $190; Tandy SX190 Rx, $120; Katsumi dual paddle keyer, $120; AWA AC/DC PSU 15 amps, $40; RTTY demodulator/encoder, tube type, with CRO tuning, $40; model 15 RTTY printer, recently overhauled, $50. VK3NCY, Box 322, Mentone 3194. Ph. (03) 90 2620.

Antenna Rotator, HAM-II, complete with 60 ft. of multi-conductor cable to suit, unused, new cond., $200. VK5KI, QTHR. Ph. (08) 264 1902.

Co-ax. Cable HGS, ½ in. dia., 3 lengths, 1 x 30 ft., 1 x 51 ft., 1 x 53 ft. Swap for pair 6J6A tubes or what have you. VK3VR, QTHR. Ph. (03) 787 1715.

Dream QTH. Vacant building block approx. 50 ft. x 150 ft., loc. Blaxland Blue Mts., N.S.W. Level block with massive 80 ft. self-supporting telegraph pole on it with additional 20 ft. rotating steel section to carry antennas. Price $9,500. Large monoband Yagis for 10, 15 and 20 m also available. VK2WX. Ph. (02) 524 8631 or (03) 26 2711.

Tower, 60 ft. high, triangular shape, self-supporting. See erected, $100. VK3ATQ, QTHR. Ph. (03) 707 2110 A H.

Antenna, TH3 Junior Yagi, $180; 432 MHz 44 el. Yagi, $35; 10-15 duo band Yagi, $100; transverter, 144-432 MHz, $199; converter, 144/28 MHz IF, $35; TS 600 6 m transceiver, as new, $625; Collins "S" line, absolute mint cond., 75S3C, 32S3A, 30L1, 516/F2 PS. Ph. (03) 24 1232 or (03) 509 8637.

Yaesu FT2FB 2 m Xcvr, channels 2, 8, 40, $139. VK3ZKE. Ph. (03) 546 4924.

Microwave Modules, 28/144 MHz transverter, unused, cost $165, sell $125, or exchange for 2 m hand held in good order. VK2BVR, QTHR. Ph. (02) 620 1444.

Transformer A and R, 200V, 220V, 230V, 240V primary, 565V, 500V, 425V aside at 250 mA. 2-6.3V 3A, 1-5V 3A, 2-2.5V 3A. Two silicon 1000V half wave rectifiers, $15. VK3VI. Ph. (03) 89 5328.

FTDX401 80-10 metre Transceiver with matching SP400 spkr. unit, mic., etc., $445; QM70 high power 28-144 MHz transverter, $145; Heathkit SB610 monitorscope, $150; Datong RF speech clipper, $65. All above units in as new condition, in original cartons with hand books. New 813 tubes, $20 pair; new Asahi 20m 3 el. beam, $155; 20m mini-beam, $50; 14 AVQ trap vertical antenna, 40-10m, $55; Drake 2B 80-10m receiver with matching spkr./Qxer unit, $175. VK3ARZ, QTHR. Ph. (03) 232 9492.

WANTED

TH3 Junior Beam, Rotator, Mast and Dummy Load. VK3BAV, QTHR. Ph. (03) 598 8665.

FT200 or FT75B or similar. Jim Upton. Ph. (062) 46 9902.

Mast 30-40 feet, self supporting preferred, also Rotator Ham II or similar. Wes VK6NAH, QTHR. Ph. (09) 446 3008.

SILENT KEYS

It is with deep regret that we record the passing of —

Mr. B. J. SORLEY VK6RO
Mr. A. F. ASHBY VK2TA
Mr. A. EDWARDS G6XJ/VK3AMM

DUDLEY McDONALD VK4MY

Dudley McDonald VK4MY passed away 12-12-1977. He held the call VK3DM from the early thirties until the middle of 1964 when he moved to Palm Beach, Queensland.

Dudley was a keen CW operator who was trying to work 5 band DXCC, I think he was well on the way to obtaining this hard-to-get certificate.

I first met him in December 194$, when I joined the staff at 3LO/3AR Sydenham, an easy-going type of chap whom I am sure will be sadly missed. To his wife Blanche, all his many friends extend their deepest sympathy.

da P. J. Anderson VK3PA

M. FRANK ASHBY VK2TA

Albert Francis (Frank) Ashby VK2TA, who died suddenly at home on 13th December 1977, was first licensed in G-land as G3GXC in 1949. His interest in radio, however, dated back to 1912 when, as a boy at school, hs was first allowed to turn a Wimehurst Machine.

On arrival in Australia in December 1950, Frank lost no lima in applying for a VK call sign, and was licensed as VK2APA with a QTH at Palm Beach in 1951. He later switched to the two letter call sign of VK2TA and his QTH was at Oatley for the past 14 years. Frank was a man of varied interests, including motor racing in pre-war England, sailing, photography and shooting. In spite of heart trouble and a cardiac pacemaker implant, he managed to remain active right up until his death at the age of 79.

He will be sadly missed by his wife and many friends.

VK2AJ

S.A. Journal, April 1976, buy or borrow for copying. VK3AFW, QTHR.

Hallicrafters Receiver, Model 62-A, preferably in working order. Also anyone with knowledge of, or has for disposal a B-40 Rx, as manufactured by Murphy Radio, please contact H. Charles, at 49 Spencer Street, Burnie, Tas. 7320.

Yaesu FT200 with power supply or FT101 or similar, price to be negotiated. Contact Chris VK6ZBT, QTHR.

Beg, borrow or steal but preferably loan of computations for 5x20' "Antiference" triangular tower, good vintage, approx. 1960. VK3AH, QTHR.

IC22 or IC22A or similar, must be good condition, enquiries Graeme Scott VK3ZR, QTHR. Ph. (03) 89 4645.

TV Antenna, price and particulars to L20432, QTHR. Ph. (02) 398 2539.

FT101 or similar Txcvr, good unit required up to $450. Trevor Pitman. Ph. (03) 550 4203, 71 Church St., Beaumaris, Vic.

Bug. VK3VI. Ph. (03) 89 5328.

Uniden Transceiver, 80-10 m, Mk. I or Mk. II, in good working order, complete with service manual and box if possible. Details and price to VK2LX, QTHR Ph. (043) 92 2390.

H/book and Maintenance Manuals for Collins TRC75 radio set. Will pay $30. G. Edwards VK2ATW, QTHR. Ph. (068) 47 2061.

Signal Generator variable, 3 MHz to 30 MHz Marconi model TF 995B, or similar. Jim Bland VK1JB. Ph. (062) 81 2824 Bus., (062) 88 2803 A.H.

Setting up shack on limited budget Any spare gear? Prime need is transceiver HF SSB, older type, e.g., Swan 350, FT101, etc.). Fred (VK2YAL (full soon)) VK2NDD, QTHR. Ph. (02) 76 9500.

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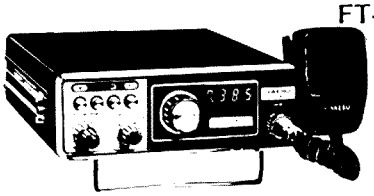

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Highly accurate counter goes to 500 megs, at an accuracy of 1 part per million. LED readout, matches the style of other Yaesu equipment. A handy piece of test equipment for any amateur or laboratory.

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Cat D-2872 .. .. $175.00

FT301S: 'Short' version of FT301. 20W, less a few features of the full FT301. But look at the saving!
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OOPS! We got caught. We bought thousands of dollars worth of electronic Morse keyers o'seas, but found the quality of construction poor when they arrived. Instead of jeopardising our good name, we're going to sell these off BELOW COST! Yes, they work perfectly and are, in fact, brand new. But there's no guarantee, no return.
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Build our novice transverter. Takes the 27MHz output from the CB, transverts it to 80Mx — ends up in novice section of band, too! The cheapest way to get onto 80! Full instructions given.
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Try these — our beam antenna brackets. Two styles, one poly. to take up to 10mm elements & 17mm boom, other metal (cad. plated) takes 17mm elements, 20mm boom. Ideal for all beam builders.
10mm — Cat D-4650 .. .. 55c each
17mm — Cat D-4652 .. .. 80c each.

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TRIO KENWOOD MODEL TS-820 AC only 160 to 10 M.	$ 900
TRIO KENWOOD model TS-600-A FM - AM	$ 680
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YAESU MUSEN FT 7 new model	$ 570
YAESU MUSEN model FT-101-E AC-DC transceivers 10 to 160 M with speech processor	$ 849
YAESU MUSEN model FL-2100-B Lineal Ampl.	$ 569
YAESU MUSEN FRG-7 Wadley Loop Receiver All solid state, 0.5-29.9 MHz in thirty 1MHz bands. Electronic band selection	$ 338
YAESU MUSEN FL110 Solid State Linear Amplifier. Companion unit to FT-301S. 10-15W drive, 200W PEP Input, 160-10mx.	$ 249
YAESU MUSEN YC-500E 500MHz Freq. Counter. Accurate to .02ppm.	$ 574
YAESU MUSEN YC-500S 500MHz Freq. Counter. Accurate to 1ppm.	$ 446
YAESU MUSEN YC500J 500MHz Freq. Counter. Accurate to 10ppm.	$ 319
YAESU MUSEN YO100 Monitorscope. Matches the FT-101E, but can be used with other Yaesu equipment. (IF kits 455 kHz and 9MHz optional extra). (IF Kits $12.00 each)	$ 285
YAESU MUSEN FTV-650B Six Metre Transverter. Converts 28 MHz. SSB to VHF, and includes receiving converter. 50W PEP. Primarily designed for coupling with Yaesu transmitters.	$ 249
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DX 33 Western	$ 240
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SO-239 Chassi Mount	$ 1.20
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Twin meter model: Y.M. - I.E. 3.5 to 145 MHz prof quality	$ 28
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APOLLO 3 position co-ax switches $ 15

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EK-150S Single Paddle Electronic Keyer	$ 136
EK-150D Double Paddle Electronic Keyer	$ 136
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HK-710 De luxe heavy duty morse key. Heavy base. A really beautifully constructed and finished unit. Fitted with a dust cover, standard knob and knob plate. Ball bearing shaft.	$ 45
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VALVES 572 B $55, 6KD6 $12.50, 6JS6 $10.50 6JM6 $9.50, S2001 (6146B) $13.50, 12GB7 $8.50 7360 $14.50, 6GK6 $6.

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amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

VOL. 46, No. 4 APRIL 1978

CONTENTS

COVER PHOTO

Husband and wife team Earl Russell VK3BER and Mavis Russell VK3BIR proudly show us the works of their van when when working mobile/portable.

Mavis, licensed for 12 months, is Vice-President of the VK3 LARA group, and Earl, licensed 10 years approximately, was a member of the steering committee of the Frankston and Mornington Peninsula Amateur Radio Club (FAMPARC).

Both are active in clubs' affairs and their two children are also becoming involved in amateur radio.

Mavis and Earl are active on all bands.

Photograph by Reg Goudge.

amateur radio

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QSP — THE INSTITUTE BUDGET

As another Federal Convention approaches, another budget is being prepared for the year 1979. As this matter is much too detailed for a QSP comment it is limited to the most significant items. On the expenditure side some 55 per cent of payments are made for the publication of Amateur Radio and 45 per cent for general running of the Institute. This was for 1977.

One problem to be faced in preparing the budget is that 1977 figures have to be used as a basis to prepare estimates for 1979. This requires considerable "crystal ball-gazing" as there is no way for an accurate assessment to be made, e.g. the cost of postage for the latter part of this year, leave alone next year. However the longer term trends do help and budgets properly prepared are very useful despite their lack of precision.

In view of the above ratio of payments, the number of copies of Amateur Radio produced is a very important figure, this is determined by looking at —

(1) The number of members who have renewed their subscription to mid-February as against the same time in previous years.

(2) The number of ARs printed for January as against previous Januarys.

(3) Such material as councillors can supply as to their division's efforts to increase membership.

The figures hereunder are supplied and examined for each division; VK totals are as follows:

	Renewals to Mid-February	ARs Printed in January
1976	3529	4497
1977	3653	4637
1978	4173	5249

From this material an estimate will be made of ARs to be produced as well as the number of members expected, hence the subscription income for the year as well as printing and distribution costs of AR. It is noted that 60 per cent of Amateur Radio expenditure was recovered from advertisers and direct subscriptions, and this resulted in an increase in the cost of AR to members rising from $12,931 in 1976 to $20,455 as shown in the audited accounts. The reasons for this are too lengthy to be gone into here, but will be discussed in detail at the Convention.

Every item of expenditure and revenue is looked at in detail and the need to incur it examined. The need for more expert and prompt attention to certain matters, as well as lack of volunteers, has resulted in more payment for services than we have had in the past. It is not possible for volunteers generally to meet deadlines that are now demanded, and it is not logical for paid personnel to wait for work to be completed in leisure time by voluntary labour. The attitude that one joins the Institute to get the best out of the hobby by playing amateur radio rather than doing administrative work, which can be done by others, is much more prevalent than in the past but the Institute still needs and would not exist without the many volunteers we have in the various committees and the actual running of the Institute. The budget now notes this, and provision is made within the limits allowed, for some assistance to get these people to get their jobs done.

K. V. ROGET VK3YO, Federal Treasurer. ■

QSP

RECIPROCAL LICENSING

Brazil has reciprocal agreements with Bolivia, Canada, Chile, Colombia, Costa Rica, Denmark, Dominican Republic, Germany, Paraguay, Portugal, Sweden, United Kingdom, USA and Venezuela. IARU R2 News November 1977.

USA THIRD PARTY AGREEMENTS

According to IARU Region 2 News of November 1977 the USA has third party agreements with Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Panama, Paraguay, Peru, Uruguay and Venezuela in South America; Costa Rica, Cuba, Dominican Republic, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua and Trinidad and Tobago; and with Canada, Israel, Jordan and Liberia.

160 METRE BAND IN SOUTH AFRICA

The 160 metre band has been opened up for greater use in South Africa. This was a result of approaches to the Postmaster General in South Africa by the South African Radio League. The report of the conditions of use was carried in the October edition of Radio ZS, the journal of the South African Radio League.

Amateurs have been allocated from 1.8 MHz to 2 MHz in South Africa, but most share the band with existing navigation services. This means that there are a number of spot frequencies with guard bands which must be avoided. These are 1.8 MHz, 1.807 MHz, 1.82 MHz, 1.83 MHz, 1.887 MHz, 1.936 MHz, 1.981 MHz and 1.982 MHz. The guard bands are in each case 3 kHz on each side of the spot frequency.

The power level allowed is 400 watts PEP.

WARC 79

The editorial in OST Oct. '77 really ought to be compulsory reading for all amateurs, especially those who do not support the WIA by being members. Basically, this is what the editorial said — Gone are the days when the USA rules the roost at International Conferences because the 50 nations of 1947 has now grown to 153. A new majority, primarily of emergent nations encouraged by the communist countries, is ramming through resolutions. Issues are decided, not necessarily on their merits, but through a coalition of special interests. Frequently, these decisions are in defiance of positions strongly held by the USA but is conceivable that many small and poor nations at WARC 79 may construe USA support for amateur radio as just another symbol of the determination of the rich countries to dominate them through some sort of economic hegemony. Planetary resources (e.g. oil) are now recognised as finite in the same way that the radio spectrum is finite. Will amateurs use efficiently and with our high purposes all the frequencies we are demanding? But there are some positive factors. When scientists get together political factors tend to play a lesser role. The growth of the amateur radio community in Japan, Europe, Latin America and the Soviet bloc together with support from these countries is another factor. The work of the IARU intensively developing maximum support for the amateur cause is yet another factor. Our fate at WARC 79 can be improved by a reduction of tensions between nations, by assisting towards upgrading living conditions in poor countries and by conserving all the planet's precious resources.

DISTURBING NEWS

Graham VK6ZGG, editor of the WA VHF Group News Bulletin, reports:—

(1) Approximately 200 Kyokuto 2 metre transceivers have been deliberately sold to non-amateurs in WA; and (2) that several legitimate Eastern State amateur call signs are being used on 2m and HF amateur frequencies without permission or knowledge of their legal holders; and (3) at least one E/S call sign is currently being used by a non-amateur with the full consent of the "rightful?" holder. Yes, this is all happening here in WA.

USA ANTI-THEFT RADIO SIGNALS

"Interference on 160 and possibly the high end of 75m could result from the FCC's recent approval of wide-band swept anti-theft systems authorised in the bands 1.7 to 2.3, 4.05-4.95 and 7.4-9.0 MHz with a maximum field strength of 100 uV per m at 30m." Ham Radio October 1977.

USA — CW

"CW sending test is being dropped by the FCC for all Commission administered amateur examinations, shortening and simplifying (since examiners won't need CW qualifications) the exam. Novice exams administered by volunteer examiners will still require a sending test, however, to weed out really bad fists." Ham Radio October 1977.

GLASS-FIBRE

A note in Radio Communication of January 1978 deriving from LERC ARC Bulletin by W6DDB points out that the catalyst added to glass-fibre resin to accelerate hardening is usually mekp (methyl ethyl ketone peroxide) which can completely destroy eyesight. Once mekp commences to destroy eye tissue there is no known way to stop the process. When using glass-fibre resin and its additives protective glasses should be worn, together with ensuring an adequate supply of clean water on hand with which to wash out the eyes within seconds if an accident occurs. Mekp is also used in other products such as some liquid casting plastics.

PACER

The Police district of Maroondah has recently been given the go ahead for the Police headquarters in Nunawading to form an organisation of CB Radio Operators to be known as PACER (Police Associated Citizens Emergency Radio).

This Organisation is currently gathering membership from responsible CB operators from within the Maroondah Police district, to be trained in many aspects of Police work, and to be available on call out by the Police Department.

Basically PACER will have several teams of twenty (20) members spread right throughout the Maroondah district covering an area from Nunawading to Healesville to Warburton, through the Dandenong Ranges back to Ferntree Gully and Wantirna.

These teams, once in operation, will, when required, be called out by the Police to assist in whatever situation that the Police feel that CBers can assist. This would include lost children, stolen cars and even crimes such as burglary and rape, etc.

Discipline will be one of the main aims and at the monthly meetings, which have already commenced, members are given lectures in virtually all facets of Police work. Some training exercises have already been carried out and there is a lot more to come which will not only make PACER into a successful organisation, but will give continuing interest to its members.

COMPONENTS

From Ham Radio August 1977 editorial —

"As more and more amateurs switch to factory-made gear, and as industry uses more ICs and disposable plug-in modules, the life of the dyed-in-the-wool ham home brewer gets tougher and tougher. If you've recently tried any of the construction articles in the amateur magazines, you are already well acquainted with the hassle involved in obtaining a few needed components.

At one time you could drop in at your local corner radio store with a list of parts and the man behind the counter would fill your order. But that was when the vacuum tubes, resistors, and capacitors in your ham gear were the same as those in the family radio. It's not the same any more — now the transistors and ICs in the radios and television sets are designed specifically for that purpose and have operating characteristics that are of little use elsewhere. There are exceptions, but they are few and far between.

Another problem that faces the serious home builder is the tremendous variety of transistors and ICs available from different manufacturers. Although some types of devices are made by more than one company, in most cases the semi-conductor manufacturers crank out devices that are completely different from those of their competitors. And to add insult to injury, the same device may carry a dozen different part numbers: a 2N number, a replacement number, plus special numbers for units sold in large quantities to equipment manufacturers."

EQUIPMENT TO UNLICENSED PERSONS

The ARRL has been promoting a code of ethics requiring, voluntarily any importer, manufacturer, distributor or dealer in amateur type gear to sign a pledge adopting the code of ethics. This is a pledge (backed up by counter and advertising display) that no amateur radio transmitters, transceivers and amplifiers will be sold at retail except to persons who can show that they are properly licensed to operate that equipment. The ARRL will publish a quarterly list of these companies supporting the code. — QST, Nov. '77.

CW TESTS IN USA

"Code sending tests have been eliminated as part of FCC-administered examinations since this past August. However, the sending test is still required as part of every Novice examination." QST, Nov. '77.

WIRELESS INSTITUTE OF AUSTRALIA

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Federal Council:

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VK2 Mr. T. I. Mills VK2ZTM
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Staff: Mr. P. B. Dodd VK3CIF, Secretary.
Part-time: Col. C. W. Perry, Mrs. J. M. Seddon and Mr. P. Simmons (AR advertising).

Executive Office: P.O. Box 150, Toorak, Vic., 3142. 2/517 Toorak Rd., Toorak, Ph. (03) 24 8652.

Divisional Information (all broadcasts are on Sundays unless otherwise stated):

ACT:

President — Mr. E. W. Howell VK1TH
Secretary — Mr. Ted Radclyffa VK1TR
Broadcasts— 3570 kHz & 146.5 MHz: 10.00Z.

NSW:

President — Mr. T. I. Mills VK2ZTM
Secretary — Mr. I. A. Mackenzie VK2ZIM
Broadcasts— 1825, 3595, 7146 kHz, 28.5, 52.1, 52.525, 144.1, Ch. 8 and other relay stations: 01.00Z. (Also Sunday evenings 09.30Z and Hunter Branch, Mondays 09.30Z on 3570 kHz and ch. 3 and 6).

VIC.:

President — Mr. S. T. Clark VK3ASC
Secretary — Mr. J. A. Adcock VK3ACA
Broadcasts— 1825, 3600, 7135 kHz — also on 6m, 2m SSB and 2m Ch. 2 repeater: 00.30Z (Also on Radio 3HA).

QLD.:

President — Mr. D. T. Laurie VK4DT
Secretary — Mr. P. Brown VK4PJ.
Broadcasts— 1825, 3580, 7146, 14342 kHz: 09.00 EST.

SA:

President — Mr. C. J. Hurst VK5HI
Secretary — Mr. C. M. Pearson VK5PE
Broadcasts— 1820, 3550, 7125, 14175 kHz; 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.

WA:

President — Mr. R. Greenaway VK6DA
Secretary — Mr. N. R. Penfold VK6NE
Broadcasts— 3600, 7080, 14100, 14175 kHz, 52.656 and 2m (Ch. 2): 01.30Z.

TAS.:

President — Mr. R. K. Emmett VK7KK
Secretary — Mr. H. E. Hewens VK7HE
Broadcasts— 3570, 7130 kHz: 09.30 EST.

NT:

President — Mr. Doug Haig VK8JD.
Secretary — Mr. Henry Anderson VK8HA.
Broadcasts— Relay of VK5WI on 3.55 MHz and on 146.5 MHz at 2330Z. Slow morse transmission by VK8HA on 3.555 MHz at 1000Z almost every day.

Postal information:

VK1 — P.O. Box 46, Canberra, 2600.
VK2 — 14 Atchison St., Crows Nest, 2065 (Ph. (02) 43 5795 Tues & Thurs (10.00-14.00h).
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 3535 Sat 10.00-12.00h).
VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton (Ph. (08) 254 7442).
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (incl. with VK5), Darwin AR Club, P.O. Box 1418, Darwin, 5794.

Slow morse transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

THIRD PARTY TRAFFIC

According to January 1976 QST the USA and Ghana have signed a third party traffic agreement.

REPEATER JAMMING

From QST January 1978 come some ground rules recommended in the USA concerning repeater jamming. Never, under any circumstances, recognise that there is a jammer on the frequency — jammers get no pleasure if they are not recognised, they need to know they have an audience. In very stubborn cases this may need to be varied. Repeater Groups should have technical committees, one function being to track down "undesired" signals. Where a serious problem exists contact the licensing authority for advice. ■

WARC 79 WARC 79 WARC 79 WARC 79

WARC 79 WARC 79 WARC 79 WARC 79

USE THEM OR LOSE THEM

WARC 79 WARC 79 WARC 79 WARC 79

WARC 79 WARC 79 WARC 79 WARC 79

WIANEWS

RECORDS — VHF/UHF

This DX season (VHF) has produced a record number of records. Is this due to the increased number of operators or to an increase in the activity ot sporadic E or TEP?

The first one to come in related to a 2-way 70 cm SSB contact between VK6KZ portable near Albany and VK3ZBJ at 10.17Z on 11th January. This was described in last month's AR VHF-UHF Notes. Following a thunderstorm, which struck the area almost immediately, VK6KZ/P used a 2m FM unit and quarter wave gutter whip to work through VK3RWZ. Next day he worked 144 MHz into VK5 on both SSB and the two Adelaide repeaters as well as a 432 MHz QSO with VK5MT. On the 8th January at 13.16Z he had a 144 MHz portable QSO with VK3ZQV at Carrajung.

The second one was a 2-way QSO on 2304 MHz (13 cm band) between Wally Green VK6WG in Albany and Reg Galle VK5QR in Enfield (about 1886 km distant) on 17th February at 07.50Z and again on the evening of 18th February. Wally commented that he could not say what next but maybe he will have o at 10 GHz. Wally used almost wholly home brew gear to a , 39BA triode with 700V at 68 mA on the anode into a home made 6 ft. dish up about 40 ft. The write up from VK5QR covered this.

The third was a 70 cm contact on 22nd February at 13.55Z between VK6XY in Albany and VK3ZQV for which details are included in the VHF/UHF notes.

Congratulations to all concerned.

The great circle distance between Albany and Morwell is of the order of 2562 km. Ail these contacts were direct without the use of satellites, repeaters, EME or other such aids. The last known recorded world record for the 2.3 GHz band was 760 km on 30-6-1976 between G3LQR and OZ90R.

As reported in IARU News AR February 1978 (p. 26) a 5044 km contact was recorded between two South American stations on 2 metres.

REGULATIONS

Several letters were received from the Postal and Telecommunications Department during February.

RB4/4/23 of the 10th referred to the subject of 10 metre band beacons and is under consideration by the VHF/UHF Advisory Committee. RB4/4/5 gave covering approval of the suppresion of call sign details from the 1977 Call Book as requested by the owners of the call signs at the time.

RB4/4/18 of the 21st provided lor comments a re-write paragraph 94 of the Handbook. This has gone to the Federal WICEN Co-ordinator for study. Another of the same reference and data concerned Third Party traffic as related to paragraph 94 of the Handbook (i.e. Emergency Amateur Networks). RB4/4/29 of the 23rd gave covering approval of the additional (2 metre band) amateur repeater channels. These were advised to members in WIANEWS October 1977 AR, p. 5. Another of the same reference but dated the 22nd related to Repeater Conditions. This is with the Chairman of the Federal Repeater Sub-Committee. The question was reported in the Repeaters column in AR for September 1976, p. 21, but was referred to the Department in July 1976. Letter RB4/4/18 of the 15th provided a re-write ot paragraphs 61 and 112 of the Handbook which mainly relate to RTTY operations. This last letter is under consideration by the Federal RTTY Committee. The re-write of paragraph 112 seeks to amend the existing 112 in another very important aspect and will be the subject of representations quite apart from the RTTY aspects. Finally letter RB4/4/18 received on 1st March intimated that proposals existed to amend paragraphs 39, 85-86, 87-89 and 90-93 of the Handbook as well as a complete revision of the book for which WIA suggestions would be welcome. Copies of all the letters quoted were mailed to Federal Councillors.

Members will undoubtedly wish to know what the various amendments to the Handbook entail since the door is open for comments by the Institute within a reasonable time. Institute comments will deprive from Divisions in the usual manner.

The proposed P. & T. re-writes of the paragraphs referred to in the letters as listed (except the final letter which is in general terms) are —

"94 (a) Approval for the participation by any recognised Amateur Civil Emergency Network in any national or local emergency (such as bushfires, floods or other disasters), must be obtained from the statutory authority responsible for the particular emergency, i.e. Natural Disasters Organisation, State Emergency Service or the Police, according to the local circumstances.

(b) The licensee of an amateur station may, at the request of such recognised Amateur Civil Emergency Network, participate in these special emergency communications networks, for and on behalf of the statutory authority responsible for handling such matters.

(c) In circumstances involving an extreme emergency, where no authorised emergency network has been established for the purpose, any amateur should act on his own initiative in a responsible manner."

"80. (a) Messages or visual images on behalf of third parties except for the purpose of providing communications as part of an authorised Emergency Amateur Network. For the conditions relating to the use of Emergency Amateur Networks, refer to paragraph 94 of this Handbook."

"61. Automatic Telegraph Systems.
The transmission of radio telegraph signals by an amateur station shall be in accordance with the following special conditions:

(a) The emission shall be:
F1 — frequency shift maximum not more than 850 Hz.
A2 or F2 — occupied band width to be confined within the limits ± 3 kHz.

(b) The code used shall be:
(i) five unit (start-stop) teleprinter code correspondence to the International Telegraphic Alphabet No. 2; or
(ii) seven unit (start-stop) data transmission code corresponding to the International Alphabet No. 5 (US ASCII or ANSCII), including the original ASCII and the Australian Standard AS XI for information exchange;
(iii) any other Internationally recognised code."

"112. (a) The operator of an amateur station shall transmit the call sign of the station being worked and the call sign of the station he is operating at the beginning and end of each transmission and not less frequently than once in every 10 minutes during the session.

(b) Stations transmitting the modes associated with Automatic Teelgraph Systems (F1, A2 or F2) and F4 emissions shall, in addition to identification on the mode in use as specified above, employ either:
(i) the International morse code; or
(ii) telephony
for identification at the end of each transmission. This supplementary identification to be in accordance with the emission authorised for use as indicated on the licence."

NOVICE EXAMINATION

Also during February talks were held with the Department at a high level by the Federal Education Co-ordinator concerning the issue of a long-awaited Novice examination syllabus, approval for the preparation and publication by the Department of a question bank for this examination and approval in principle to the establishment of a joint educational committee manned by WIA and Departmental representatives.

The Department approved the last two items but in relation to the Novice exam syllabus submitted by the Institute last year (see WIANEWS in AR July 1977, p. 4) the Department had dratted their own version despite a modicum of revisions submitted to them at the meeting. The WIA version attempts to define the depth of knowledge expected of candidates as well as listing in an appendix the topics considered to be outside the scope of Novice examinations.

The Departmental syllabus for Section O (theory) is prefaced by a paragraph stating that "questions are based on the elementary theory of radiotelephony and radiotelegraphy as applied to amateur transmitting and receiving systems and the elementary theory and practical application of the principle of electricity and magnetism". The syllabus then lists the items under 15 broad headings such as "electrical laws and circuits", "vacuum tube principles", "semi-conductor devices", "receiving systems", AM, Code, SSB, wave propagation, transmission lines, HF antennas, interference, test equipment and measurements to name some of them. Under these general headings appear appropriate sub or sub-sub headings devoid of further definition. As examples, there are AC phase and reactance, characteristics of pentode valves, junction diodes, bipolar transistors, PIV of rectifier circuits, voltage regulation, sensitivity and selectivity of receiving systems, the modulation envelope, balanced modulators, fading, line impedance, "matching transmission line to the transmitter", impedance of antennas, use of filters, dip meter, SWR, etc. The reference book is shown as the "current edition" of the ARRL Handbook.

It is understood the Department intends to publish this syllabus in booklet form along with their own 200 to 300 examination questions. The comment made to the Departmental representatives at the February meeting by the WIA was that the Departmental Novice Examination (theory) syllabus could almost be used intact by the AOCP examination.

The representations made by the Institute concerning the standard of the last Novice theory examination were successful. It is understood that a re-marking has been done resulting in pass marks being allocated to those who previously failed by a small margin.

CUSTOMS

Representations have been made to the WIA concerning import duties levied on 70 cm amateur equipment and the removal of the duty free by-law concessions on amateur antennas. These questions are under investigation.

EDP AND AR MAILING

At the Executive meeting in February the Institute's computer programme's conversion to the latest model computer at Monash was reported as almost complete. Quotations for the mailing of AR (of which inserts are a part) were being obtained from two other mailing services capable of handling address labels for Cheshire machines.

RTTY CONTEST

The Executive delegated to the WIA NSW RTTY Group the organisation and management of a Federal RTTY Contest subject to general acceptance of the rules and date. The contest be scheduled to be held during the VK/ZL/O phone contest later this year.

1978 CONVENTION AGENDA ITEMS

Seven items were received from the VK4 Division, some of which were procedural to introduce matters lor discussion whilst others sought reviews. In brief these encompased —

Standard formula for selecting (Hon.) Life Members,
Review NAOCP exam standard,
Review AOCP exam methods,
Review existing and proposed legislation on sale or ownership of transmitting equipment by non-licensed persons,
Receive report on compensation for loss of 27 MHz,
Postage stamp to promote amateur radio,
Guidelines for membership recruiting drive.

Any member wishing to obtain details of Agenda Items should contact his Divisional Federal Councillor or write to the Executive office. It is understood other Agenda Items will be submitted by other Divisions but none was available at the time of writing this. The Executive will reject a number of procedural Agenda Items to permit discussions on IARU, WARC 79, and certain financial matters. In addition it is proposed to raise two additional matters (apart from recruitment and publicity), namely, (a) ways and means to retain the continuing interest of members in the WIA and (b) to discuss designs for badges, stickers, posters and other publicity material. ■

Sideband Electronics Sales

Distributors of COMMUNICATIONS TRANSCEIVERS

HF TRANSCEIVERS

ASTRO - 200 digital solid state 200 W.P.E.P.	$1,000
TRIO KENWOOD new model TS-520-S	$ 685
TRIO KENWOOD model TS-820S AC only 160 to 10 M with digital readout.	$1,050
TRIO KENWOOD MODEL TS-820 AC only 160 to 10 M.	$ 900
TRIO KENWOOD model TS-600-A FM - AM	$ 680
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A DIFFERENT MULTI-BAND AERIAL SYSTEM

H. F. Ruckert VK2AOU

Due to the present low sun activity not too many European amateur stations are being heard in VK-land. Of those, who still put a good signal through via the short path on 14 MHz at 1200Z time and via the long path at 0800Z, more and more central Europeans — especially from DL — report that they use a VK2AOU or VK2AOU/DJ2UT beam. The writer believes, that mainly those VKs who had not joined the radio amateur ranks 20 years ago, when a number of multiband aerials were developed, may like to know what this aerial is all about, which can now be found in European antenna books under a VK call.

Until the early fifties we had only the three stacked 14, 21 and 28 MHz yagis called fittingly "Christmas Tree" for efficient DX work needing only one mast and rotator. For most of us it is still difficult enough to build and tune a single yagi beam, and three stacked beams would beat nearly all of us but a few brave ones. In 1956-58 and approaching the geophysical year and a record sun spot count of 300, several amateurs tried to do something about the antenna problem for 14, 21, and 28 MHz operation, and a number of new beams were invented especially mini types.

We all know the W3DZZ trap aerial as dipole, ground plane and yagi tribander. The disadvantages and difficulties presented by this aerial, compared with a single band full size yagi, are that at 14 and 21 MHz the element is of less than full size causing reduced gain and bandwidth (frequency band of low swr and high f/b-ratio). It is a major problem to seal the traps (tuned circuits) so that moisture and polluted atmosphere do not cause corrosion at element, coil, and capacitor contacts, especially if dissimilar metals are used. A compromise for trap-Q and bandwidth has to be chosen. On 14 MHz four traps per element are part of the element, and contact resistance at the traps causes losses. This triband yagi is now the most widely used amateur DX aerial and is manufactured in several countries.

Substantial initial interest, except in W-land (not invented there), gained the G4ZU multiband method (British patent No. 790, 576 of 12-2-1958).

The inventor claimed (AR September 1956 by G4ZU and AR April 1957 by VK6GU):

1. A beam element, which on its own resonated near 21 MHz, was made to resonate near 14 MHz by inserting a loading coil or twin boom hairpin loop in the middle.

Fact: The coil actually used had only about half the inductance a coil would need to act as claimed.

2. An "automatic switching stub", in form of a piece of twin lead or coaxial cable open at the far end, was connected parallel to the loading coil. The stub was to act as an electrical short circuiting means when the aerial was used at about 21 MHz, because the stub alone resonated at this frequency, eliminating electrically the tuning effect of the loading coil at 21 MHz.

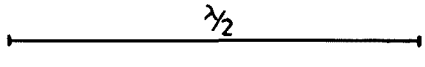
Fact: An open ¼ wave stub acts under flat line matched conditions as a near short, but G4ZU had a different case and insisted that the stub cable had to have a very special velocity factor (e.g. capacitance per unit of length). It appeared to the writer that the cable capacitance with the parallel inductor did the *two band tuning* and not the stub as claimed *the automatic 21 MHz band switching.*

3. The 28 MHz tuning was not explained by G4ZU, and in private correspondence the inventor stated that the coil to mounting channel capacitance did the trick together with a part of the stub.

Fact: By placing the stub cable inside the element or double boom tubing the so obtained coupling of distributing L and C caused the 28 MHz resonance to occur and others too.

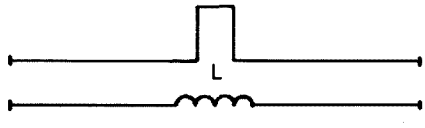
The experiments which demonstrate these facts can easily be repeated. They were described in AR May 1958. In AR June 1958 the writer described a three element triband beam which incorporated what was learned from the investigation.

EXPERIMENTS:

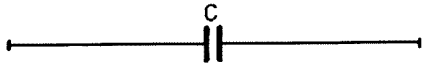


Dipole resonating at . . .

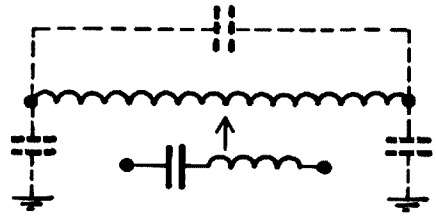
$$f_{MHz} = \frac{300}{\lambda m}$$



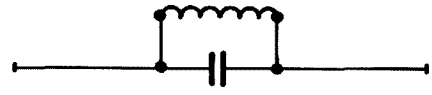
Dipole tuned to lower frequency due to laoding inductance "L".



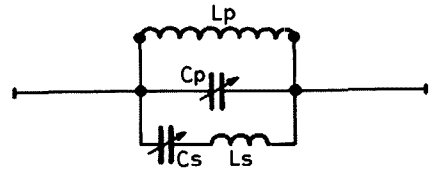
Dipole tuned to higher frequency due to capacitance "C".



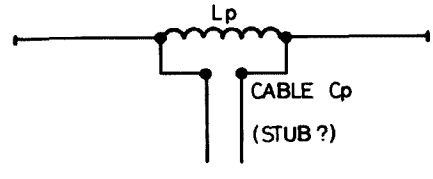
Dipole equivalent circuit formed by distributed "L" and "C" components, e.g. a series tuned circuit.

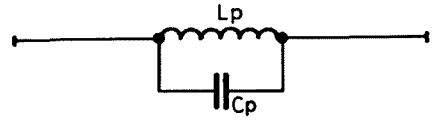


Parallel tuned circuit.



Paralleled parallel (Lp + Cp) and series tuned circuit (Ls + Ls) form the "multiband tank" used in the past in transmitters to cover 3.5 to 30 MHz without coil switching with ganged 150 pF variable air capacitors. There are always two resonances occurring at the same time within the ranges: 3.5 to 8 MHz (Lp and Cp) and 7 to 30 MHz (Ls and Cs), depending on the Cp and Cs setting.



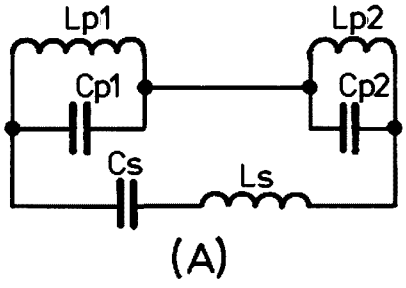


We can replace the series tuned circuit Ls and Cs by the two dipole element half elements, and we can also replace the (G4ZU stub) cable capacitance by a lumped capacitor of the same value to obtain in both cases two-band aerial elements, for example for 14 and 21 MHz, 21 and 28 MHz, or 70 and 180 MHz. The cable (stub) resonance and the velocity factor of the cable used is of no consequence — only the cable capacitance

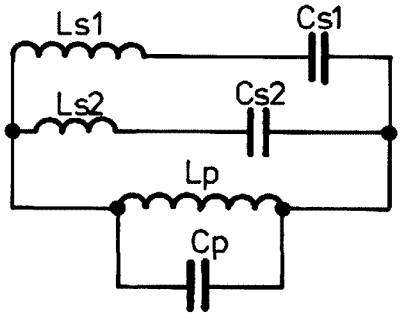
matters (AR May 1958 detailed experimental evidence). Lp acts as dipole-L-increase and Cp as the opposite. Lp may be a coil, a hairpin loop, or a double boom with shortening bar. Bringing the cable (Cp) near the element creates a coupling of distributed L and C and more resonances, e.g. at 28 MHz and higher frequencies under certain conditions. This form was too difficult to tune, and unwanted resonances occurred as well.

After it was understood what made the G4ZU beam work on three bands, the writer looked for a well controllable and tunable *three frequency circuit* convertible into a *triband aerial element.*

To obtain resonances on three different frequencies (e.g. 14.15 MHz, 21.25 MHz, and 28.6 MHz) at the same time without switching inductors or changing capacitors we need three inductors and three capacitors suitably arranged.

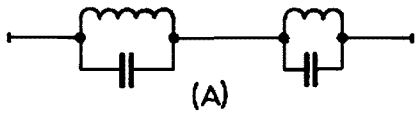


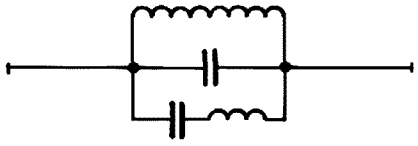
(A)



(B)

The two circuit versions shown fulfill this requirement. By adjusting the three L and C values the three simultaneous resonances can be moved over a wide range. As previously described one series tuned circuit can again be replaced by a dipole to obtain a triband aerial element. In A we have then two differently tuned parallel tuned circuits in series, and in **B** we have a series and a differently tuned parallel circuit in parallel in the middle of the aerial element. This "triband element" may be any yagi type radiator, director or reflector, the ground plane radiator or a cubical quad element. The dipole may have any length from ½λ/2 to 2 × λ/2, e.g. from mini beam to full size beam. The mini beam uses larger tuning inductors. The tuned circuits are not tuned to the aerial operating frequencies, and should not be confused with dipole and traps (W3DZZ type).


(A)


(B)

Mainly the "A-version" was built in yagi, ground plane, and quad form by a number of amateurs in several countries since 1960. Descriptions appeared in VK, ZL, DL, W-land by the writer. RSGB declined to reprint the VK paper. Other amateurs described their experience with this system in JA, ZS, DM, OK, etc. Aerial manufacturers showed no interest. This is a true triband antenna element, where the full element is used on all three frequency bands, without the unused dipole ends of the W3DZZ system.

DJ2UT was particularly successful in using this triband tuning system, and asked the writer for the permission to produce this aerial and to call it the VK2AOU beam. No patent cover had been arranged, because industry often waits until the 16 years a patent runs are over, unless the inventor has mass production facilities and threatens their present market share. DJ2UT continued the aerial development where VK2AOU had to stop, mainly due to backyard size limitations. OM Sommer extended later the elements to 14 MHz full size to be competitive with other full size yagis. On 21 MHz the element had 1.5 × λ/2 length and on 28 MHz the element had even 2 × λ/2 length (collinear), which resulted in superior gain and bandwidth on the 15m and 10m band. The front to back ratio (f/b) and so the reflector gain and bandwidth were improved by feeding this element as well via a crossed phasing line, resulting too in more concentrated radiation in the vertical lobe plane. Only 2m reflector to radiator and radiator to director spacing was needed, forming a very short beam, which was also strengthened by using a twin boom with 25 × 3 mm Al-Mg-Si corrosion resisting tubing. All clamps are Al-alloy castings. Only stainless steel screws, bolts and nuts are used to avoid electrolysis and corrosion at contacts of dissimilar metals.

Over the years the mechanical design was improved and strengthened, until ice loading and storms left this beam intact whilst other makes failed.

The feeding with a simple coaxial cable presented a number of problems, because the impedance and phase changes dramatically, especially at 21 MHz, between and outside the tuned circuits. T-match feeding of radiator and reflector gave finally the desired and easy to control results. The 28 MHz matching is improved by selecting a suitable L/C ratio for the tuned circuits. By placing proximity or matching elements for 21 MHz and 28 MHz in front of and near the radiator the impedance at the 14 MHz T-match points was also made suitable for 21 MHz and 28 MHz operation. At 21 MHz the resonances of the radiator and the also fed 21 MHz match element are above and under 21.25 MHz respectively, similar to a band filter. At 28 MHz the match element acts also as a futher director. The centres of the long elements and the 21 MHz match element have a polycarbonate casting, which seals and holds the coaxial cable capacitors of about 75 and 100 pF, the stubs for the 7 and 10 mm tubing of the hairpin loop (length pre-set but adjustable) and the 30 mm x 2 mm element tubing centres. Two part clamps and three bolts hold each of the five elements to the boom and to the boom to mast mounting bracket. The reflector phasing line has three plastic spacers. An insulated wire and a clamp for the mast extension are supplied to support the boom and avoid sagging (snow and ice load in some areas).

The antenna can handle 2.5 kW r.f. power continuously. The tuning elements carry no high r.f. voltages as in the trap beam case. The weight with the original tubing amounts to 23 kg. The turning radius is 5.8m. Wind load data: Antenna area 0.65m², load 52 kp below 20m height and 72 kp above 20m installation height.

Galvanised copper solder lugs are used to attach the RG8U coaxial cable feeder. The use of the popular Ferrite . Balun (ratio 1 : 1) is not recommended to obtain symmetrical feeding of the beam halves because it was discovered that the same degree of coupling was achieved without this core. This is in contrast to the popular belief. DJ2UT advises to use 3.5 of the feeder coaxial cable in the form of a closely would six turn cylindrical coil near the beam feed point to achieve balanced feeding.

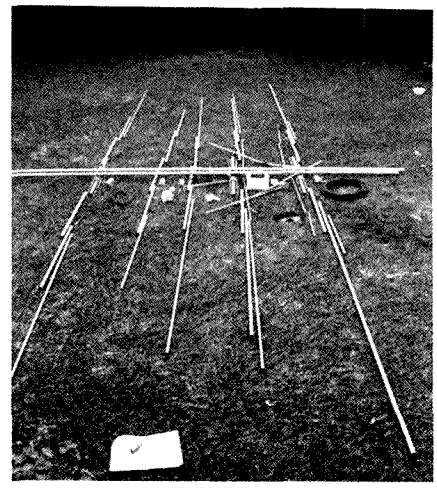


FIGURE 1

Within Europe all beams are shipped by rail. It was in my case simpler to obtain all the one metre or shorter parts by post in two parcels (1m Is mail service limit length), and to purchase the 4m long boom tubes and long element tubing ends locally. **Fig. 1** shows all beam parts prior to assembly on the lawn. Parts and part positions are colour coded and a detailed description is supplied.

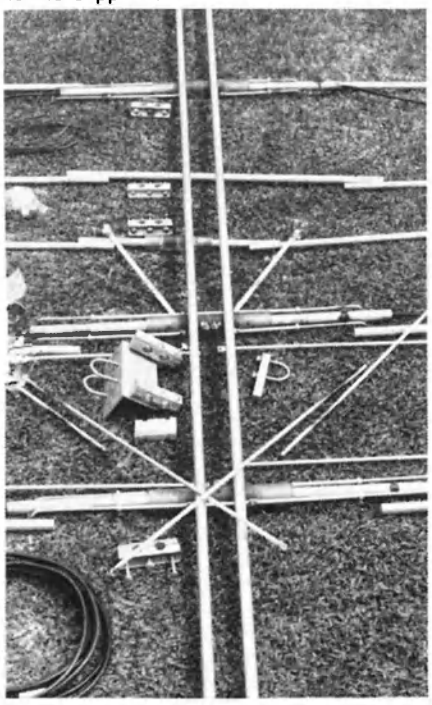


FIGURE 2

Fig. 2. This is a close-up picture of the element centres with the coaxial cable capacitors, the T-match 10mm diameter tubing and phasing line. Two plastic bags (left side) contain nuts and screws, clamp lugs to hold element tubing of different diameter securely together but adjustable If required. The six two part boom to element clamps are visible, and so are the six hairpin loops.

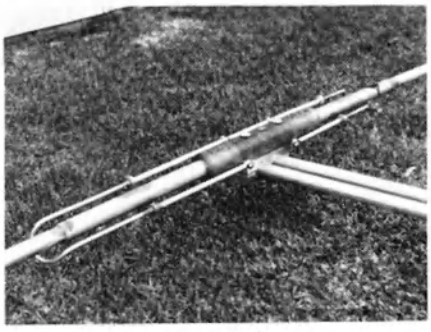


FIGURE 3

Fig. 3. Triband director centre.

Fig. 4. Triband radiator centre, mast bracket, feeder to radiator (part of T-match), and 21 MHz match element centre (left top), and part of reflector phasing line.

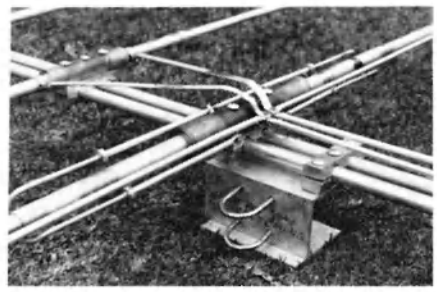


FIGURE 4

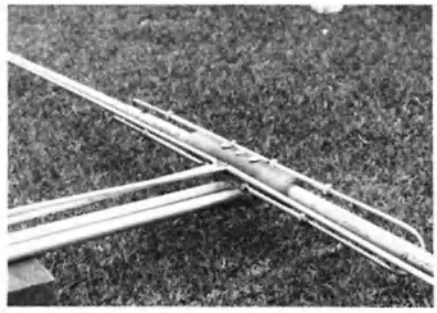


FIGURE 5

Fig. 5. Triband reflector centre with part of T-match and crossed λ/4 phasing line.

FIGURE 6

Fig. 6. Assembled VK2AOU/DJ2UT beam model: Periodic-5-C (formerly called HP-44). (A periodic-6-C beam with a further triband director is also produced, having a six metre long twin boom.) The term "periodic" is used due to the similarity of some features of this antenna and a log-periodic beam. "C" stands for polycarbonate centre insulator.

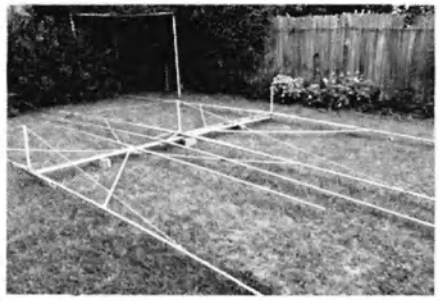


FIGURE 7

Fig. 7. Due to the fact that the locally available tubing was heavier: 20mm x 2mm (not 1.5mm) and 16mm x 1.6mm (not 15mm x 1mm), the writer decided to add supports for the long elements avoiding sagging (PVC tubes, nylon cord and epoxy end insulators). DJ2UT reckons that it was not necessary to add PVC tubes as triangular bracing between elements and boom. "It is no good to be sorry after a cyclone storm."

Fig. 8. The beam three metres high, doing already DX work. The photographs show that a lot of construction effort, engineering experience and money for tooling were necessary to arrive at this technical perfection.

ELEMENT LENGTH — Fig. 9

Director	8.6m
28 MHz match element	4.9m
21 MHz match element	6.7m
Radiator	10m
Reflector	10.6m
Radiator T-match	2 x 1m
Reflector T-match	2 x 1.4m
Radiator to 21 MHz match element spacing	0.4m
28 MHz match element to 21 MHz match element spacing	0.4m
Director to radiator to reflector spacing	2m each

PERFORMANCE

Similar to a multi-element (new) trap beam (W3DZZ type) of 7 to 8m boom length but with superior forward gain and reflector bandwidth. On 20m, due to also fed reflector, performance better than a two element quad and three element full size yagi. On 15m, due to 50 per cent extended elements, performance similar to a four element full size yagi. On 10m, performance is due to collinear (double length) elements and the 10m match element similar to a five or six element yagi.

GRAPHS — Figs. 10, 11 and 12

Three graphs show the forward gain, voltage swr and front to back ratio of a typical periodic-5 antenna, and the bandwidth of all three parameters, which is wider than found on trap beams . (Test dipole at same height, 10λ apart.)

There is an important difference between DX performance and the usually quoted gain, which is measured with a test dipole at the same height as the beam under test and a few wavelengths apart. In this way it is possible that a low gain ground plane antenna with very low angle radiation (6°) shows more gain than a high gain beam with 20° elevation of the main radiation lobe. Gain and DX performance can be compared if the power from the main radiation lobe area is integrated (see "All about cubical quad atennas" by W. Orr W6SAI, page 25, calculation method by W7GRA). This can be done on UHF antenna models in the laboratory, or an aircraft flying in circles at various heights around the antenna has to be used to carry out the field strength measurements.

The vswr curves are shown as a band, because nearby objects (trees, buildings) have a more or less disturbing effect. ■

1. Walfried Sommer, DJ2UT, D-7809 Denzlingen, Kandel Str. 35-37, West Germany.

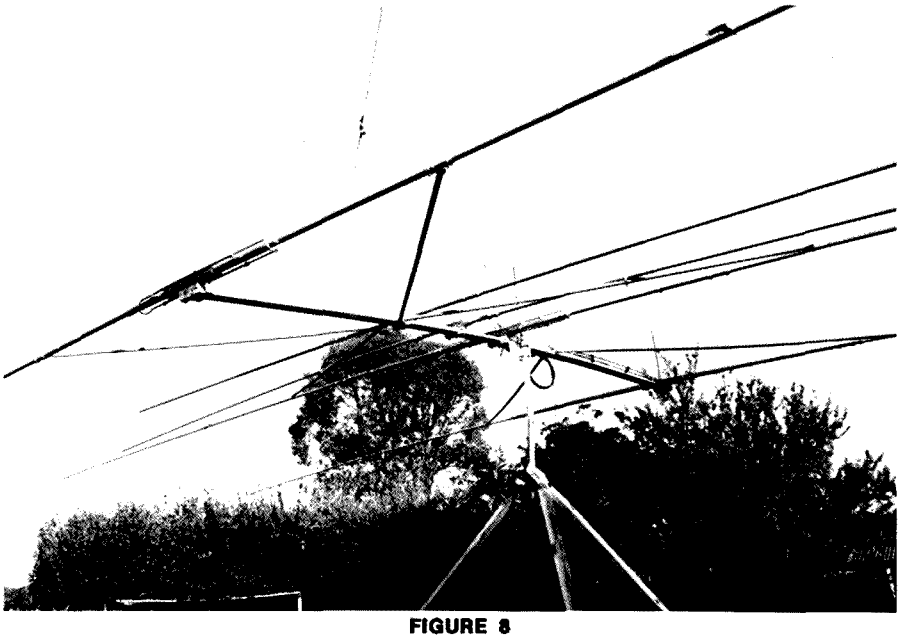


FIGURE 8

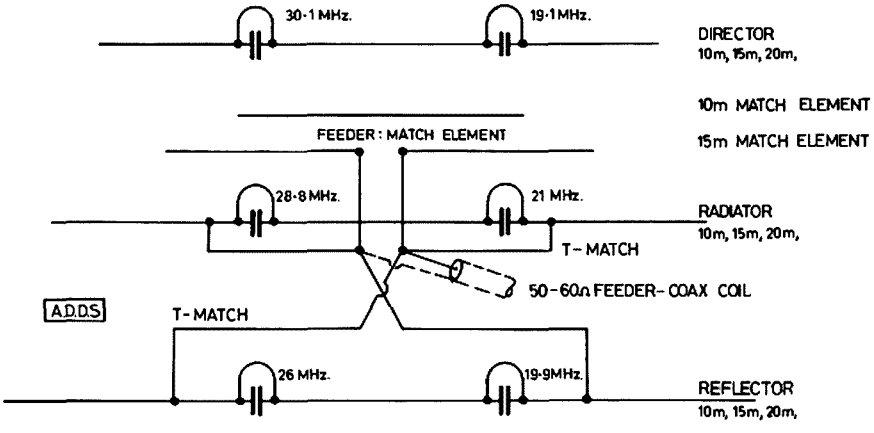


FIGURE 9

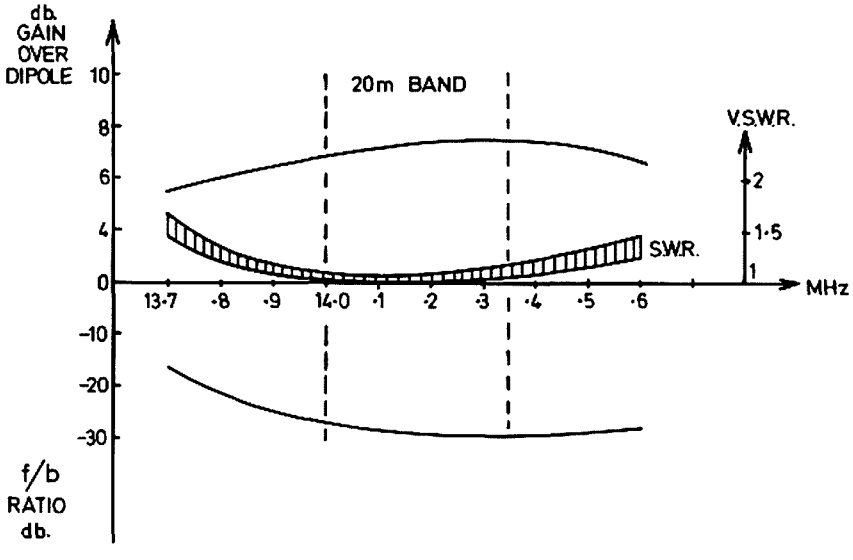


FIGURE 10

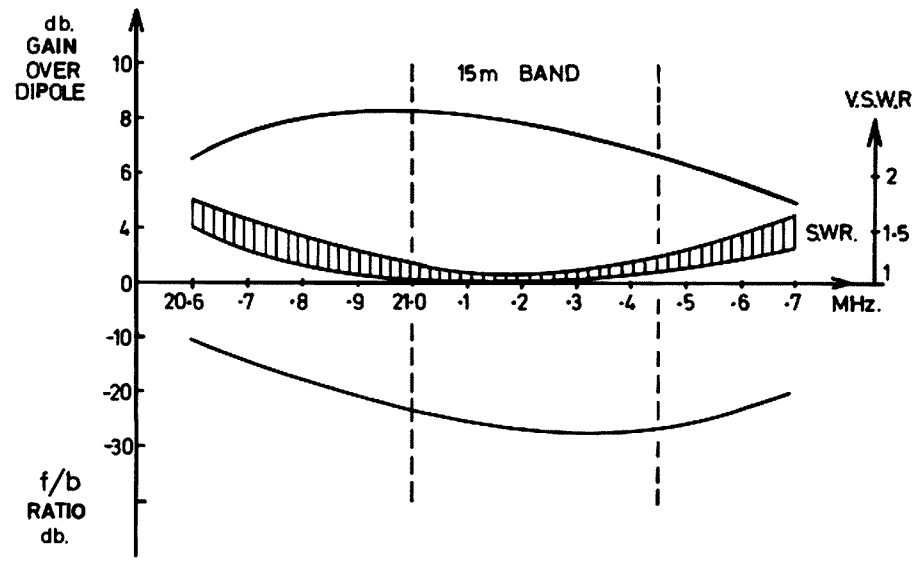


FIGURE 11

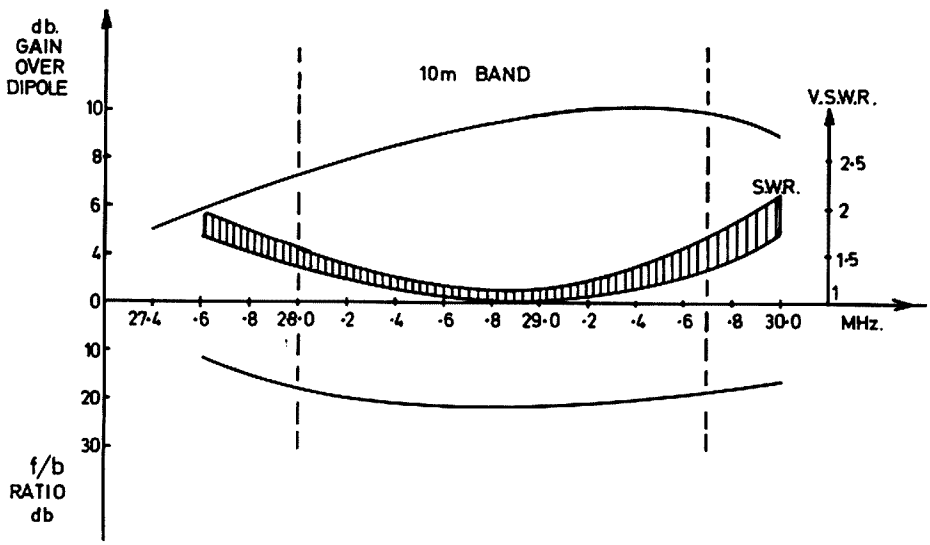


FIGURE 12

FEBRUARY 1978 AOCP EXAM

POSTAL AND TELECOMMUNCATIONS DEPARTMENT
AMATEUR OPERATORS' CERTIFICATES OF PROFICIENCY

February, 1978.

SECTION M (Theory)
(Time allowed — 2½ hours.)

NOTE: *SEVEN questions only* to be attempted. Credit will not be given for more than *SEVEN answers. All questions carry equal marks.*

1. (a) Explain the fundamental difference between frequency modulation and amplitude modulation.
   (b) With the aid of a circuit diagram, explain the theory of operation of the discriminator stage of a receiver suitable for reception of frequency modulated signals.
2. (a) With the aid of a circuit diagram describe the operation of each stage of an amateur transmitter capable of operating in the 14 MHz (20 metre) band.
   (b) Explain how you would tune each stage of the transmitter.
3. Draw the circuit and briefly explain the operation of a grounded grid R.F. stage of a receiver operating in the VHF range. With reference to operation on frequencies of the order of 144 MHz, list any advantages this type of amplifier may have over that of the normal type.
4. (a) With the aid of a suitable sketch, describe the construction and principle of operation of a moving-coil (dynamic) type microphone.
   (b) Compare the frequency response and output level of a moving-coil type microphone with a carbon granule type microphone.
5. (a) With the aid of a circuit diagram describe the operation of a full-wave HT power supply which uses silicon rectifiers.
   (b) Discuss any advantages and disadvantages silicon solid-state rectifiers may have when compared with the vacuum-tube type.
6. (a) What do you understand by the term "standing wave ratio" when applied to an RF transmission line?
   (b) How would you detect the presence of standing waves on a transmission line?
   (c) What does a high SWR on a transmission line feeding an antenna indicate? How can the SWR be reduced?
7. (a) Assisted by a circuit diagram describe a variable-frequency oscillator (VFO) suitable for use in the 3.5 MHz band.
   (b) With reference to a VFO, discuss the factors upon which the stability of the generated frequency depends.
8. (a) With the aid of a circuit diagram describe the operation of a product detector suitable for use in an SSB receiver.
   (b) What ratio of BFO to signal input voltage to the product detector do you consider satisfactory to obtain good resolution of the SSB signal?
9. Two resistors of 10 and 30 ohms respectively are connected in series and placed across a 24 ohm resistor, a supply voltage of 30 volts is connected across this combination.
   Calculate:—
   (i) the total current drawn from the supply; and
   (ii) the power dissipated in each of the three resistors.

COMMENTS ON FEBRUARY 1978 AOCP EXAM THEORY PAPER

The February exam was of the same type and style as in previous years. No new ground was broken and some of the questions were a little dated.

A question on a grounded grid RF amplifier is completely out of date as valves have long been superseded at VHF and UHF by semiconductors. This question could have been very simply updated into the current technology as grounded base

and grounded gate amplifiers are in general usage.

Similarly the use of vacuum tubes as rectifiers is nowadays an anachronism and should not be included in the exam. The question could surely have been reworded to probe knowledge of rectifier techniques and basic theory.

The rest of the paper was more or less standard with a few twists in the wording which would only upset those candidates with a sketchy grasp of the subject.

FM was once again on the paper which is a good sign as it is currently used extensively in a first rig. However some discussion of basic repeater principles would appear timely also.

Similarly so many rigs now use phase locked loops and digital counters that these items must surely be included in the exam soon. ■

AUTOMOTIVE RADIO NOISE ELIMINATION

Graham Wiseman VK5EU

The author has had considerable experience in the field of mobile radio installation. Many of the applications involved operation over considerable distances, under weak signal conditions. The following is the result of much experimentation into reducing vehicle noise.

SOURCES

There are many sources of noise in mobile installations. The major ones are:—

Ignition noise — regular clicks or plops, changing in frequency as engine revs vary. Alternator or generator noise — whistle, whine, or high frequency buzz, also varies as engine revs vary.

Appliance contact noise — ranges from slow clicks through to a continuous or interrupted hiss type noise, not usually related to engine revs.

CURES

The cures for any particular problem can be many and varied. Often a cure which works on one vehicle does not on another. Some of the available remedies are listed below. These are the ones I have had the greatest success with.

1. Ignition Noise
   (a) Use ignition suppression leads for plug and distributor EHT leads. (Or suppressor resistors.)
   (b) Install bypass capacitor on ignition switch side of ignition coil, mount under coil mounting bolt.
   (c) If ignition points lead is run in vehicle wiring loom, improvement can sometimes be made by replacing it with a separate lead.
2. Alternator or Generator Noise
   (a) Install bypass capacitor (coaxial type for HF, VHF and UHF) In alternator or generator output lead — install capacitor as near as possible to generator or alternator (preferably on it).
3. Appliance Contact Noise
   Install a bypass capacitor across the supply to any appliance or attachment which generates noise, e.g. windscreen wiper motor, heater, fan motor, etc.
4. Cures of benefit for Ignition, Alternator, and Contact Noise
   (a) Install bypass capacitor across battery supply to radio.
   (b) Ensure braid of antenna feed coax. makes a low impedance connection with the antenna ground at the antenna, and with set ground at the set.
   (c) Extreme cases may require complete shielding and isolation of ignition system or offending appliance.
   (d) Install ground straps —
      (i) Bonnet to nearest point of body (good ground).
      (ii) Engine block to chassis.
      (iii) Tailpipe to chassis (at rear).
      (iv) Between bolted or rivetted body panels.
      (v) Between ignition coil case and distributor case.

   In some cases multiple straps may be required.
5. Wheel static — may be cured by using conductive grease in wheel bearings.

NOTE—Suppression devices should be installed as near as practical to the noise source. Capacitors should be earthed to the same earth point at the noise source.

I have been installing the above as standard precautions per —

MF, HF: 1(a), 2(a), 4(b), 4(d) (i).
VHF, UHF: 1(a), 2(a), 4(b).

Other measures are taken on an individual requirement basis.

OLD-TIMERS OVERSEAS

Dick VK3SV

From time to time we come across VK amateurs whose "radio-activity" has extended far beyond the nominal three score years and ten. What of other old-timers whose homes are far beyond our shores? One of them undoubtedly is 9M8HG, Horace Gray at Kuching, in West Malaysia.

Now in his 81st year, Horace is still putting out an FB signal from his modified TS510, running 80 watts into a dipole at 30 feet. Neither his voice nor his crisp operating gives any indication of his age, and the fact that he has been active in radio for well over half a century must come as a surprise to those working him for the first time.

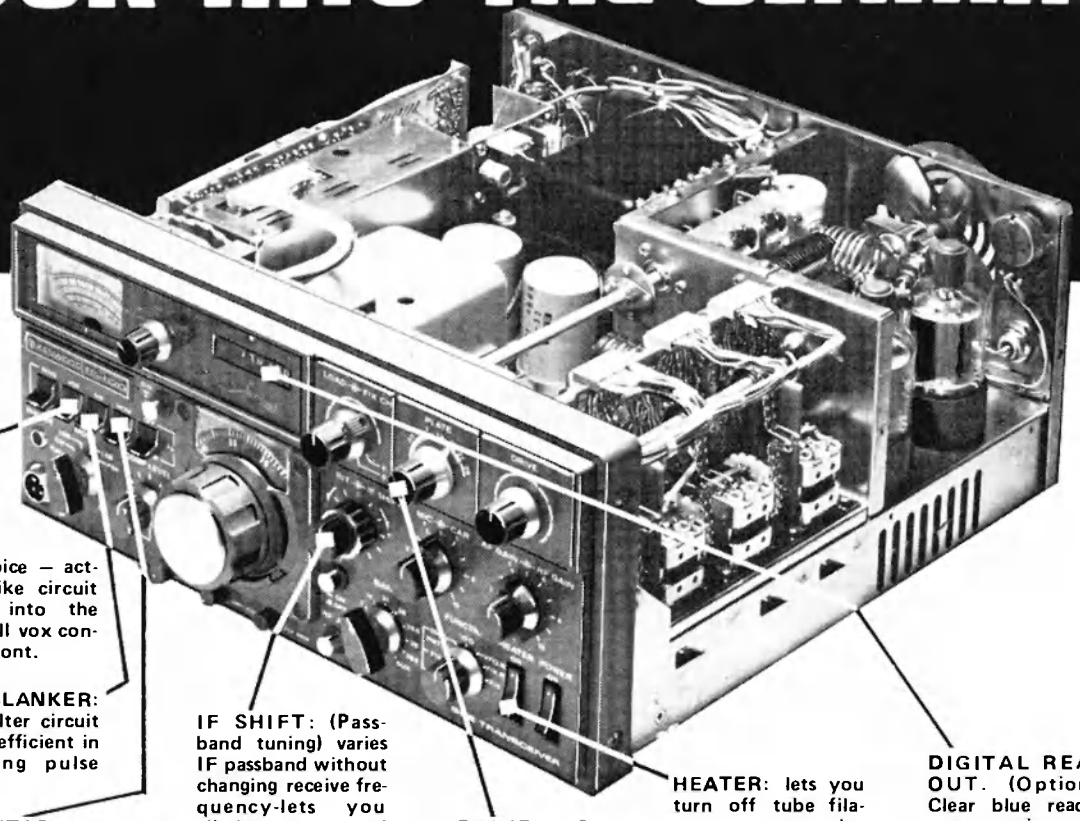
Horace was first licensed in 1924 and operated as OB2SK over the next eleven years. In 1932 he won the World DX Contest using a 5 watt home brew rig. In 1936 he moved QTH and operated as VS5AC until 1941. Then followed several years of internment, and after this a long period of recuperation and rehabilitation. Unable for various reasons to "get back on air", Horace maintained his interest in radio by monitoring and reporting the world's B/C stations between 1963 and 1974.

At long last, after an enforced absence of 33 years, Horace returned to amateur activity as 9M8HG on 23rd August, 1974, at the age of 77. For brief periods in 1974 and 1975 he also operated as PA9AEU and G4EPT.

Horace's QSL card is literally a "piece of history". Designed originally as a reception report, it is headed "Kuching, Sarawak, Isle of Borneo", and beneath this, in colour, is the national flag. On the left, also in colour, is Sarawak's emblem, the hornbill, and on the right a photograph of a head hunter. Diagonally across the card, in Horace's impeccable handwriting, is his present call sign.

A memorable card from a truly remarkable old-timer. ■

LOOK INTO THE ULTIMATE



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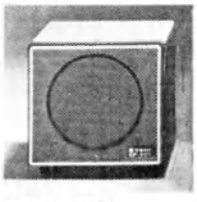

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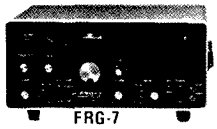

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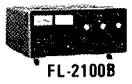
FS-302 VHF In-line power and SWR meter, 50-170MHz – $58



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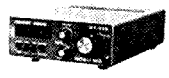

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TWO MULTIBAND ANTENNAS FOR THE 160 METRE ENTHUSIAST

Arthur Solomon VK3LJ
428 Ligar Street, Ballarat 3350

Multiband antennas proliferate in amateur literature but few of these can be operated conveniently on 160 metres. Here are two multiband antennas which resonate on various bands from 160 metres upwards and both have been used at this QTH with excellent results. The diagrams show the details of these antennas, including information on the VK5QV traps used. The VK5QV traps are simple and inexpensive to build, a delight to tune, and they are utterly stable in operation.

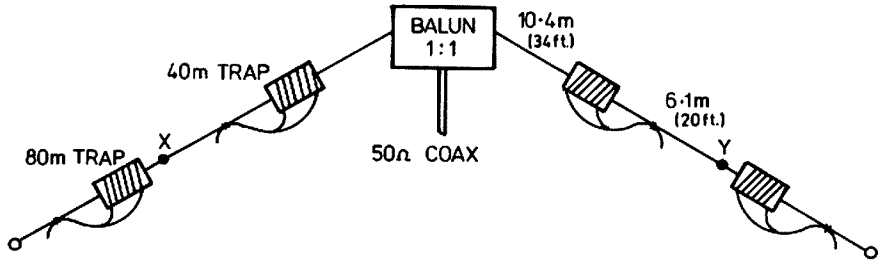


FIG. 1

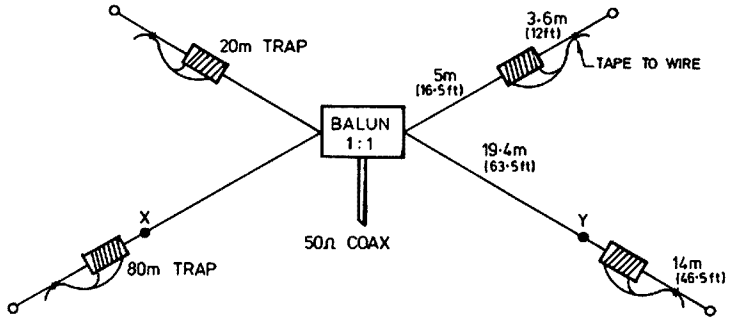


FIG. 2

Trap	Coil	Coax. Capac.
20m (14.2 MHz)	2.5 μH 10t. 7/.0076 PVC covered hook-up wire, 1⅛ in. o.d. PVC circuit	47 pF approx. 29 ins. RG 59/u coax.
40m (7.07 MHz)	10.7 μH 38t. 7/.0076 hook-up wire. 1 in. o.d. PVC conduit.	47 pF approx. 28 ins. RG 59/u coax.
80m (3.60 MHz)	27 μH 25t. 7/.0076 hook-up wire. 2¼ in o.d. PVC irreg. pipe.	80 pF approx. 48 ins. RG 58 coax.

NOTES:

1. **All coils are close wound.**
2. **Coaxial cable lengths should be treated as very approximate. Cut to longer lengths and trim back as GDO to frequency.**
3. **Antenna wire lengths above are only a guide. Allow extra length and prune as explained in text.**
4. **The braid of the coaxial capacitors is soldered to the OUTER wire sections of the antenna and the coax. itself is taped to these outer sections.**

First, let us consider the antenna shown in Fig. 1. This is a single antenna, fitted with traps so as to operate on 40, 80 and 160 metres. It also has a very low VSWR on 15 metres. Although quite a long antenna (approximately 175 feet span), it is still considerably shorter than a full-scale inverted vee for 160 (260 feet). The VSWR is very low on 15, 40 and 160 metres but you will find, in all probability, that the usable bandwidth on 80 metres will be restricted to about 120 kHz. This is not unusual with multiband trap antennae — compare the 18 AVT. If you do not relish this situation then you have at least three alternatives: (a) switch in an ATU to cover those sections of the band where the SWR is too high for comfort, (b) use an ATU for the 80 metre band entirely and operate bare-foot on the other bands, or (c) erect antenna in Fig. 2.

The procedure for setting up the antenna is quite simple. First put up the 40 metre sections, including the traps, and adjust the wire lengths for a VSWR of 1 to 1 at the trap resonant frequency. Next, add the 80 metre sections, including traps, and adjust the 80 metre wire sections for minimum SWR. Finally, add the 160 metre wire sections and adjust these for a 1 to 1 SWR at the centre of the band. That is all there is to it; there should be no necessity to go back and readjust any of the earlier sections.

The antenna shown in Fig. 2 is the one at present in use at this QTH. As is evident from the diagram, it is a combination of the multi-dipole concept and the trap concept; it consists of two trapped inverted vees fed by a common feeder. It covers all bands from 15 through to 160 metres; the VSWR is very low on all bands and no tuning unit is required. (Incidentally, it also covers 11 metres but this is of little value to us now.) If you wish to cover 10 metres also, you would need to insert 10 metre traps in the 20/40 metre vee.

The method of setting up the antenna in Fig. 2 is much the same as for the first antenna, except that two trapped dipoles have to be adjusted. First set up the 20/40 metre dipole and adjust the wire sections (as for Antenna A) for a 1 to 1 VSWR on both bands. When that is completed, repeat the procedure for the 80/160 metre dipole. I found that there was very little interaction between the two dipoles.

Admittedly, both of the antennas described here are long antennae, but they can be reduced considerably in span by bending the ends back at the points indicated in the diagrams (X, Y). By doing this Antenna A could be reduced to the span of a G5RV and Antenna B to that of an 80 metre dipole.

Two final comments: (1) antennae of this kind greatly simplify operating procedures. You can tune up quickly and completely on a dummy load and then switch into the antenna system to begin *immediate* operation without the additional fussing with an ATU (with its attendant QRM on the band). This enables you to change bands in seconds, not minutes! This kind of convenience has to be experienced to be appreciated. (2) Although details of the traps are given in the diagrams, you would be well advised first to refer to the admirable article of Ivan Huser VK5QV, "A Simplified Method of Antenna Trap Construction", in March 1977, AR. The only alteration I have made to the disposition of the traps is to tape the coaxial capacitors to the antenna wire for greater mechanical strength and (to my eye) a more pleasing appearance. ■

A SCANNER FOR THE KYOKUTO SXR11

Martin Willems VK4ZIL
P.O. Box 407, Coolangatta

Kyokuto owners! Are you missing out on all the lovely DX? Do you sit on one particular channel and wait for an interesting DX signal? Do you frustratingly hop from channel to channel and find that the signal you were hoping for has already been claimed by another?
If this is the case, help is at hand.
If you, as the author does, go to each beacon frequency in the hope of hearing a ZL beacon, or some other rare two metre signal, relief is here.

The recipe for this is very simple: Take one Kyokuto, add five fourteen-legged fuses, mix in three BC108 transistors, a dash or fifteen of small diodes, a pinch of eight resistors, and for flavour about four little capacitors. For good measure throw in a switch (or use the on/off switch already available), stir in a bit of quick-stick glue to hold it all together (a nice circuit board would make it more professional), a slight rewiring of the Megahertz switch and the DIN socket at the rear and you will be able to listen to all the available channels at one and the same time.

Bring to just below the boil (otherwise the ICs will self-destruct!), a pinch or so of solder and there you have it. What? You may well ask! Once the system is debugged by removing the link at the rear of the Kyokuto, and switching the Megahertz switch to 148, each and every channel between 144.000 and 147.990 will be selected, mute open condition detected and, if there is no signal, the next channel will be scanned.

Each 10 kHertz channel will be scanned at a rate of approximately 100 channels per 3 seconds. By inserting the aforementioned link, the device will only scan from 146.000 to 147.990. When a signal does appear, or the Phase Lock Loop becomes unlocked, the scanner will stop on this channel and sit there for about two seconds and then step on again. The device will stop on a signal so weak that it can't even be read as the Kyokuto will open the mute on a signal of approximately .15 micro-Volts.

To astute readers it will be immediately apparent that there is a tremendous possibility of improving on the functions and the features available but that can be left up to the individual. Suffice to say that this works and works well.

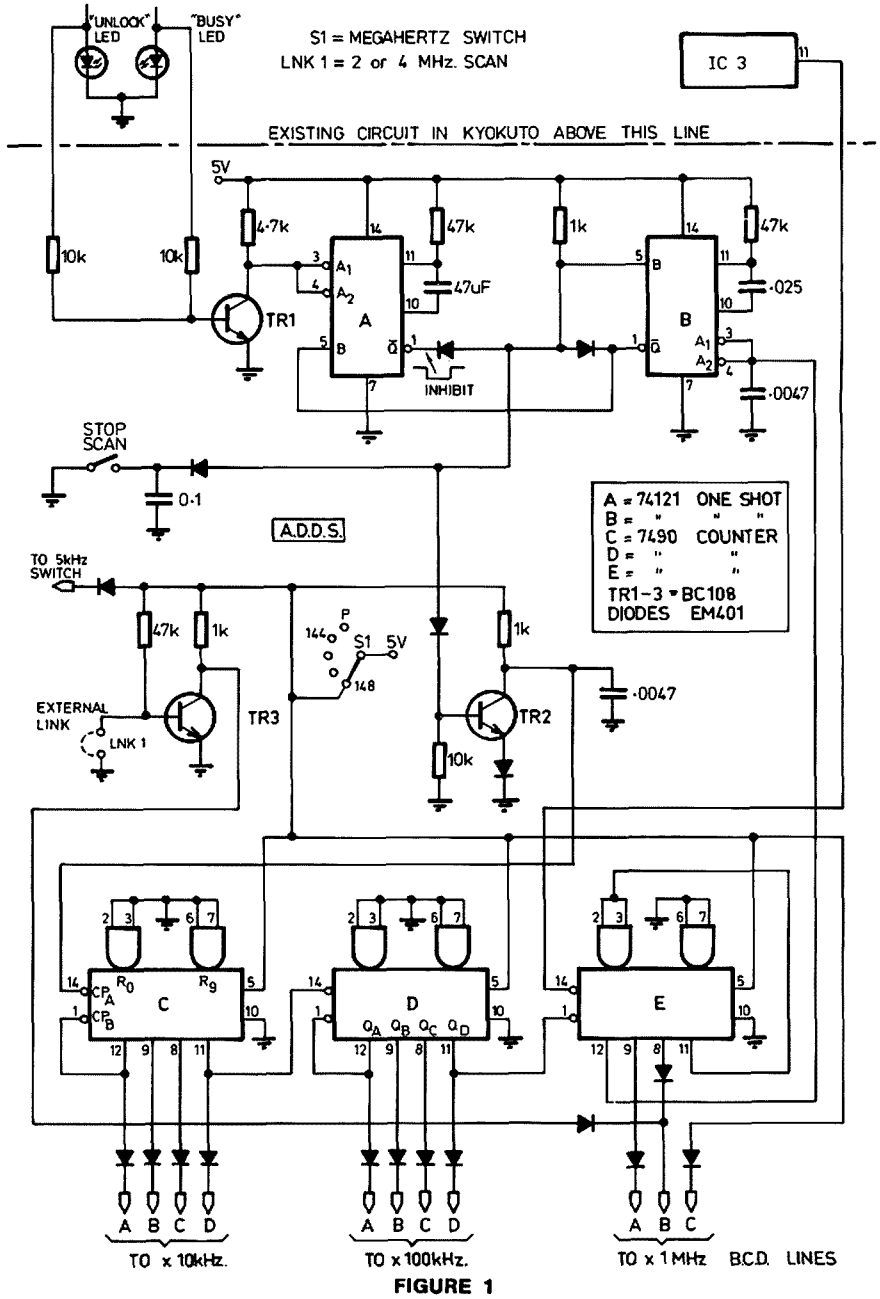


FIGURE 1

CIRCUIT DESCRIPTION

The circuit is a fairly simple one, in that it uses easily available components. It is also very simple to construct on a small piece of Vero Board and added to the Kyokuto. It will fit near the speaker area.

Inside the Kyokuto is a PLL with one of the oscillators coming out at 1 MHz. This is divided down to 10 kHz and then fed into half of IC E. This is part of a divide by 10 counter. The output of this is 5 kHz which is fed into IC B, a one shot. This slows and shapes the pulse train, hereafter known as the clock pulse.

TR2 takes this pulse, subject to any of the INHIBIT functions, and passes it to the counting chain IC C. This chain drives the BCD lines which are strapped to the existing BCD lines coming from the manual switches on the front of the set. Thus the channel select data on the BCD lines is incremented 1 channel per clock pulse.

IC C feeds the X10 kHz lines, IC D handles the X100 kHz leaving the other half of IC E to look after the X1 MHz lines. The astute reader will notice that the output of IC E is different to the other two, but there is a good reason for this. The X1 MHz needs only to change from 144 to 147 and, if you looked at a truth table of a BCD counter, you would find that it is only the A and B value that changes with C staying high. The reason for the extra diode on line B of the X1 MHz lines is simply

to override the counter when the link is inserted to give a selection of 2 MHz only. TR3 is there purely as a logic inverter as I did not like to have full 5V rail external to the set where it could short.

Two important points to take note of. It is very important to remove all links and the diode from the 148 MHz position on the *Meg* switch so as to disable the BCD manual switches. Because of this, the 5 kHz LED now has no voltage to it so it would be floating between 0 and 5. This is overcome by the additional diode.

The inhibit functions mentioned earlier are provided by IC A, another one shot. TR1 is once again only a logic inverter and this enables the one shot whenever the PLL circuit gets out of Lock or when the mute open LED comes on denoting a busy channel. Another point worthy of note is that the mute setting becomes critical, if it is set too tight, the scanner will be sampling the next channel before it has decided if the previous channel was in use or not! If too loose, it will stop on every channel for 3 seconds.

OPERATION

In the author's case, the stop scan switch is actually the on-off power switch of the radio. The 2 or 4 MHz selection is done by using a DIN plug with a link and re-wiring the DIN socket on the back. And the whole thing starts by switching the radio to the 148 MHz position! Now for the good bits! When in the scan mode, each and every channel (at 10 kHz spacing) is sampled, mute open condition tested, and if nothing, it will step on to the next channel. At a rate of doing 200 channels per 7 seconds, or 400 in about 14 seconds. If, however, a channel is busy, the scanning will stop, let you read the frequency and decide if you wish to stop it or not, then it will step on to the next channel.

However, a word to the wise. No set is capable of 10 kHz separation, so if the input signal is very high, as from a repeater, then it is highly probable that it will stop (because the mute opens) about 10 or even 20 kHz before and after the correct channel. Not to worry, even with a permanently open mute, it will step on at approximately 10 kHz every three seconds. Have fun. ■

THE NSW RTTY GROUP

S. E. Molen VK2SG

With the increased number of Teletype machines becoming available throughout Australia, there has been an upsurge of interest in RTTY, this has been reflected in the increased number of stations on the air using this mode of transmission.

Unfortunately with this increased activity, there have been a number of misleading articles in various magazines, giving inaccurate information to their readers, mainly in the areas of speed and frequency shift.

The international amateurs' standards are speed 45.45 bauds, and the shift is 170 Hz. These are the amateur standards, and not necessarily the commercial standards, which have a wide variation, depending upon the type of service that it is used for.

The NSW RTTY group has been conducting a weekly news transmission for the past seven months under the call sign VK2SG, but they have now been allotted their own call sign of VK2TTY; this call sign will in future be used for all official broadcasts of the NSW RTTY group. The transmissions have been taking place on the frequencies of 7045 and 14090 kHz every Sunday morning, and will continue on these frequencies in the future, with the addition of an evening transmission of 3545 kHz. The morning transmissions are at 0300 UTC and the evening transmissions are at 0830 UTC; we feel that in this way we can spread the news on RTTY to a greater number of people and help a lot of people getting their RTTY gear going correctly.

The NSW group has been allocated two RTTY repeaters, one of which will be at Dural and the other will be in the Newcastle area. The call sign will be for Dural VK2RTT, and for Newcastle VK2RYY.

In their efforts to assist the growing number of interested RTTYers the group has produced demodulator boards for the ST6; these are available from the NSW group, either as the bare boards or as a kit of parts, and will be supplied to any person who writes to the secretary requesting them. The kits comprise of the bits and pieces to build the demodulator but there is no power supply or chassis, as we think that most people will be able to provide their own 12 volt supply that will do the job, and therefore we are able to keep the price down to about 40 dollars.

Stemming from the interest in RTTY the NSW group has suggested that an RTTY section be included in the VK/ZL contest, the suggestion is that it be on the weekend of the phone section of the contest as this will not cause any interference to the CW part of the contest, and as a prelude to the suggestion we have asked numerous RTTY contest committees throughout the world for their comments on the proposed rules. In reply we have had an overwhelming agreement to the contest, and we hope that it will be a great success, if the VK/ZL contest committee agrees to its inclusion.

The RSBG RTTY station GB2ATG has been carrying out tests on 14 MHz in preparation to starting their world-wide broadcasts of news from Great Britain; the time of the broadcasts will be 0830 UTC and the frequency will be 14090 kHz; reports would be appreciated on these transmissions.

On the 24th to the 27th March will be the RSGB RTTY Spring contest.

If you are getting an interest in RTTY as a special mode of transmission and you need information about how to go about getting going, write to the Secretary of the RTTY Group, 14 Atchenson Street, Crows Nest, Sydney, NSW. We now have about 135 members in the group, and will be happy to accept more; it costs nothing to join and you do not have to live in NSW or be a member of the WIA, just write to us and indicate that you are interested and we will help you if we can. ■

TRY THIS

WITH THE TECHNICAL EDITORS

HAM M ROTATOR REPLACEMENT CAPACITOR

This circuit replaces the 130μF AC electrolytic in Ham M and Ham II rotator control boxes. Motor torque suffers as the capacitor ages. The steering diodes obviate the need to obtain a special AC capacitor.

G. Scott VK3ZR,
Len Greaves VK3BGM ■

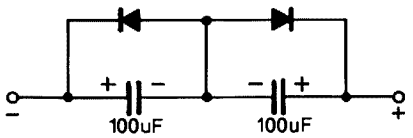


FIGURE 1

QSP

WANTED

Photographs of your activities for inclusion in this magazine. Please don't forget captions. Send to Editor, AR, Box 2611W, GPO, Melbourne, Vic. 3001.

DIGITAL COMMUNICATIONS

An interesting article in the Aug. '77 issue of the Telecommunication Journal traces the development of source rates, bit by bit, from the 5-10 bit/s in 1850 when the Morse telegraph key came into operation, through to teletype as high as 30 bit/s early in this century, computer-related source rates of 4800 bit/s in the 1950/60s, vocoder at 32000 bit/s to digital video at speeds up to 80 million bit/s. The capacity of major telecommunications facilities has doubled every 5 years over the last century. Digital transmission techniques currently used on the INTELSAT system use phase shift keying (PSK) closer to the technical limits theoretically possible for the efficiency of information transmission (Shannon's Law) but further studies continue. "Digital transmission" is defined as the conveyance of information of any nature between two points by means of discrete, as opposed to continuous, signals. Digital transmission in carrier or radio systems implies that the signal modulating the carrier is discrete. Another interesting definition is for Digital speech interpolation (DSI) being a process utilizing digital techniques in which the pauses in the conversation between two parties are used to carry the transmission between two other parties.

YAESU

bail

A wish come true . . . from Yaesu to you — the FT-901DM

The combination of rejection tuning, variable IF bandwidth, and audio peak frequency tuning (APF) makes such accessories as a CW filter unnecessary. Any or all of the three systems may be used to enhance reception: the WIDTH control varies the width of the IF passband, the rejection tuning will null out a particular interfering signal within that passband, and, on CW, the APF control may be adjusted to emphasize the desired signal.

Digital and analog frequency readout plus memory circuitry make for the ultimate in versatility and operating efficiency. The memory unit will control the transmit, receive, or transceive frequency, as desired. For example, if you are on a net and must QSY to pass a piece of traffic, just store the net frequency in memory, and when you've finished with the message on the other frequency, just press a button for instant return to the net!

The Curtis 8043 IC keyer chip was designed for amateur radio applications. It provides such intangible qualities as immunity from RF interference and false keying due to key contact "bounce." The inclusion of the 8043 IC keyer provides relief for the DX-peditioner, too, as it eliminates the need for a separate electronic keyer (and the power transformer to make the keyer work on unfamiliar voltages).

The built-in RF speech processor increases your average talk power by 6 dB, by filling in "holes" in your voice. The processor accomplishes this average power increase without an accompanying increase in distortion, and it gives you that extra "boost" you may need in a tough pile-up.

Purity of emissions is important, both legally and ethically. The new FCC regulations regarding spurious emissions put tough demands on design. But even more important is your reputation, which can deteriorate quickly if you transmit distortion products across the band and harmonics that can cause TVI. YAESU engineers have included such features as a built-in low-pass filter, toroidal output circuitry, and RF negative feedback for a clean signal.

If you think the transmitted signal is clean, just look at the internal construction! Computer-type plug-in circuit boards make servicing a breeze, because a service technician can perform voltage tests and other measurements using an "extender" board, thus saving valuable time (and your service dollar!) that might be wasted unsoldering components from deep inside the chassis. The plug-in board concept also reduces point-to-point wiring, resulting in a clean, compact transceiver.

Some transceivers have WWV reception but no 160 meter capability; others have 160 but no WWV or crystal calibrator. All these features — full band coverage plus a 25 KHz crystal calibrator — are standard equipment, not costly "extras."

For the traveller, the FT-901DM offers unparalleled convenience. In addition to the built-in electronic keyer, the FT-901DM has provision for operation from a variety of AC voltages from 100 to 234 volts. Thus, no heavy, big transformer is needed. In addition, a DC-DC converter is built-in, for operation from your boat, car, or mobile home. Small enough to qualify as carry-on baggage on most airlines, the FT-901DM is equipped with a strong side-mounted handle for ease of carrying around airports.

Human engineering is a factor often taken for granted. It means more than just fancy or convenient gadgets incorporated in design; it also means placement of controls in a logical manner so that you won't have to fumble around looking for a knob when you need it quickly. It also means protective devices to make it difficult for you to damage your radio: in the FT-901DM, the "TUNE" switch has a 10-second timer which automatically returns the transceiver to the "receive" condition after 10 seconds of tuning, making it impossible for you to walk away from your transceiver while it is "key down." You'll find the FT-901DM to be the most convenient, most carefully engineered rig you've ever used.

Weak signals can often become buried by noise to the point where they are inaudible. The advanced noise blanker in the FT-901DM provides a significant improvement in signal-to-noise ratio in situations of impulse-type noise.

The FT-901DM brings you the state of the art in advanced features. Whether in the heat of competition or a casual ragchew, you'll be proud to own the exciting FT-901DM — from YAESU.

Features

- Unique receiver filtering system with rejection tuning, dual-filter variable-width IF bandpass tuning, and a variable audio peak control for maximum selectivity.
- Built-in Curtis 8043 IC Keyer, which provides excellent immunity from RF interference. Eliminates the need to bring along a separate keyer while travelling. Semi break-in with sidetone.
- Advanced noise blanker for elimination of noise spikes.
- Digital readout utilizing bright LED's. Memory system allows you to store any transmit or receive frequency, then recall it with a flick of the switch. Ideal for net operation, multiplier hunting during contests, etc.
- RF speech processor for increased talk power.
- Rugged 6146 final tubes, toroidal output circuitry, and RF negative feedback for maximum reliability and purity of emissions. PLL frequency generation is state-of-the-art stability. 100KHz crystal calibrator and +5 kHz clarifier for transmit and receive frequencies.
- Built-in VOX with front panel gain control.
- Selectable AGC system: SLOW-FAST-OFF.
- Built-in speaker.
- 180 watts DC input for SSB/CW, and 80 watts for AM/FSK/FM.
- Choice of supply voltages 100/110/117/200/220/234 plus DC-DC converter for 13.5 VDC for mobile.
- Compact size, light weight.

Specifications

GENERAL

Frequency range: 160m 1.8—2.0 MHz, 80m 3.5—4.0 MHz, 40m 7.0—7.5 MHz, 20m 14.0—14.5 MHz, 15m 21.0—21.5 MHz, 10mA 28.0—28.5 MHz, 10mB 28.5—29.0 MHz, 10mC 29.0—29.5 MHz, 10mD 29.5—29.9 MHz, WWV 5 MHz (receive only)
Power requirements: AC 100/110/117/200/220/234 V, 50/60 Hz, DC 13.5 V, negative ground
Power consumption: AC 117 V—70 watts receive (45 watts HEATER OFF)—320 max watts transmit, DC 13.5 V—5.0 A receive (1.1 A HEATER OFF)—21 A max transmit
Size: 342(W) x 154(H) x 324(D) mm
Weight: 18 kg

TRANSMITTER

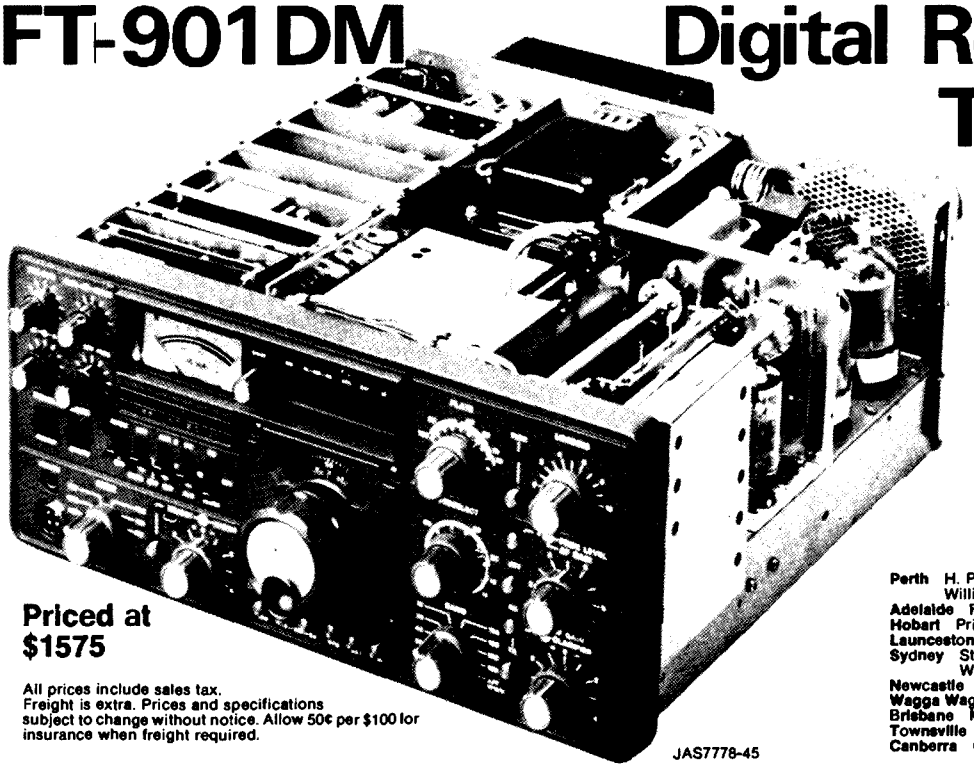
Emission: LSB, USB (A3j), AM (A3h), CW (A1), FM (F3), and FSK (F1)
PA input power: A1, A3j—180 watts DC, A3h, F3, F1—80 watts DC
Carrier suppression: Better than 40 dB
Unwanted sideband suppression: Better than 50 dB @ 1000 Hz
Spurious radiation: Better than 40 dB below rated output
Transmitter frequency response: 300—2700 Hz (—6 dB)
3rd order distortion products: Better than 31 dB below rated output
Stability: Less than 300 Hz drift from a cold start; less than 100 Hz drift over a 30 minute period after warm-up
Negative feedback: 6 dB at 14 MHz
Modulation type: A3j—balanced modulator; A3h—amplitude modulation of a low power stage; F3—variable reactance frequency modulation, maximum deviation ±5 KHz
Antenna output impedance: 50—75 Ohms unbalanced
Microphone impedance: 500—600 Ohms (low impedance)

RECEIVER

Sensitivity: 0.25 uV for S/N 10 dB
Image rejection: 1.8—21 MHz—better than 60 dB, 28 MHz—better than 50 dB
IF rejection: Better than 70 dB
Selectivity: WIDTH control at "0" SSB —6 dB: 2.4 KHz, —60 dB: 4.0 KHz; CW/FSK (with optional CW filter installed) —6 dB: 0.6 KHz, —60 dB: 1.2 KHz; AM (with optional AM filter installed) —6 dB: 6 KHz, —60 dB: 12 KHz; FM —6 dB: 12 KHz, —60 dB: 24 KHz
Passband tuning: Continuous from 2.4 KHz to 300 Hz
Cross modulation rejection: Better than 80 dB immunity at 20 KHz off 20 dB input at 14 MHz
Desensitization: Better than 90 dB immunity at 20 KHz off 20 dB input at 14 MHz
Audio output: Better than 3 watts @ 10% THD. Audio output impedance 4—16 Ohms

The Radio of Tomorrow Here Today

FT-901DM Digital Readout HF Transceiver



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All prices include sales tax.
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JAS7778-45

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Canberra Quicktronic, Phone (062) 81 2824

20 YEARS AGO

Ron Fisher, VK3OM

MARCH 1958

During the post-war years, disposals equipment was freely available to Amateur operators. This tempted many to construct transmitters that were capable of running well in excess of the licensed maximum power. The use of final tubes such as the 813 or 100th was commonplace. However, many of these amateurs found much to their embarrassment that Radio Inspectors were not in favour of such components. To take the regulations literally, a transmitter capable of 100 watts input had to blow up with 101 watts input. The Amateur Radio editorial for March 1958 however, explained that now these regulations had been relaxed and that high power components could now be used subject to a reasonable method of limiting the power to the licensed limit.

March AR 1958 saw the start of a series that was destined to become a classic. Amateur Television by E. E. Cornelius VK6EC. Part one described the camera chain and the sync generator. To go with the article, Eric produced a set of superbly drafted diagrams and circuits.

An *article in the* previous issue, Mathematical considerations of SSB by John Albert Adcock ACA, provoked some interesting technical correspondence. The SSB versus AM arguments were at their height about this time. Frank Hine VK2QL reported via his DX page that conditions had been good from time to time, but with short skip producing a high level of QRM. A feature of the page was a photo of KV4AA with his array of the latest Hallicrafters and Johnson gear.

Changes on Federal Executive announced for March 1958 include Bob Boase VK3NI taking over as Federal Secretary from Doug Bowie VK3DU and new Federal Councillor for South Australia, Rex Richards VK5DO. ■

WIA CORRESPONDENCE

Commonwealth of Australia.
Postal and Telecommunications Department,
G.P.O. Box 5412CC,
Melbourne, Vic. 3001.

Reference: R34/4/29.

The Secretary,
Wireless Institute of Australia,
P.O. Box 150,
Toorak, Vic. 3142.

Dear Sir,
Reference is made to your correspondence of 28 October 1977. The matter referred to is that concerning *additional VHF amateur repeater* channels.

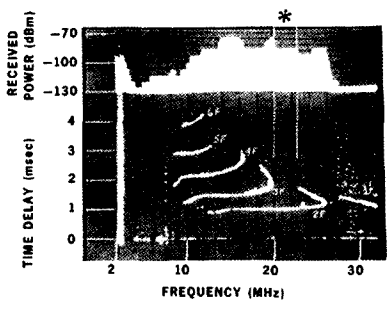
Thank you for the advice in this regard, no objection is raised to your proposal. Officers of this Department will be notified of the new arrangements accordingly.

Yours faithfully,
D. M. HUNT,
for Secretary.
23/2/78.

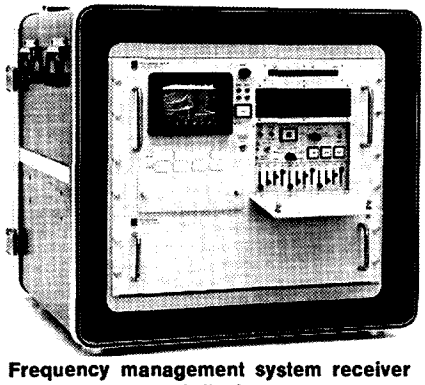
AROUND THE TRADE

An HF frequency management system of great interest was recently tested in trials conducted by Datatel Pty. Ltd. for the Department of Defence. Extremely good and reliable communication was established by using this new equipment, Type AN/TRQ—35(V), which displays both actual propagation and frequency spectrum usage. This allows selection of an optimum frequency.

The system is in two parts. One of these is the spectrum monitor which displays usage of HF



HF propagation display



Frequency management system receiver and display

frequencies so that a frequency freed of interference may be selected.

The other part of the system is a type of ionospheric sounder called a chirpsounder, which provides a display of propagation over the circuit. This allows the optimum frequency for propagation to be selected.

The chirpsounder operates at lower power than a normal ionosonde so as to reduce interference to the circuit and allow its continuous usage.

Using this equipment, HF circuit reliability can be improved. Maybe HF is not dead and will enjoy a new lease of life for commercial and military usage and not be relegated to broadcasting, amateurs and over the horizon radar "woodpeckers".

Further details may be obtained from Datatel Pty. Ltd., Suite 4, 3 Raglan Street, South Melbourne, who are the agents for the manufacturer, Barry Research of California.

432 MHz LINEAR AMPLIFIER — MODEL EDL 432

This modular amplifier, for the 432 MHz band, uses the 2C39A triode in grounded-grid configuration. The input drive power, 10 watts maximum, is compatible with most of the new 432 MHz transverters, transceivers and varactor triplers currently available. The modular style construction permits the owner to utilise his existing power supplies, etc., for maximum economy.

This linear amplifier is suitable for all transmission modes: CW, AM, FM, SSB, RTTY, fast and slow scan ATV, etc.

Further information is available from the manufacturers: Spectrum International, PO Box 1084, Concord, Mass. 01742, USA. Price is US$124.95 (freight extra, plus duty if applicable).

BUILD IT YOURSELF ELECTRONIC EDUCATIONAL KITS

Dick Smith Electronics has released a range of 15 very basic Electronics Kits designed for anyone who has an interest in using their hands to learn about electronics.

The Kits are packed in plastic hanger bags and contain all the bits and pieces to build a multitude of useful and interesting products. Even the wire and solder.

The Kits are battery powered so there is no worry about electronic shocks. They are easy to put together — all the tools that are used are a soldering iron, wire strippers and wire cutters.

The Kits are based on the Electronic Kits published in the book Project Electronics which sells for $4.75. The book is available from newsagents and book stands and contains all the instructions and helpful information on how to build all the Kits.

The Kits are inexpensive and would make an ideal present for anyone over 12 years of age or as an introduction to Electronics.

Among the range is:

Two Tone Door Bell Kit	$4.00
Heads and Tails Game	$3.50
Morse Code Practice Game	$3.50
An Electronic Sire Kit	$5.50
A Simple AM Radio Kit	$6.50
An Electronic Dice Game	$5.90

Plus eleven more.

The Kits are available from all Dick Smith "Electronics for the Enthusiast" Stores, in Sydney, Melbourne, Brisbane or Adelaide or any Dick Smith dealer. ■

QSP

A STEP BACKWARDS — RECIPROCITY

The first part of the above is the title of the editorial in the Nov./Dec 1977 issue of Mobile News (Journal of Amateur Radio Mobile Society). As from 1-7-1977 the use and the possession of radio transmitting equipment without the required licence is an offence in the Netherlands. Registration stickers will also be issued to be affixed to all such apparatus. Travellers passing through Holland will therefore face difficulties if registration certificates and stickers had not been obtained prior to the visit. The editorial comments — "No doubt the increase in acts of terrorism and kidnapping in several European countries is making their authorities much more security conscious. Such acts require split second timing so a two-way radio is probably essential: hence the new requirement for sticking official labels on all the equipment as far as the Dutch are concerned. There could be another explanation. Most of us are conservative and tend to resist change. This seems to apply particularly to civil servants who suddenly find their routines upset by some new regulation. Could it be that this new Dutch licensing procedure is simply designed to deter would-be foreign applicants so as to cut the work load on some civil servants? There is evidence that other countries are taking a very long time to process reciprocal licensing applications, so that, unless one is able to plan a trip well in advance, it may not be possible to get the paper work through in time."

10 GHz BAND

Writing about 10 GHz operations in the radio amateur column in the Telecommunication Journal November 1977, G3RPE commented:—

"The maximum length of unobstructed path is limited by geographical factors; in the United Kingdom, *to about 260 km under normal conditions*. To go substantially beyond this while still using the simple equipment described above, amateurs have exploited the humidity ducts which form over water under certain weather conditions. The super-refraction observed has enabled paths up to 521 km to be covered. In some cases, the ducts appear perfect and, as a result, the path losses then fall well below even the free-space values. Under these conditions, signals tend to be very strong, for example, good signals from the United Kingdom were received in Belgium using only the open end of the waveguide receiver input. Amateurs' experience strongly suggests that these ducts are present much more often than had been anticipated." ■

AMATEUR SATELLITES

Bob Arnold

VK3ZBB

OPERATING NEWS

It has been a little difficult for inexperienced operators of OSCAR 7 to keep up with the operating Mode changes, particularly during January and February. Due to battery temperature aboard the satellite, the conventional BBA sequence was changed to continuous B, but further overloading of this Mode in Europe caused automatic switching to Mode A without warning. It has, therefore, been necessary to monitor both Modes on every pass to determine individual operating procedures.

Despite these problems, operations have been at a high level and considerable satisfaction has been obtained from the high quality of communication attained on Mode B.

The popularity of the "Microwave Modules" series of transverters is making an impact on Mode B operations — the following new stations have been heard:—

VK2ZSL, ZAA; VK3BH, YFT, ZVV; VK5PF; VK6ZHM; ZL1BDU; ZL2TSH; VK1RC; WA8VDJ/KH6.

Notable contacts: VK4TL and VK4ZRF to WA8VDJ/KH6.

During January, the beacon of Stanford Research Institute satellite P75-5 was heard. Beacons are 435.97 MHz and 1239.0 MHz. The former beacon gives 5 x 9 signals but the latter is not reported as being heard.

The orbital parameters are: inclination 99.655°, period 105.729 minutes, longitude increment 26.43°, height 1025.968 km.

The satellite is sun synchronous and can be heard on one or more passes between 11 a.m. and 3 p.m. LOCAL time on South-North pass, and twelve hours later on North-South pass. For a more accurate calculation of the passes, the following information may prove useful:—

Date: 28 Feb. 78.

Equatorial Crossing: 0029 GMT.

Longitude: 194.05 degrees West.

The P76-5 beacon on 435.97 gives a useful indication of what to expect with Mode J operation (145.95 up, 435.15 down). The doppler effect is most noticeable and averages 20 kHz on an overhead pass. To follow the beacon requires almost continuous tuning of the receiver to hear the signal — we shall need yet another pair of hands for Mode J!

PORTABLE OPERATION

Graham VK5EU has sent me an interesting report, reproduced below, which shows how easy it is to make satisfactory OSCAR contacts using simple equipment and antennas. Graham writes — "During my holiday periods and in the course of my employment I have travelled extensively in VK2, 3, 5 and earlier in VK8. I have always wanted to set up a semi-permanent portable/mobile station, and this is the result.

Mobile antennas are ¼ wave verticals on 70cm and 2m, and a 6 ft. fibreglass car radio whip with a coil at its base to resonate it on 10m. Portable antennas are similar but 3-5m high.

A preamp on 10m is in most cases a necessity, and it certainly helps on 2m too — I use both.

Equipment used on 70cm was initially a rebuilt commercial transvertor at ½ watt PEP, later with a home brew 15W PEP amp. This was eventually relegated to the base station, and was replaced with a microwave modules unit at 8-9W PEP — much more compact.

The 2m exciter and receiver is an IC202 modified to allow USB and LSB operation for Mode B, with a 3N200 preamp on receive and amps to 30W PEP using a 2N5591 on transmit.

The 10m receiver and 70cm IF is an FT301S. Preamp on 10m uses a 2N5245.

My best DX to date with portable is JR6AE in Okinawa, and while mobile is ZL, although VS3, DU6 and even KG6 should be OK mobile. Portable I have worked 43 different stations, including VK2, 3, 4, 5 and 6, ZL1 and 3, and JR6. Mobile I have worked 26 different stations, including VK1, 2, 3, 4, 5, 6, and 7, ZL1, 2 and 3.

Excellent results can be obtained with very simple equipment and antennas, but for the best results, look out for the details like preamps, noise blankers, feeder losses, etc. I will be looking forward to hearing you."

SATELLITE PARAMETERS

To assist listeners to and operators of the various satellites, I have tabulated the parameters of the known and anticipated satellites, as at February, 1978. Some of the information, particularly referring to the Russian Series, is a little vague and lacking in detail for long-term calculations of acquisition data.

I hope to update this information from time to time via Divisional Broadcasts or notes in this segment of AR, and will re-issue the Table periodically.

If any operators have suggestions to make or up-dated information, would you please let me know.

INFORMATION SERVICE

I have now received a supply of the following literature:—

- AMSAT Membership Application Forms.
- OSCAR in the Classroom.
- OSCAR for Beginners.
- Satellites make Ham listening more fun.
- OSCAR Phase III Sponsorship.
- Calculating orbit predictions. Reprint from Amateur Radio, October 1972.
- Morse Code Telemetry Reporting Forms.

If you would like a copy of one or more of these, please drop me a line and enclose 18 cents stamp (no phone calls, please). QTH is correct in all recent call books.

ORBITAL PREDICTIONS — MAY

Orbit	Mode	Date	Time Z	Long.
15814	B	01	0001	57.5
15827	B	02	0055	71.0
15840	A	03	0150	84.6
15852	B	04	0049	69.5
15865	B	05	0143	83.1
15877	A	06	0043	67.9
15890	B	07	0137	81.5
15902	B	08	0036	66.3
15915	A	09	0131	79.9
15927	B	10	0030	64.8
15940	B	11	0124	78.4
15952	A	12	0024	63.2
15965	B	13	0118	76.8
15977	B	14	0017	61.7
15990	A	15	0111	75.2
16002	B	16	0011	60.1
16015	B	17	0105	73.7
16027	A	18	0004	58.5
16040	B	19	0059	72.1
16053	B	20	0153	85.7
16065	A	21	0052	70.5
16078	B	22	0147	84.1
16090	B	23	0046	
16103	A	24	0140	
16115	B	25	0040	
16128	B	26	0134	
16140	A	27	0033	65.9
16153	B	28	0128	79.4
16165	B	29	0027	64.3
16178	A	30	0121	77.9
16190	B	31	0021	62.7

	OSCAR 7	OSCAR D	R-S	PHASE III	P76/5
Launch Date	15 Nov. 74	Est. March 5, 78	During 1978 Four Satellites	Est. Dec. 79	
Inclination Degrees	101.70	98.99	82	57	99.655
Orbit Period Minutes	114.945	102.790	102	11 hr. approx.	105.729
Orbit Increment Degrees	28.736	25.697			26.43
Apogee km	1461	903.79	950	24249	1025.968
Perigee km	1450	877.86		932	

		OSCAR 7	OSCAR D	Russian Series	OSCAR Phase III	P76/5
MODE A	UP	145.85-145.95 RC	145.85-14.95 RC	145.80-145.90		
	DN	29.40-29.50 L	29.4-29.5 L	29.30-29.40		
MODE B	UP	432.125-432.175 LC			435.150-435.290	
	DN	145.925-145.975 Inverted LC			145.850-145.990 Inverted	
MODE J	UP		145.90-146.00 LC		145.850-145.990	
	DN		435.10-435.20 liverted L		435.150-435.290 Inverted	
BEACONS		A 29.502 L A 435.10 RC B 145.972 LC 2304.1 LC	29.402 L 435.095 L		145.995 435.145	435.970 A0 Modulation No communication

Polarisation for Southern Hemisphere:
L — Linear. LC — Left hand Circular. RC — Right hand Circular.

AWARDS COLUMN

Brian Austin, VK5CA
P.O. Box 7A, Crafers SA, 5152

WAVKCA (VHF)

Certificates have been posted to the following: VK3AQR, VK3ZNJ, VK3ZGP, VK3AMK, VK3AOT, VK4ZWW, VK3BFG, VK3ZAZ, VK2HZ, VK3KK.

WORKED ALL QUEENSLAND AWARD

1. This award is divded into two sections:
   Worked All Cities and Towns.
   Worked All Shires.
2. Any transmitting amateur or listening amateur may apply for this award, provided that these applications comply with the rules.
3. Only one award is issued, but this will be updated upon receipt of further additions.
4. Worked All Cities and Towns: There are 20 incorporated cities and towns in Queensland. Initial award: 15 contacts with radio amateurs operating from these cities and towns. A "silver sticker" if ALL cities and towns are worked.
5. Worked All Shires: There are 111 shires in Queensland. For this award, 1976 listing is considered to be the correct one. The population figures in these shires range from 250 to well over 25,000. Initial award: 51 contacts.

"Stickers" for 61, 71, 81, 91, 101 shires, with a gold sticker if ALL shires have been contacted.

6. Modes and Bands: All legitimate modes and bands may be used. MF, HF, VHF, UHF, OSCAR, EME, etc., but cross-band modes are not allowed.

7. Special VK Rules: As a number of areas are not very active, "DX-peditions" to these areas are encouraged to help the award hunter and others to get that rare Queensland Shire, Town or City. The following will apply:

   (a) The Queensland Awards Manager or his appointed delegate shall be advised in writing of the intended VK/portable operation in those areas which are not too active or are non-active. If the approximate dates of operation are available, advanced publicity could be given and you may become a much sought-after "rare DX-station".

   (b) A copy of the VK/P log shall be forwarded to the Queensland Awards Manager for use as a check list. The VK/P operator will automatically be credited with "as having worked" that particular area, if

      (i) at least 50 contacts are made with a minimum of 4 VK calls areas, or

      (ii) at least 30 overseas contacts are logged.

   Method of application: A certified list of contacts, as per CHC rules, to be sent to —

   The WIA (Queensland) Awards Manager, G.P.O. Box 638, Brisbane, Qld. 4001, Australia, with either $1 (Aust.) or 10 IRCs or equivalent for the initial award. Subsequent stickers will be issued free, although return postage will be appreciated.

9. Contacts made as from 1-1-1976 will be valid for this award.

A list of the Cities, Towns and Shires can be obtained from the WIA, Brisbane. I would suggest you enclose a s.a.s.e. with your request.

REDCLIFFE CITY AWARD

Readers are reminded that the time to try and get this award is every Sunday evening at 1000 hrs. GMT. The Redcliffe Radio Club station VK4RC will call the RRC Net on approximately 14.295 to 14.300 MHz (depending on QRM). Anyone interested in this award should check in. At times it is possible to acquire the necessary point score in "one sitting", at other times it may require a few more check-ins.

VK and ZL stations require a total of 6 points to qualify, others require 4 points. VK4ARC, the Club station, carries a 2 point score, RRC members count as 1 point.

All one has to do to apply for the award is —

1. List the stations worked, giving time, date, frequency, mode, report and operator's name.
2. Forward this list with either 2 IRCs or 50c Australian in mint condition to:
   Redcliffe Radio Club Awards Manager,
   P.O. Box 20, Woody Point, Qld. 4019.

No QSL cards are required, but will be welcomed. Redcliffe cards will be sent through the normal channels to the stations contacted. However, for this award the list as under 1. is the only requirement.

Please note that wherever enough interest is shown, the Club net may QSY at 1030 GMT to 28.550 MHz or 3.650 MHz or thereabouts for the VK4Ns. During the winter months the net is usually held on 3.680 MHz ± but this will be announced on the WIANEWS.

It is reported that distinctive prefixes such as KG6 and KV4 are being discontinued for various Pacific and Caribbean Islands. Instead of their present unique prefixes, all Pacific area US amateurs will be issued KH6 calls while those in the Caribbean will receive KP4 prefixes. Present holders of calls with the discontinued prefixes will, however, be permitted to retain them indefinitely — the change applies only to new applicants from those areas. The prefixes involved include KG6, KS6, KB6, KJ6, KM6, KP6, KW6, KV4 and KC4 (Navassa). The reasons for the change include freeing up a large number of amateur call signs for future amateur growth and reduction of the processing burden. ■

BOOK REVIEW

MAINTENANCE SERVICE MANUAL FT101 SERIES

Here it is — all you ever wanted to know about the FT101, but didn't know where to ask.

This comprehensive book has been produced in the United States by Bernard E. Tower W6RNW, General Manager of Yaesu Electronics, USA.

The 226 pages are divided into eight sections which cover in turn, general information including history, tune up, soldering, theory of operation and compatible Yaesu accessories.

Section two has operating information. Three covers assembly and interconnection with details on removal of the front panel, VFO, plus details of connecting the various accessories. Included in this is an interesting modification to provide increased output from the IF OUT socket to give adequate deflection on the YO-100 scope when used for receive monitoring. Part four covers fault finding including voltage and resistance charts. Part five has a full run-down on board and parts location including schematic diagrams. Modifications are treated in part six and these include installation of the RF processor into the late 101 and 101B series, noise blanker modification, FSK operation plus many more. The last two sections cover alignment and parts lists.

Overall the book does an excellent job of covering an enormous subject. However, owners of the very early 101s would be disappointed in the very limited coverage given to these sets.

Unfortunately, information of this type does not come cheaply. The current price is $30 and it is possible future supplies will be even more.

It is, however, highly recommended to all FT101 owners who want to know more about the way their transceiver works.

Further details from Vicom International, 139 Auburn Road, Auburn. ■

VKCB CLUB

REPORT ON ACTIVITIES — AUGUST 1977 TO FEBRUARY 1978

MEMBERSHIP

Those not holding an amateur's licence are required to complete a total of 5 hours of training at a club course organised for prospective new members. (A step by step outline of this course is available.)

ASSISTING THOSE ENQUIRING ABOUT AMATEUR RADIO

The use of the club call sign "amateur radio" continually attracts enquiries as to what amateur radio is and how one can become a ham. VKCB members handle enquiries received on 11 metres as follows: (1) THOSE ABLE TO ATTEND SATURDAY AFTERNOON COURSES — are encouraged to attend the weekly novice amateur licence course at the WIA. (2) THOSE UNABLE TO ATTEND COURSES — are told to (a) write for the $15 novice YRS study package, (b) obtain the book "From 5 to 1000 watts", $2.95 from Tandy Electronics, (c) pick up the amateur regulations booklet for $1.65 from P. & T.

FRICTION FREE INTERACTION WITH THE CRS

Has been achieved through the aims and spirit of the club which outlined constitutionally are —

(1) To provide an opportunity for those interested in the hobby of amateur radio to contribute to the development of the citizens, radio service, particularly in assisting the newcomer by way of —

(a) providing an example of good operating practices, and

(b) by providing technical on air assistance in relation to interference problems and station maintenance.

(2) To encourage and assist interested fellow CB operators who would like to obtain the novice amateur radio transmitting licence.

AMATEUR RADIO'S RESPONSIBILITY IN RELATION TO PIRACY

The radio hobbyist should be given a friendly hand into amateur radio before he or she gets caught up in the ideas of modifying their CB, building beams, adding linears and using any frequency one desires. Such a state of affairs does not benefit either service. Within CB the first step is to know that a hobby called amateur radio exists, the second is to offer an opportunity to get involved in the hobby, and the third step is to become sufficiently enthusiastic so as to personally commit oneself to studying for the amateur licence. As the CB user becomes interested in radio as a hobby the VKCB club members are able to direct the energies of such enthusiaists in the right direction.

AFFILIATIONS

The VKCB club is closely associated with the WIA, the NCRA and the YRS. During the December-January vacations some 125 people were attracted to the 6 week novice course. Over 90 per cent indicated that they were CB users. Many had heard VKCB club announcements about the course being broadcast regularly on the AM and SSB call channels on their CB radios. As a result of these activities a somewhat exceptional number of 50 applications for WIA membership was received by January.

At the NCRA State meeting at Bathurst in February the VKCB club introduced some 200 people representing CB clubs around NSW to amateur radio. Displays of inexpensive home made rigs and kits for the new novice as well as WIA log books, AR magazines, were well received, as were several novice study kits. Arrangements were made to speak at several CB clubs as well as get novice courses going within the clubs. The next NCRA State meeting will be at Port Macquarie in May, where the VKCB club will conduct another amateur introduction session.

11 METRE ON AIR VKCB CLUB ACTIVITIES

Guide to VKCB club members.

Channel 6 (new) 11 (old) AM LISTENING (VKCB members QSY to old 14 when possible).

Channel 10 (new) 14 (old) VKCB CLUB AM QSO CHANNEL and hand held.

Channel 12 (new) 16 (old) LSB LISTENING (VKCB members QSY to old 19 when possible).

Channel 15 (new) 19 (old) VKCB CLUB USB QSO CHANNEL.

THE SYDNEY 11 METRE NOVICE STUDY COURSE ON THE AIR

In this VKCB club net, the net controller asks a novice exam question and each CBer in the net selects the correct answer from the alternative. Then the controller reads the question again and gives the correct answers with explanations.

VKCB club net runs almost daily on old 14, using AM from 8 p.m. often till 12 or 1 a.m. New CBers breaking in are always made welcome.

The EASTERN SUBURBS VKCB NET operates each SUNDAY at 7.30 p.m.

Novice and CB news each Sunday at 11 a.m. and 7.30 p.m. on old 22 USB.

80 METRE VKCB PARTY MONTHLY NET

1st Friday of each month 7.30 p.m. from 3.560 to 3.573 MHz. CBers are invited on the air to attend these parties to find out more about the VKCB club and amateur radio.

VICTORIAN DIVISION OF THE VKCB CLUB

Co-ordinator, Mark Stephenson, 43 Cuthbert St., Reservoir, Vic. 3073. (03) 460 1615.

N.S.W. PRESIDENT AND NATIONAL CO-ORDINATOR

Sam Voron, 2 Griffith Ave., East Roseville 2069. (02) 407 1066. All enquiries welcome, via letter, on 80m or at week-end seminar radio. ■

QSP

VICTORIAN NOVICE LICENCE — TRIAL EXAM

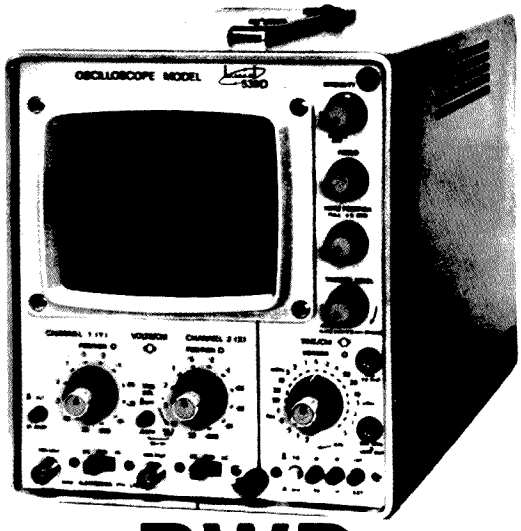
In order to help all actual and prospective candidates for the Novice Amateur Licence, the Youth Radio Clubs Scheme (Victorian Division) will hold a Trial Novice Examination on Saturday, April 15, 1978. The place of examination will be near the central area of Melbourne and will be easily accessible by public transport. Parking will be available.

The exam fee is $1.00 and should be sent with your application as a postal note or a cheque made out to the Youth Radio Clubs Scheme; please DON'T send cash. The fee should be included with a note containing your:

Surname and initials.
Postal address (in full, including postcode).
Telephone number (if none, write "nil").

Applications should be posted to:
YRCS Trial Novice Exam,
11 Vista Avenue,
KEW, Vic. 3101. ■

25 MHz Bandwidth



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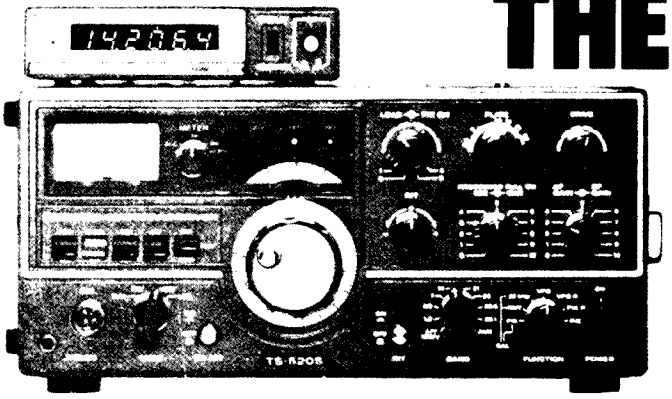
S.A.	Protronics Pty. Ltd., Adelaide. Phone 51 4713
	Rogers Electronics, Adelaide. Phone 42 6666
W.A.	Cairns Instrument Services, Perth. Phone 325 3144
TAS.	Associated Agencies Pty. Ltd., Hobart. Phone 23 1843

THE NEW TS 520S



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KENWOOD TR 7400A FM VHF TRANSCEIVER
Full 4 MHz coverage, 25 watts high, 5 to 15 watts low, offset for Repeater. Fully synthesised, 6-Digit Read-out
PRICE .**$425**

KENWOOD TS600 VHF TRANSCEIVER
Matching in size and performance to the TS700A, coverage 50 to 54 MHz. SSB/FM/AM/CW. PRICE **$650**

ICOM MODELS	IC – 22S	PRICE $265
	IC – 245	PRICE $440
	IC – 245 (with SSB adaptor)	PRICE $550
	IC – 211	PRICE $750
YAESU MODELS	FT 101E	PRICE $850
	FL – 2100B Linear	PRICE **$565**
	FT – 301S – FT – 301D – FRG7	

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NEW RELEASE

MMT432/144'S' Transverter, featuring 2 switchable ranges. 432 – 434 434 – 436 MHz, input frequency 144 to 146 MHz.

Get away from the maddening crowd below. The MMT432/144'S' 434 Linear Transverter will get you there. This solid state linear made transverter allows you to operate your 144 MHz SSB, AM, FM or CW units at 432 MHz .... up where there still aren't a lot of people. Amateur Electronic Imports is the exclusive Australian distributor for this precision British made unit from Microwave Modules, Ltd.

NEW RELEASE for OSCAR 8 down link – 70CM converter model MMC434/28, coverage 434 to 436 MHz. PRICE $51

TRANSVERTERS Model MMT432/28 S, coverage 432 to 436 Price $245
TRANSVERTER Model MMT144/28 coverage 144 to146 MHz Price $185

Our extensive range includes: Converters MMC432/28–432/144 Price $51 144/28 Price $45, 144/28LO and 52/28LO Price $49, MMC1296 and 1296/144 Price $65, Varactor Tripler MMV1296 Price $74, 500 MHz counter MMD050/500 Price $175, MMT Power supply $94.

SPECIFICATIONS:
Frequency coverage: 432–436 MHz.
Input frequency range: 144–146 MHz.
DC power requirements: 11-13 volts (12 volts nominal).
Current consumption: 250 mA quiescent 2.1 Amps peak.
RF connectors: 50 ohm BNC sockets
Power connector: 5 pin DIN socket
Size: 187 x 120 x 53 mm
Weight: 900 grams. PRICE $ 295

All prices subject to change without notice.
Onwards forwarding please add sufficient for freight or postage. Excess will be refunded.

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- 144 - 148 MHz, PLL digital synthesizer system
  FM: 800 channels (5 kHz step)
  SSB: 400 channels (10 kHz step) plus VXO system (± 7 kHz)
- AC 117/240V, DC 13.8V, two-step power supply
- Digital display system (using a large-sized LED) provides reading up to six figures
- Easy-operating, separate and selective mechanism displayed by the frequency unit for wider operation of FM/SSB
- Transmitting output: 10W/1W, shifting mechanism
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- AGC FAST/SLOW, two-step change-over circuit
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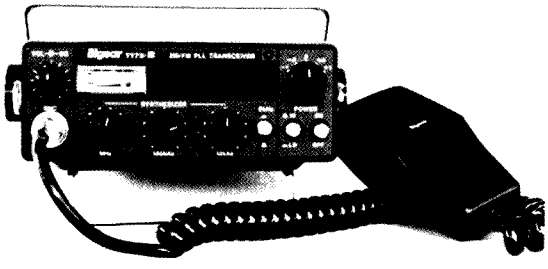
- Included RIT, AGC, VOX and noise blanker circuit
- MIC GAIN CONTROL is provided with front panel for ease of operation
- Highly sensitive, highly selective six-element SSB filter

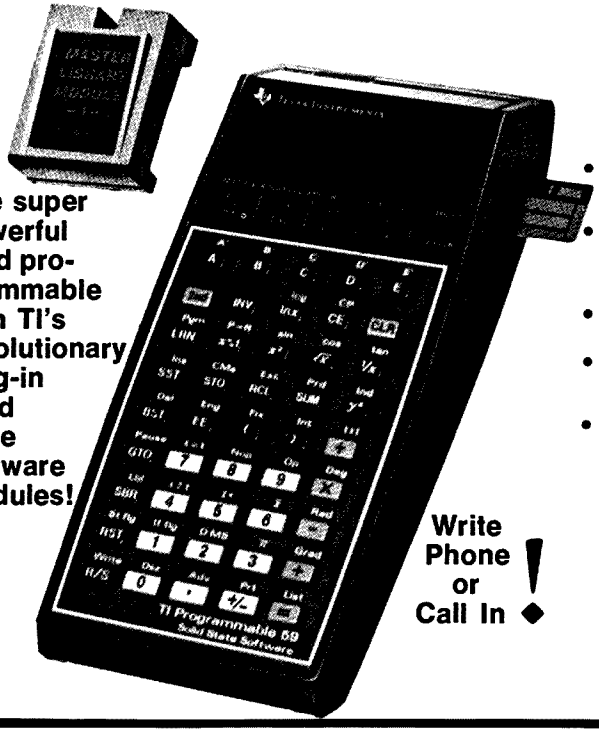
- A large-sized VXO mechanism provides reading of the frequency
- Provides repeater operation of ± 600 kHz and ± 1 MHz
- Optional part: tone burst module

TYPE-2 — 2m FM PLL SYNTHESIZED MOBILE TRANSCEIVER — $385



- 144 - 148 MHz, PLL digital synthesizer system (800 channels)
- A large-sized LED, digital display system provides readings up to six figures
- Easy-operating separate and selective mechanism displayed by the frequency unit for wider operation
- Transmitting output: 25W/1W, two-step selector switch
- Highly reliable plug-in module
- Completely narrow band system for transmission and reception
- Provides repeater operation of ± 600 kHz and desired frequency
- RF output with S meter indicator
- Designed for high reliability and high sensitivity
- With external loudspeaker and external accessory connecting terminals
- Easy-to-operate AF/SQ coaxial type knob
- Sturdy, removable mobile mounting system
- Optional part: tone burst module

TYPE-3 — 70cm FM MOBILE TRANSCEIVER AVAILABLE SOON!



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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 publishers.

The Editor,
Dear Sir,
The Gouiburn Amateur Radio Club has only been operating for a little more than one year.

The results of the RD Contest just published have given the club something to *be proud* of. We have only 1.. licensed operators in the district, 11 logs were entered for a total of 2,569 points from 1,427 contacts.

Can any other club say that they had a better performance?

73s and will be there again next year.

David Thompson VK2BDT. ■

The Editor,
Dear Sir,
Had VK7NOW read the excellent articles on the G5RV by Maurie VK3AVO (AR, April 1974) and Phil VK5NN (June 1974), he might have been less rash with his statements "All text books and AR are wrong" and "The correct length of 300 ohm ribbon is 32 ft. 6 in.". (Letter to the Editor, February 1978.)

The authors mentioned have each approached the problem by entirely different methods, and apparently with equally successful results. It is worth noting that neither of them specified a "correct" length in terms of feet and inches.

I have no doubt that VK7NOW's friend in ZL is putting out a "superb" signal with his 32 ft. 6 in. feeder. So is Ted Bowden G2AYQ with his 29 ft. 3 in. feeder — S9 in VK3 from 120 watts PEP. In a letter dated 25th January, 1978, Ted says, "Make the feeder 34 ft., then trim it back ¼ inch at a time keeping an eye on the SWR meter. Mine was trimmed right back to 29 ft. 3 in. for zero SWR. I have worked the world with the G5RV."

There are many variables involved in getting any type of antenna to perform at its optimum at a particular location. What is "correct" at one QTH may be quite unsatisfactory at another, and therein lies one of *the* fascinations of amateur radio.

To assume that a certain antenna arrangement is "correct" for every situation is akin to buying a motor vehicle solely on the assurance that it will perform satisfactorily under all conditions of service. In both cases, we need to do a little "test-driving" before either accepting or rejecting a particular product.

Yours sincerely,

R. Goslin VK3SV. ■

R. J. Zimic,
55 Hobart Street,
St. Marys, N.S.W. 2760

The Editor,

1st February, 1978

Dear Sir,
I have only recently joined the WIA as a full member, however this is not without problems.

The nature of my problem, and perhaps common to the Australian Amateur is self explanatory by the accompanying copy of a letter which was sent to the Regulatory and Licensing Branch in Sydney, N.S.W.

A copy of the letter has also been sent to Mr. R. Gillard (Federal M.P.).

I am sending you the copy of this letter in the hope that you might be interested in publishing it in the AR magazine.

This is the tenuous hope of improving the prevailing licensing conditions, and in the interests of the future Amateurs in Australia.

Yours faithfully,
R. J. Zimic.

(Copies to P. and T. Department and R. Gillard, M.P.)

Superintendent,
Regulatory and Licensing Section,
Postal and Telecommunications Department,
23 Berry Street,
North Sydney, N.S.W. 2060.

Dear Sir,
I am writing to you in protest to the delays in which a Radio Amateur can obtain his licence.

I deplore the attitude of your department, for so little concern to the person who has troubled himself to qualify for the requirements, only to find that the "red tape" has made him now a second rate citizen.

Over six months when I applied for the AOCP examination, I was fired by the enthusiasm of becoming a Radio Amateur. Now I am still waiting for the station licence, but my enthusiasm has changed to bitterness and disappointment.

I believe that six months waiting period is quite common; if this is continually tolerated, then the Amateurs deserve to be called "nuts".

If there is any interest in radio left in me now, I will consider in joining the CB service. I believe that the CB licence may be acquired in a reasonable time. (Although a licence is often not necessary.)

I do not seek explanations, nor a reply to this letter, as such measures are unproductive. However, I wish to be "counted" by expressing my deep disappointment over the attitude of your department.

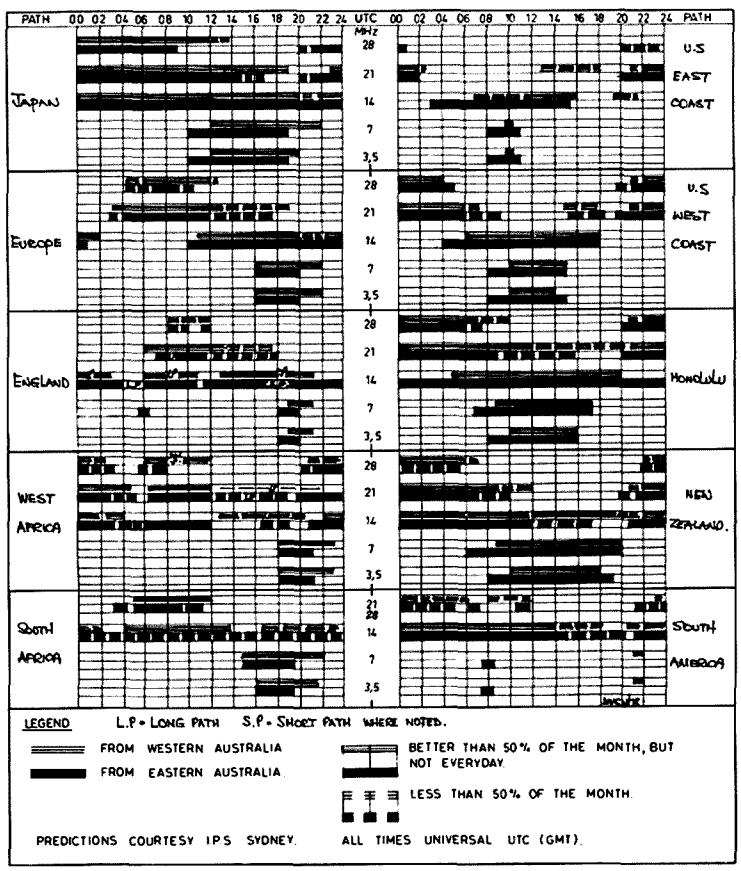
Eventually, if and when you grant me a licence, I might become interested in this hobby again, but not without the unpleasant memory.

Yours faithfully,
R. J. Zimic.

(A copy of the letter to the Federal Member for Macquarie was received but is not produced here because of space limitations.—Ed.) ■

IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



Since September 1977 there has been a steep improvement in conditions, particularly on the 28 and 21 MHz bands. Both have seen activity at great levels. 28 MHz has enjoyed probably the greatest increase particularly during the pre-summer period with good openings daily across most paths. 21 MHz was not without its share of the action with long, regular openings across all paths.

Sunspot data available shows 11/77 with a mean of 26.6 12/77 as 41.3 1/78 as 49.3. The running smoothed numbers for 5/77 — 23.7, 6/77 — 25.6, 7/77 — 28.1 predicted smoothed means for 3/78 — 45, 4/78 — 47, 5/78 — 49, 6/78 — 51, 7/78 — 53.

The 10.7 cm (2800 MHz) solar flux has steadily risen over the past six months with some enormous bursts equating with peaks in daily sunspot numbers. The means for 1977 were 1/77 — 77, 2/77 — 62, 3/77 — 77, 4/77 — 78, 5/77 — 80, 6/77 — 92, 7/77 — 81, 8/77 — 84, 9/77 — 100. Predicted means for the following period are 10/77 — 102, 11/88 — 106, 12/77 — 108, 1/78 — 107, 2/78 — 106, 3/78 — 105, 4/78 — 104, 5/78 — 105. The means are as ambiguous as the sunspot means but generally represent a rather high burst during each month settling to an average which is climbing slowly month by month.

Probably the greatest effects on propagation that are felt at least twice each month are ionospheric storms which produce a decrease in MUF below expected values during the storm periods. Broadly speaking there are two types of storms according to the solar event causing them. The flare induced storm, and the recurring storm are the most common. The first is of a sudden nature caused by a solar flare. These types are most common as the cycle is ascending towards its peak and the effects last up to a few days. The recurring storm is associated with variations in the geomagnetic field, due to the presence of the solar wind which changes the earth's geomagnetic field as the structure sweeps past the earth. These types of storms last up to seven days but are more severe about sunspot minimum.

Storms are related by changes in the normal currents that flow in the magnetosphere and

ionosphere. The largest contribution to the geomagnetic field index K is provided by ionospheric current systems, concentrated in and near the auroral zones. Since it is these currents which appear to give rise to the major ionospheric storm effects, K is often used as an indicator of expected disturbances in the ionosphere. WWV provides this information in the 18 minute past the hour report on solar terrestial conditions and is as good a guide as is possible on a 6 hourly basis.

Storms generally exhibit both positive and negative phases, typically giving an enhancement effect (rise in MUF) on the first day and then depression (lowering of MUF) on the following day or two.

It has been found that a positive phase occurs in the afternoon and early evening if the geomagentic storm starts in the afternoon, while a storm starting in the midnight to dawn period results in an immediate negative phase. This particular phase is probably the most interesting aspect as the commencement time will invariably dictate what paths may be open and the degree of signal availability is directly related. The movement of the storm front will open paths to a higher usable frequency ahead of the front and decrease the usable frequency behind the front. So the direction the front is travelling will control the propagation. The fact that a storm is in progress will often be illustrated by tremendous increases in signal levels in one direction and almost total loss in the opposite direction. Sudden changes in either direction is a fair indicator of an impending storm. They can be felt over very long distances and relatively short distances — even cross town in the negative phase.

However fixed circuit communications are the most disrupted as changes in frequency are required to compensate for the losses incurred. The amateur generally can take advantage of a rotary antenna to seek propagation over unaffected areas. Of course there are exceptions in all cases.

Forecasting of ionspheric conditions is a science similar to weather forecasting. Averages mean little and local events can completely dominate an otherwise perfect situation. There is so much going on all the time that ideal conditions seldom exist for the periods predicted. However extremely good conditions out of character with normal often occur and some fortunate amateurs are always there to take advantagee of the event. So please do not take a dead band as being dead. Call — in at least two or three directions to test feasibility from unexpected directions. Like working West Africa over South America with both beaming around the South Pole. It's been done quite recently to the surprise of both parties. Long path propagation on 3.5 MHz around the twilight zone attracts quite a few stalwarts to this form of DX. Some staggering distances have been worked over the path in recent years. VK3 to EA8 was a recent one. Many enjoy this rather sophisticated mode.

At the time of writing the solar flux had climbed to 169 in the first week in February and held quite high for a further five days, settling to 125 on February 21 and immediately started a climb upwards. Whilst the flux levels are high it does not necessarily mean above average conditions will always apply. WWV are using solar activity statements as Low to Medium, Medium to High, and on rare days as high. Flare activity over the past months has been high and dependant on the class of flare conditions, do change abruptly.

The period March to May and in particular September to December are certainly worth watching. 28 MHz is bound to show longer periods of action. Make a point of getting in on the action. This year you will be in for some pleasant surprises. ■

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Syd Clark, VK3ASC

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LARA

Ladies Amateur Radio Association

This month, as part of the series on famous YLs, we start with the obvious choice, VK3YL herself! The holder of this distince call is Austine Henry, who has been a licensed amateur since 1930.

Austine first became interested in amateur radio as a child whilst convalescing after an operation. She was given a crystal set, complete with cat's whisker with which she experimented in receiving. Her first transmitter was a "shortwave" battery-powered rig (home brew recipe from the very start), which was followed by an AC transmitter soon after. Improving her knowledge of regulations and morse (as well as theory), Austine gained her licence to enter what must, in that period, have been exclusively a gentlemen's world. It can be a trifle daunting even today for a would-be YL licensee to enter an exam room full of OMs, so we all look up to Austine who set us such a precedent quite a while ago.

Since then, Austine has been active in many fields of radio. She was an instructor with the WIA, giving lessons to members of the Armed Services during the war, and was a member of the RAAF Wireless Reserve, from which she has some happy memories and some warm, long-standing friendships.

Austine has operated for most of her career on 20, 40 and 80m CW and VHF AM phone. She at one stage used post-war surplus equipment but then moved on to own a Collins S line with SSB. Her log books include 322 countries worked, which gives an indication of her interest in DX.

As a member of the WIA, ARRL and RSGB, Austine did not, of course, really need to join a new club, but ever since LARA first started she has given her enthusiastic support, bringing valuable experience and advice.

Amongst Austine's non-electronic interests are her relaxations of philately and golf (especially golf). As a keen golfer she is currently fretting at the bad luck which caused a broken wrist and has kept her off the golf course for many weeks. Best wishes to Austine for a speedy recovery.

Another LARA member who has been off golf courses and basketball courts and in the hands of the medical profession is Irene, YF of Jeff VK3YER. Best wishes to Irene for a "hamonious" recovery. ■

VK5 LARA lovelies — left to right: Myrna VK5YW, LARA Net control on Mondays; Rhonda Holker VK5N??, enjoys LARA; Jenny VK5ZBI, first woman "Z" call in VK5 — is active in LARA.

VHF-UHF
AN EXPANDING WORLD

Eric Jamieson, VK5LP
Forreston. 5233

AMATEUR BAND BEACONS

VK0	VK0MA, Mawson	53.100
VK1	VK1RTA, Canberra	144.475
VK2	VK2WI, Sydney	52.450
	VK2WI, Sydney	144.010
	VK2RHR, Mittagong	144.120
VK3	VK3RTG, Vermont	144.700
VK4	VK4RTL, Townsville	52 440
	VK4RTT, Mt. Mowbullan	144 400
	VK4RBB, Brisbane	432.400
VK5	VK5VF, Mt. Lofty	53.000
	VK5VF, Mt. Lofty	144.800
VK6	VK6RTV, Perth	52.300
	VK6RTU, Kalgoorlie	52.350
	VK6RTW, Albany	52.950
	VK6RTW, Albany	144.500
	VK6RTV, Perth	145.000
VK7	VK7RNT, Launceston	52.400
	VK7RTW, Lonah *	432.475
VK8	VK8VF, Darwin	52.200
JA	JA2IGY, Nagoya	52 500
KG6	KG6JDX, Guam	50.110
KH6	KH8EQI, Hawaii	50.104
ZL1	ZL1VHF, Auckland	145.100
	ZL1VHW, Waikato	145.150
ZL2	ZL2MHF, Upper Hutt	28.170
	ZL2VHP, Palmerston North	52 500
	ZL2VHF, Wellington	145.200
	ZL2VHP, Palmerston North	145.250
	ZL2VHP, Palmerston North	433 250
ZL3	ZL3VHF, Christchurch	145.300
ZL4	ZL4VHF, Ounedin	145.400

* Listed again.

Peter Dodd, our Federal WIA Manager, forwarded a copy of a letter he received which quoted some interesting information in regard to beacons which had been taken from the January 1978 issue of IARU Region 1 Journal, which mentions the French beacon on 50.104 MHz FX3VHF was heard twice in Eastern Canada by VE1ASJ during June 1977. The Es tests of FX3VHF were switched to TEP in August and the beacon signals were logged in October 1977 by ZE2JV about 8137 km to the south. The signals were also heard later by ZE1JJ in Rhodesia. The FX3VHF beacon runs 70W RF into a stack of two 6 element yagis, giving an e.r.p. of 1 kW.

Further comments in the journal were that the 1977 summer season seems to have seen a record Es VHF activity in the European area and generally around the world. Distances of 8500 km have been covered on 50 MHz between Japan and California.

Reports on these long distance contacts have steadily increased but it is not known whether this is due to the increased number of observers or to an increase in the activity of Es itself. Possibly both apply. More research, observations and reports are required to detect possible recurrence patterns and to relate these to other geographical or solar phenomena. Any thoughts?

Steve VK3OT reports following statistics of VK9NI for six metres: 29-11-77 1850-1900Z VK2; 13-12-77 1745-1800Z ZL3QK, ZL4LV; 25-12-77 1540-1552Z VK1, 2 and 4, ZL1QI; 8-1-78 1247-0235Z K1, 2 and 4 up to S9+, worked 24 VK2, 1 VK1 and 19 VK4. Heard bursts from VK3AUR and VK3OT. A VK6 was heard calling YJ8KM, but nothing since. Chas. is hoping for an improved season next year, and worked sufficient this time to keep him interested.

Similarly Ken YJ8KM had about 4 days to play around, on 7-12 worked VK2, 3 and 4, plus ZL4LV at 9+; 22-11-77 first six metre opening for season worked 14 in VK4, plus VK2, 3 and 5; 7-1-78 VK8ZCJ, VK8ZGF, heard VK8VV and VK6BV. Ken ZL4LV 5 x 7; 8-1-78 worked 29 VK4s, 6 in VK5, is now SMIRK number 2446 and had a pretty good time on six this year. We all hope he will be around again next year.

Steve K3OT is holding over 100 cards for distribution from YJ8KM. If you need yours please send stamped addressed envelope. SMIRK 6-6 co-ordination net operates on 21.352 MHz at 2352Z Sundays, and during the equinox 14-3 to 14-4 will be controlled by VK3OT and VK3AKK.

A reader of this column for some time has written to say he has now received his call sign, VK3ANI, and Evan lives in North Balwyn. He mentions hearing both the Albany and Perth beacons on 2 metres on 17-2, and calling using CW at 0745Z on 144.01 and 144.02, but no answers. Evan runs 15 watts to a 7 element yagi and keeps a good eye on the weather maps to alert him for the right conditions for 2 metres. However, it would be wise to either call on 144.1 or if that is occupied just above or below, if anyone is around they will tune for signals.

Thanks for writing, Evan, and will look forward to hearing from you again some time. I thank you for the interesting support you have given to the 50 to 52 MHz proposal, and filed your letter for use later.

David VK5KK reports on a number of 6 metre openings to Japan during February, namely 11-2 with signals to 5 x 8 at 0600Z from JA0 and JA7, opening lasting 15 minutes; 18-2 JA7MIT and JA0; 25-2 JH1HHE 5 x 3 at 0549Z for 2 minutes and JA7MIT at 0620 5 x 5 for 10 minutes. The moral is that it pays to be around at the right time, but also indicates either an improvement in overall band conditions or the JAs are around in VK5 more often than previously thought but for such brief periods they were generally missed. David also mentioned George P29HV had been noted working KG6JIH and P29ZWW working KG6JJI and KG6—DX about 15-2.

Throughout February there were a number of excellent 144 MHz openings across the southern parts of Australia, with Albany in VK6 being the starting point in most cases, and extending right through to eastern Victoria. From Albany Aub VK6XY, Wally VK6WG, Bob VK6BE and Bernie VK6KJ have held the fort, many VK5s, including VK5PB, ZPS, NY, KK, SV, LP, RO, ZIW, LZ and others were involved, plus the boys in Mt. Gambier, and going through into VK3 to find VK3ZQV, ZBJ, AUR, AOS, etc.

Not only has 144 MHz been involved, so also has been 432, 1296 and 2304 MHz, so much so that established records have tumbled during February. See the separate box on this page for details of the outstanding efforts of those involved in these long distance contacts on 432 and 2304.

At my own QTH behind the 30 dB hill to the west, I have found it to pay handsomely to upgrade the antenna department, and the two 16 element yagis stacked on 144 MHz have really paid off in that when the boys in Adelaide now work Albany, I can claim my share too, perhaps not as strong, but nevertheless strong enough to have contacts with all stations on hand.

Having observed these improvements I found myself rather disgruntled with what I was hearing on 432 MHz, so I began to listen to the prodding in the first instance by David VK5KK who already sported a 16 el. yagi on 432. He was soon joined by Bob VK5PB who in very strong terms condemned the antenna and transmitter set-up on observing same. So with Bob's help and encouragement the old 13 element yagi was pulled down together with its RG8AU coax., and replaced with a 16 element yagi — a la 5 PB type — fed with FLD4 heliax cable kindly placed in position on the tower by Graham VK5EU and my nephew, Trevor, to a height of 70 feet, a bigger black box to boost the transmitter power and all systems were go on 18-2-78 — a very appropriate day, being my birthday, so it was a nice present, and thanks to all concerned. However, more was still to come. That same night the boys in Adelaide were working Aub VK6XY in Albany on 432, so pointing the new antenna west through the 30 dB hill, which now by reason of being hit with UHF signals becomes a 60 dB hill, and lo and behold, after some effort, a two way contact ensued between VY6XY and myself on 432.1 with signals 5 x 1, not strong but good enough to put on tape. My day was complete, what had been considered the impossible had been achieved. Signals at VK5KK at the time from Albany were 5 x 9 on peaks, dropping to 5 x 1 through my hill! A great day for me!

The purpose of all this is simply to indicate what can be done with the help of some good mates who have confidence in the possibilities and prepared to help physically, and to the encouragement given by David VK5KK and Bob VK5PB at this end during the contact and to Aub VK6XY for staying on long enough at his end to make the contact possible.

The improvements into the Adelaide area have been quite spectacular on 432 since the upgrading; it's a rugged path but Bob VK5PB now gives me a genuine 5 x 9, and I do the same for his signal. Subsequent to the Albany contact I almost made it with Michael VK3ZQV, 100 miles east of Melbourne on 432.1 on 20-2, but conditions were not so good. Anyway, there will be other times, and I look forward to them. Maybe all this will encourage others to upgrade their own equipment, the rewards are obviously there.

VK8 TO JA ON 144 MHz

That's a fact, it has been done. Graham VK8GB (ex ZCJ) contacted JH6TEW, whose name is Tel, at 1200Z on 24-2-78 on 144.110 MHz SSB. Graham received 5 x 1 and Tel 5 x 2, the path distance being presently estimated at only 49 miles short of the new record established on 29-10-77 between YV5ZZ and LU1DAU of 3135 miles (5044 km). VK8GB used an FT101E driving an FT250 transverter with a QQE06/40 linear amplifier to a 10 element yagi. Tel JH6TEW used a TS700G2 with a receiving pre-amp included to a pair of element crossed yagis. VK8VV was listening to the contact, congratulations, boys, you have established the first amateur contact on 144 MHz between Japan and Australia, a fine effort, let us all hope your next contact Graham will be enough distance further to bring the 2 metre record to Australia. If so, it looks like Australia will be at least one end of records for 144, 432, 1298 and 2304 MHz!

Proof that scheduling pays off is shown in that VK8GB and VK8VV had been running skeds every night on 52 and 28 MHz for a week or more previously, and on 21-2-78 the first signals were heard in Japan at 1237Z, but no contact. The same results on 23-2, one way at 1200Z, with the next night, 24-2, resulting in the two way contact. Graham commented signals were no where near as good as the previous time last year when he heard all the FM signals but unable to make contact. Six metres was open all the time. 28, 52 and 144 MHz all exhibited the same reception pattern, it did not seem to be TEP which produced the contact, possibly something to do with a density quotient for want of better description. My thanks to David VK5KK for collecting the above information for me. No doubt I will be hearing direct from Graham in due course.

MOONBOUNCE REPORT

Lyla VK2ALU in "The Propagator" reports that the February 432 EME News includes details of the different scheduled EME tests for the month of February, involving over 40 stations in all continents. They will be using the frequency range from 432.000 to 432.060 MHz. Also it is normal for a number of other contacts to be made on an unscheduled basis.

Reports continue to be received of EME contacts being spoiled by interference from non-EME stations using the same frequency. The station causing the interference does not have to be in the same part of the world as either of the EME stations and, of course, probably cannot hear either of the EME stations.

The message to VK stations on 70 cm is clear — if you are using other than low ERP on transmit, **PLEASE** do not use 432.00 to 432.060 MHz, especially on Friday night and on week-ends — after all, there is more than ample spectrum space above 432.060 MHz. This is now being recognized by the more progressive overseas Amateur Radio Organisations who are modifying their "band-plans" accordingly.

VK2AMW is scheduled for EME tests with YV5ZZ and W6ABN between 0000Z and 0100Z on 11-2-78.

Before closing there are two things I missed earlier. Firstly, Bob VK5PB and Aub VK6XY were not content just to work one another on 432 SSB during the opening on 17-2 and 18-2, but had successful contacts on the same band using RTTY, and that's not the first time they have done it either! The other matter was that Tony

VK6BV has sent in a fairly long list of 28 MHz beacons throughout the world. These seem to listed using the newly proposed system of frequencies, and obviously some or most are still using the old frequencies. I will file the list for the time being Tony, until more definite information is available.

The rest of the current news is included in the box which details the record breaking contacts, so in an effort not to use quite so much space this month, I will now conclude with the thought for the month: "The world is moving so fast these days that the man who says it can't be done is apt to be interrupted by someone doing it."

73. The Voice in the Hills.

WORLD RECORDS

A world record contact on 2304.1 MHz on 17-1-78 at 0755Z occurred between Reg VK5QR in Adelaide and Wally VK6WG in Albany over a distance of approximately 1170 miles. VK5QR used SSB and VK6WG used CW, and signals peaked to S8/9 both ways. VK5QR used synthesized SSB running about 4 watts into a 3 foot dish at 35 feet. VK6WG originated his signal on 128 MHz using an SCR522 aircraft unit, finishing with a 2C39A doubler with 50 mA plate current to give approximately 3 watts into a 6 foot dish not very high. The QSB observed was slower on 2304 MHz compared with 1296 MHz, and at the time signals were stronger on 2304 than 1296 even with more power on 1296. The contact was taped at both ends and replayed over 144 MHz for all to hear. Congratulations, gentlemen, a fine effort.

On 22-2-78 at 1355Z what also is likely to be a world record was established with a 432.1 MHz contact between Aub VK6XY in Albany and Michael VK3ZQV, 1¼ miles south-west of Carra ung, about 100 miles east of Melbourne; Aub received VK3ZQB 4 x 2 and Michael received VK6XY 5 x 1.

VK3ZQV used an IC202 into a Microwave Modules transverter mounted at the antenna, being two 12 element phased arrays mounted side by side and 60 feet high. Power output would have been a maximum of 10 watts. VK6XY used an FT620B into a Modular Developments transverter running 8 watts PEP into a KLM 35 watt amplifier, such drive being incapable of obtaining full output. Antenna two 16 element long boom yagis, spaced 6 feet, and 30 feet high fed with UR67 coax.

144 MHz used for setting up contact commencing at 1131Z, and while Mike could hear Aub's carrier each time they tried on 432, it was not until 1355Z the signal improved sufficiently for a two way QSO to take place. Contact was maintained on 144 MHz for over 4½ hours with good signals, but the 432 MHz band was not in good shape, as signals into Melbourne on previous occasions had been much better.

Congratulations to you, gentlemen, as well, a fine effort. . . . VK5LP

NEW 144 MHz WORLD RECORD

On 12-2-1978 at 0015Z LU5DJZ located at Mar Del Plata 400 km south of the capital of Argentina contacted KP4EQR in Puerto Rico over a distance of 6400 km (3977 miles). Signals were 5 x 9+ on 144.1 MHz. LU5DJZ used 400 watts of SSB to 11 over 11 yagi antenna, KP4EOR used 800 watts SSB to an array of 4 x 9 element yagis.

Ray DL2GG/YV5 also contacted LU5DJZ for a distance of 5500 km on the same day, using 100 watts of SSB to an 11 over 11 yagis.

The above information was received via Peter VK8NJW.

STOP PRESS

David VK5KK reported hearing VK3RTG, the Melbourne beacon, on 144.700 at 5 x 1 at 1410Z on 28-2-78. As far as is known this is the first reported hearing of this beacon in the Adelaide area.

And possibly even more interesting to everyone is the reception by David of VK7RTW at Lonah on 432.475 MHz on 28-2-78. This beacon was first heard at 1435Z, peaked to S7 at 1525Z and disappeared at 1535Z. David reports it operates close to the stated frequency with slight variation, uses FSK at 1 KHz shift to high side with key down. Quick QSB noted on signal. No other signals heard of course. The Channel 8 repeater from Launceston was also through at the same time, together with a multitude of repeaters from VK3.

Good work, David, but it's a bit late really for most of us, hi!

Although I have not been advised, it is now obvious the VK7RTW beacon is now operational again so is included in the listings. Proof of both hearings was confirmed when David played tape recordings of both stations over the air the next day to me.

From Graham VK8GB a further rush item:

"On 25-2-78 at 1145Z Brian VK8VV worked JH4JPO on 144.100 on CW received and sent 4 x 1. At 1150Z he worked JH6TEW on 144.101 on SSB again 4 x 1 both ways. The distance to JH4JPO was in excess of 3200 miles. ■

IARU NEWS

IARU MEETING IN GENEVA

A meeting of the IARU President's WARC Advisory Committee was held in Geneva from the 13th-18th February, 1978. This Committee has previously been informally known as the International Working Group (IWG).

The President of IARU invited Dr. David Wardlaw VK3ADW, the President of the Wireless Institute of Australia, to attend this meeting as it is probable that Dr. Wardlaw will be a member of the Australian delegation to WARC 1979. Present at the meeting held in Geneva were, in addition to the President of IARU, IARU Secretary Richard L. Baldwin W1RU, the Assistant Secretary of IARU David G. Sumner K1ZZ, the Secretary of IARU Region 1 Roy F. Stevens G2BVN, the President of IARU Region 2 Victor C. Clarke W4KFC, and a Director from Region 3 Michael J. Owen VK3KI. In addition to David Wardlaw VK3ADW, Wojciech Nietyksva SP5FM, and Merle Glunt W3OKN, were also present.

The timing of this meeting was fixed to coincide with the ITU World Administrative Radio Conference (Aeronautical (R) Conference). This enabled those present to observe an actual ITU conference. In addition to Merle Glunt, who hes recently retired from the Federal Communications Commission and is an expert on ITU procedures, presented a Seminar on the working of that organization.

The IARU Headquarters and Region 1 hosted a reception at the ITU building for delegates to the Aeronautical WARC on Thursday, 16th September, and this enabled those attending the Committee meeting and other Amateurs from the Geneva area to meet many of the delegates from many different countries.

The formal meeting of the Committee gave consideration to numerous matters relating to the WARC. The importance of an Amateur being a member of a delegation, either as an advisor or as a full member, was discussed and shortly a circular will be sent to all Societies by IARU Headquarters stressing the importance of this matter.

In addition to that circular IARU Headquarters will be forwarding to each Society a letter restating the IARU position on Article 41 of the Radio Regulations — the article dealing specifically with the Amateur Service. The organization of the IARU WARC team to WARC 79 was discussed in considerable detail and shortly the President of the IARU will be making a formal statement to the IARU member societies on the organizational policy that has been adopted. IARU Headquarters has agreed to prepare a descriptive and informative booklet on the Amateur Radio Service suitable for distribution to telecommunication authorities in developing countries. The importance of the special preparatory meeting of the CCIR in October 1978 was also discussed and the possibility of the submission of papers furthering the interests of the Amateur Service was explored.

Following the meeting in Geneva Region 3 Director, Michael Owen VK3KI, and WIA President, David Wardlaw VK3AOW, visited a number of societies in Region 3. Meetings were held in Tokyo with the President of JARL, Shozo Hara JA1AN. On the 21st February, 1978, the JARL League Headquarters were visited and a press conference was held. That same evening Michael Owen and David Wardlaw and their wives (who were travelling with them) were invited to a formal dinner given by JARL. The importance of the CCIR special preparatory meeting was discussed with Shigetake Morimoto JA1NET, who is a Director of JARL and President of JAMSAT, and Keigo Komuro JA1KAB, both of whom are deeply involved with JARL's preparation for WARC.

On the 22nd and 23rd a visit was made to Seoul in the Republic of Korea to meet with representatives of the Korean Amateur Radio League. After this visit two further days were spent in Japan, enabling further consultations with the President of JARL, JA1AN, and Region 3 Director, Matsumi Saito JH3PJE.

In Singapore, meetings were held with representatives of SARTS and Region 3 Director, Tan Llan Huat 9V1OD, and Region 3 Secretary, David Rankin 9V1RH. ■

Michael Owen VK3KI replying at the formal dinner given by JARL at Tokyo. WIA President David Wardlaw VK3ADW is on the left and Mrs. Nanette Owen is on the right. JA1AN photo.

DICK SMITH'S ATTITUDE ON SALES TO UNLICENSED OPERATORS

In Dick Smith's submission to the Australian Government over 12 months ago he insisted that the seller of equipment be responsible to see that the equipment was licensed.

> " The retailer should also be made responsible by legislation to provide a full listing each month of all purchasers who do not have a license . . ."

Until the Government takes this advice there is absolutely no way that unlicensed people can be prevented from operating equipment on the amateur or any other bands.

This is unfortunate — but it's a fact!

Sure — it's OK for a retailer to state in advertisements that "Purchasers may be asked to provide evidence that he/she is the holder of an appropriate certificate of proficiency ". We have done this in the past only to find that unlicensed operators have had licensed friends purchase equipment for them.

We have to have legislation.

If you support Dick's original proposal that retailers be made responsible to provide the P&T each month with a listing of all purchasers of transmitting equipment, call in to any Dick Smith Store and sign our petition. This petition asks for control on sales of all transmitting equipment, instead of lip service to a rule which can easily be by-passed.

If you are not convinced that Dick's attitude is genuine, we suggest you obtain a copy of "Dick Smith's Australian CB Radio Handbook" and see for yourself the responsible guidelines towards licensed operation.

No other supplier has made the effort to publish such a guide.

DICK SMITH ELECTRONICS
THE AMATEUR RADIO PROFESSIONALS


Dick Smith
VK2ZIP


Ike Bain
VK2AIG

DID YOU KNOW THAT MANY OF DICK'S STAFF ARE LICENSED AMATEURS?

So they can talk your language, understand your problems, know the equipment they sell inside as well as out . . .

Call in and see the amature radio specialist at your nearest Dick Smith Store. Ask him to show you our range of Yaesu transceivers, linears, power supplies, frequency counters and 'scopes.

You'll find that Dick Smith Electronics can supply most of your amateur radio needs – from a power plug to an antenna insulator, and just about everything in between!

Our service department, one of the biggest and best-equipped in the country, has all the parts, test gear and know-how to service everything we sell.

When you buy Yaesu from Dick Smith, you can be confident you'll never be left in the lurch for service . . .

Dick Smith Electronics is a direct distributor for YAESU. Compare our prices against any other company's with similar service back up.

You'll find ours are very competitive.


Gary Davis
VK3NCN/ZNU


Garry Crapp
VK2YBX/T


Cress Everdell
VK4ZAD


Ross Tester
VK2ZVO


Peter Hunt
VK2YCZ


John Dennis
VK2AJF


Bob Thurley
VK4ARY


Allan Greening
VK3WU


Bill Edge
COCP

CQ CQ CQ – CALLING ALL AMATEURS
Don't miss out on the all new 1978 edition of Dick Smith's famous catalogue.
It's FREE in the April issue of Electronics Australia. Order your copy NOW!


Peter Harding
VK2NGK

DICK SMITH ELECTRONICS

SHOP HOURS
Mon-Fri 9AM 5.30PM
Sat 9AM 12 noon
(Brisbane 1 hour earlier)

bankcard welcome here

Order value	P&P charge
$5 - $9.99	$1.00
$10 - $24.99	$2.00
$25 - $49.99	$3.00
$50 - $99.99	$4.00
$100 or more	$5.50

SYDNEY
125 York St.
City. Ph 29 1126
Open 'til 8PM Thursday

SYDNEY
361 Hume Hwy.
Bankstown. Ph 709 6600.
Open 'til 8PM Thursday

SYDNEY
162 Pacific Hwy.
Gore Hill. Ph 439 5311
Ample parking at door

SYDNEY
30 Grose St.
Parramatta. Ph 683 1133
1st floor – friendly store!

MELBOURNE
399 Lonsdale St.
City. Ph 67 9834
New right in town!

MELBOURNE
656 Bridge Rd
Richmond. Ph 42 1614
Easy access huge stock

BRISBANE
166 Logan Rd.
Buranda. Ph 391-6233
Opens 8.30AM

ADELAIDE
203 Wright St.
City. Ph 212 1962
Now Open. See us!

MAIL ORDER DEPARTMENT PO Box 747, Crows Nest, NSW 2065 Phone 439 5311 Post & Pack extra.

WE HAVE DEALERS RIGHT ACROSS AUSTRALIA – THERE'S ONE NEAR YOU!

BUY YAESU AT DICK SMITH'S AND SAVE $$$$

Yaesu factory prices have just increased by up to 20%. But just look at Dick Smith's prices on Yaesu amateur equipment — some have actually gone DOWN!

FT-101E	HF Transceiver	$850.00	Cat D-2860	FT-227R	2m Mobile Transc.	$335.00	Cat D-2890
FL-2100B	1.2kW Linear Amp	$540.00	Cat D-2546	YC-500S	Frequency Counter	$380.00	Cat D-2892
FT-301	HF Transceiver	$949.00	Cat D-2870	YD-844	Base Microphone	$39.00	Cat C-1116
FP-301	Power Supply	$170.00	Cat D-2872	FT-301S	HF Transceiver	$710.00	Cat D-2880
FL-110	200W Linear Amp	$210.00	Cat D-2884	FT-901D	HF Transceiver	$1275.00	Cat D-2854 *
YO-301	Monitor Scope	$355.00	Cat D-2882	FT-7	HF Mobile Trans.	$515.00	Cat D-2866 *
YO-100	Monitor Scope	$330.00	Cat D-2862	DC–DC Converter for 901D		$75.00	Cat D-2856 *
FRG-7	Comm. Receiver	$350.00	Cat D-2850				

* These items due in approx. 4 weeks.

Dick Smith Electronics is a Yaesu-factory-authorised dealer with full warranty and service back-up.
How many others can make this claim?
You may have seen advertisements from 'suppliers' offering similar — maybe even lower — prices, without even having the stock on hand, nor being able to sell it to you at the advertised price if they do get it.
Everyone knows this type of advertising is illegal — but the fact is it happens, and happens often.
Dick Smith Electronics has in excess of **$200,000** worth of Yaesu equipment in stock right now.
Why shop around? Make Dick Smith Electronics your first stop.

WIN A TRIP FOR TWO TO TOKYO
WITH THE PURCHASE OF ANY YAESU EQUIPMENT

ENTER OUR SIMPLE COMPETITION — AND WIN A LUXURY TRIP TO TOKYO FLYING QANTAS

YES! You'll stay at a luxury hotel in Tokyo, and be treated to a guided tour of Akihabara — the amateur's paradise. You'll also be shown through the incredible Yaesu-Musen factory — see where that piece of equipment that helped you to Tokyo came from!
And it's absolutely FREE — all you have to do is write a few well-chosen words and YOU could be the one going to Tokyo.

YOU'LL BE PAMPERED ALL THE WAY BY AUSTRALIA'S AIRLINE TO THE WORLD:

QANTAS

Competition not valid in states where conditions of entry contravene state laws

HERE'S HOW TO ENTER — RULES & CONDITIONS.

Write, in one paragraph of not more than 50 words, the best way that Dick Smith Electronics can promote the fantastic hobby of Amateur Communication to the benefit of Australia.

Obtain an entry form with the purchase of any Yaesu amateur equipment from a Dick Smith store or participating dealer. Complete it in full and post it to:
Amateur Radio Contest PO Box 747, Crows Nest NSW 2065.

All entries will be judged by Dick Smith to produce 5 finalists. These finalists will be judged by the editor of Electronics Australia magazine to produce a winner. Originality and the constructiveness of the idea will be taken into account.

Entries close at 5PM on 28th July 1978. Entries received after that date will not be considered.

The final judging will take place on 2nd August 1978. The judge's decision will be final and no correspondence will be entered into.

The winner will be notified by mail and by notice in the next available issue of Electronics Australia magazine.

As this flight departs from and returns to Sydney, the winners must travel to and from Sydney at their own expense.

All entries become the absolute property of Dick Smith Electronics Pty Ltd, who may use such entries as they see fit.

Yes, it certainly pays to buy YAESU from DICK SMITH!

DICK SMITH ELECTRONICS

SHOP HOURS: Mon-Fri 9AM - 5.30PM, Sat 9AM - 12 noon (Brisbane - hour earlier)

bankcard welcome here

Order value	P&P charge
Up to $9.99	$1.00
$10 - $24.99	$2.00
$25 - $49.99	$3.00
$50 - $99.99	$4.00
$100 or more	$5.50

SYDNEY	SYDNEY	SYDNEY	SYDNEY	MELBOURNE	MELBOURNE	BRISBANE	ADELAIDE
125 York St.	361 Hume Hwy.	162 Pacific Hwy.	30 Grose St.	399 Lonsdale St.	656 Bridge Rd.	166 Logan Rd.	203 Wright St.
City. Ph 29 1126	Bankstown. Ph 709 6600	Gore Hill. Ph 439 5311	Parramatta. Ph 683 1133	City. Ph 67 9834	Richmond. Ph 42 1614	Buranda. Ph 391 6233	City. Ph 212 1962
Open 'til 8PM Thursday	Open 'til 8PM Thursday	Ample parking at door	1st floor - friendly store!	New - right in town!	Easy access - huge stock	Opens 8.30AM	Now Open. See us!

MAIL ORDER DEPARTMENT PO Box 747 Crows Nest, NSW 2065 Phone 439 5311 Post & Pack extra

WE HAVE DEALERS RIGHT ACROSS AUSTRALIA THERE'S ONE NEAR YOU!

Dx COLUMN

Alan H. Reid, F.I.E.Aust., VK3AHR
93 Yarrbat Ave., Balwyn, Vic. 3103

WHAT DX MEANS TO ME

When asked by the Editor to write something on the above subject for AR, two ready replies sprang to my mind: one was "absolutely nothing" and the other "how heart-warming it is to have friends, people I have grown to know personally, at the other end of the world". It all depends on one's definition of DX!

Is DX the brief long-distance exchange of call signs, reports, names, QTH and "QSL 100 per cent through the Bureau OM 73" sort of thing? Or is it the pleasant, unhurried exchange of personal and technical information between two friendly people situated a long distance apart?

If the term DX refers to the former type of QSO, then I for one find "working DX" a crashing bore. I know I can put a signal into his area whenever the band is open, as I have a reasonably good antenna with a couple of hundred watts of clean RF power, and the technique is not that complicated. I suppose if I had a very low-power home-made rig with a poor antenna, I would work someway but only if I was unable to stir up someone with whom I could talk freely and easily.

Coincidentally, I don't want to decry those who only chasing rare countries and adding up the number of countries worked; our hobby has very many facets to it and each of us is entitled to choose which he enjoys most. But this chasing of new countries does not come under my heading of "DX", as a new country popping up on one's doorstep is counted in just as eagerly as an amateur operating from a small rock in mid-Atlantic!

Not only do I find the "hullo and goodbye" type of contact of no interest but they are so often followed up with a card through the Bureau! This despite the fact that I never, or only very rarely, say that I will QSL. I spend quite a lot of my spare time on the air and probably have at least 50 or more stations in my log during any week. It embarrasses me somewhat that I allow most, if not all, of the resulting cards to go unanswered. I much prefer to spend my available time listening or working on the air, followed, in quite a few cases, by an air-mail letter to the amateur concerned. Perhaps I am being selfish in this but I fail to see the value of a QSL card now that world-wide contacts are so easy for us to come by. ■

DIVISIONAL NOTES

MODERN CONDENSED VERSION

VK2

In the last issue there was a notification that the AGM of the VK2 Division would be held in March. Due to insufficient nominations to form a new Council the AGM will be put back a month while new nominations are called. The new date set for the AGM is 28th April, 1978. The notice and other details are contained in the VK2 Division mini bulletin enclosed in this AR.

The Division is to discontinue the Morse Tape loan service due to declining use. However, the Novice and YRS section of the Division's Education Service has a basic to Novice level of 2 x C60 cassettes and an instruction booklet for $6.50 posted. In addition there is a tape dubbing facility available for various speeds of code. Details from the Divisional Office, 14 Atchison St., Crows Nest 2065.

For many years the Division has conducted the Slow Morse training sessions on the 60 metre band under the call VK2BWI-P. The frequency of 3550 kHz is coming under interference from the increasing use of the Novice portion of this band. Consideration is being given to a frequency change, somewhere round 3535 kHz.

VK2WI — Dural is now providing some of the HF coverage for the morning broadcast (11 a.m. Sunday) with some recently obtained high powered AM transmitters. ■

INTRUDER WATCH

Alf Chandler, VK3LC

ALL AMATEUR BANDS SLASHED BY HALF

How would you like to read that caption in "Amateur Radio" late next year? I could happen, you know! The intruders that are so prevalent in our bands are probably there because they do not have sufficient frequencies of their own to operate in. They find that the Amateur bands are so easy to occupy. They don't get hounded off as they do if they get on other frequencies. For instance, say an intruder picked a frequency of the Marine Mobile Service, there would be so many complaints that it would be removed quick smart. Unfortunately, that is not the case with the Amateur Service. There is no avalanche of complaints from amateurs. As a matter of fact, you can count them on one hand. What a sad state of affairs!

As I write this column I am listening to a point-to-point CW transmission on 14251 kHz, the time being 0900Z. The strength of the signal is 9+, and full break-in is being employed, five letter-number code groups with barred letters. I cannot hear the other stations, so I presume it is on another frequency. Two days ago the same signal could be heard on 14204 kHz, but the time was 0230Z. The bearing was 345° ex Melbourne, and I am of the opinion that the transmission originates in Indonesia, but no call sign was given while I was listening. Would members listen at various times for these transmissions? Try to get a call sign or some identification, and you may find it on any segment of the CW portion of the 14 MHz band.

In "Electronics Today" International on page 35 of the February issue is a very interesting and thought provoking article. It is entitled "OTH-B Radar — In Defense of Australia". Perhaps some of the P9 pulse transmissions that have been reported in our bands are not coming from the USSR after all, who knows? However, next time you hear the "woodpecker", get a bearing on it and report your findings to your Divisional IW co-ordinator. Cross bearings may put the location in a very different spot ot where we thought it should be! I have heard a higher pitched pulse in the 14 MHz band. ■

CONTESTS

Kevin Phillips, VK3AUQ
Box 87, East Melbourne, 3002

CONTEST CALENDAR

April		
	1/2	Polish "SP" CW Contest
	1/2	Tennessee QSO Party
	1/3	ARCI QRP QSO Contest
	8/9	Swiss "H22" Contest
	11/12	DX YL to NA YL CW Party
	15/16	County Hunters SSB Contest
	15/16	Common Market DX Contest
	15/16	Polish "SP" Phone Contest
	22/23	Bermuda Contest
	25/26	DX YL to NA YL Phone Party
	29/30	Dutch "PACC" Contest
May		
	6/7	Vermont QSO Party
	13/14	USSR "CQ-M" Contest
	20/21	Michigan QSO Party
	27/28	Francophones Countries Contest

POLISH DX CONTEST

CW April 1-2, Phone April 15-16. Starts at 1500 GMT on Saturday and finishes 2400 GMT Sunday.

Poland is divided into 49 Provinces (Wojewodztwo). Two letters will be sent by the SP stations to denote their Province. Their are three categories, single operator single and all band, and multioperator all band only; also SWL.

Exchange RS(T) plus a 3 figure QSO number for foreign stations. Polish stations will send RS(T) and their WOJ (i.e. 579KA). Each QSO with an SP/SQ/3Z counts 3 points. Each different Province (WOJ) worked counts as a multiplier and can be claimed once only (max. of 49). Final score is the sum of QSO points multiplied by the number of Provinces worked. The same station may be worked on each band for QSO points, but only once for a WOJ.

Awards are Certificates to the top scorers in each category and mode, in each continent, each country, and each call area of Australia, Canada, USA and USSR.

Use a separate log sheet for each band, and include a summary sheet with the scoring and your name and address in block letters. A signed declaration is requested, and disqualification rules for excessive duplicate contacts, and etc., will be enforced.

Entries must be post marked no later than April 30 for CW and May 11 for Phone. They go to PZK Contest Committee, P.O. Box 320, 00-910 Warszawa, Poland.

ROSS HULL MEMORIAL CONTEST RESULTS

		7 day	48 hour
(a)	Open		
	VK2HZ	520	230
	VK3VF	254	224
(b)	Phone		
	VK2YDY	1022	290
	VK3OT	4720	1671
	VK4DO	3462	1256
	VK4ZRF	1440	542
	VK4ZRQ	1099	399
	VK4ZJP	939	404
	VK4LX	150	
	VK7ZAH	360	
	VK8ZGF	1415	755
(c)	CW		
	VK4XA	370	130

■

HAMADS

- Eight lines free to all WIA members. $9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Commercial advertising is excluded. Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

FOR SALE

Collins 30S1, immaculate condition, completely overhauled recently by Collins in Melbourne, new 4CX1000A. Roth Jones VK3BG, 23 Gaudion Road, Doncaster East, Vic. 3109.

Novice EA 10W AM 80m Tx (inc. CW xtal), $60; EA 130 Rx 40-80m, $60 or $110 the lot. N. Mattick VK2ZLL, Hill Top, Hargraves, N.S.W. 2850.

Standard SR-C146A 2m FM 5 Ch. hand held Tcvr with leather case, AC charger, Ilex antenna and external mic., mint condition, in original packing, $250. VK3BFB. Ph. (03) 93 1638.

Icom IC22 2m FM Transceiver, 40, 50, R2, R4, R5, R6, R7, R8, $150, plus 0-15V, 6A, adjustable power supply, cct. Nov. AR, $50. Adrian Clout VK2BFN, QTHR. Ph. (047) 58 6797.

AR's, 1960 to 1977, 50 Practical Electronics, 1965 to 1969, 77 Practical Wireless, 1968 to 1975. Best offers. VK4ZAL, QTHR.

Yaesu FT75B, FP75B, AC PS and DC, 75B, DC PS with twelve xtal freq. and instruction book, as new, $450. VK2JD, QTHR. Ph. (02) 639 6020.

Shack clear-out — recently married! TR220G, fitted with nicads and ch. 2, 3, 6, 7, 8 and 40. Charger supplied. Also available matching power-booster raising output to 10W. Price $200 ONO; 2m FM Selwa SV230 25W Tcvr, ch. 2, 4, 6, 8, 40, 50 and 51, slightly modified, price $100 ONO; Pair B70s microwave army tcvr, operating around 3.5 GHz, these complete with AC power supply, $90; Trio 6m tcvr, fitted with crystals operating between 50-52.5 MHz, all valve, output approx. 20W, as this troubled by intermittent fault, would sell for $100. M. Goode VK3BDL. Ph. (03) 61 2701 bus, (03) 99 1806 AH.

Antenna Noise Bridge Omega Model TE7-02, up to 300 MHz, with fittings, $40; Hy-Gain 204BA 4 el. 14 MHz yagi with Hy-Gain BN-86 balun and 100 ft. RG8U antenna cable, $225; Surveyor 23 ch. AM CB radio, $40; new U.S. manuf. 12V DC bl-linear amplifier 3-29.5 MHz, 8-20W drive for 160W PEP output, using pair Motorola MRF453 power transistors, very well made, $200. VK2JO, QTHR. Ph. (02) 36 2981.

Tx HF 60-10m SSB, AM CW, with PS and circuit, made from ARRL, $50; 20m mark mobile helical whip, $15. VK3ZRO. Ph. (03) 99 3333.

Hallicrafters SX101 Rx, VGC, $210; HB 7 MHz Rx with PSU, $15. VK3AWD, QTHR. Ph. (03) 338 8574 AH.

Various Breadboard Vintage Wireless Component Parts, 1925-30 era, assorted B/C coils — variable condensers, dials, rheostats, variocouplers and meters, also WWII and earlier valves. Sale or Swap. SAE for list. A. Shawsmith, 35 Whynot St., West End. Qld 4101. Ph. (07) 44 6526.

Vials Ken KP202 and Tone Burst, 4 UK and European repeaters, 1 Simplex Ch., handy over there. Cheap. VK2BDT, QTHR. Ph. (048) 21 5036.

Yaesu FT101B, excellent condition, $550. VK5DL, QTHR. Ph. (08) 79 7901 (bus.) and ask for Tony Dexter.

Yaesu FTDX401 Tcvr, 560W PEP input, in immaculate condition throughout, complete with manual, $425.00. Belcom Liner 2m SSB rig, 12W PEP out, noise blanker, etc., in excellent condition, $160.00. Ray Price VK3AWQ, QTHR. Ph. (056) 74 1351.

Kenwood TS820 with digital readout, 12 months old, in mint condition, little used, $950. VK3ARD, QTHR. Ph. (03) 277 3954.

A Complete Morse Package, comprises two C60 cassettes, exercises and tests with a programmed learning manual, $6.50 posted. N.S.W. WIA Education Service, VK2ZCA, C/- P.O. Box 109, Toongabbie, 2146.

Europa B 2m Transvsrter, all modes — 180W input, 28 MHz, IF, $180 ONO. Trio 7200G, 2m FM rig, R2, R8, Ch. 40, Ch. 50 plus another dozen assorted xtls, plus 50W amplifier, $180. VK7CCC, QTHR.

Telequipment D61 Oscilloscope, 10 MHz, 10 mV, dual trace, with 2 x 1 probes and handbook, $325. Vic McDonald VK3ADQ, QTHR. Ph. (03) 850 6859.

ZL Repeater xtals, complete set chans. A, B, C, D for Ken KP202 hand-held FM transceiver, $40. Jim Preston VK6JP, QTHR. Ph. (09) 364 1779.

Self-Supporting Tower — Crank down tilt over, puts beam at 58' or on ground — no guys, double geared winch, take highest winds, $850. VK6HP, QTHR. Ph. (092) 450 4379.

AWA MR6 2m Carphone, Ch. 2 and 8 rpt. Ch. 40, old Ch. A, working, $50. 2 PA amplifiers, 60W and 30W, $25.00 each. Osker Bloc SWR meter, $50.00. S. Castle, 6 Gray Place, Kings Langley, NSW 2147 or on Sydney 2 metres VK2ZSC.

Signal Generator, No. 15, Marconi, Model TF801A, 10 MHz-300 MHz, 4 switched ranges, 0-99 dB attenuator, internal, external, modulation (sine or square or pulse), $140.00. Doug Johnson VK3YMG, 25 Verney Road, Shepparton, 3630. Ph. (058) 21 2309.

Uniden 2020 SSB Transceiver, first class condx., unused, with manual and servicing notes, $700 ONO. Hy-Gain all band vertical antenna, 18 AVT, with tuning and application notes, $100 ONO. Type 15 Teletype WGK, $50 ONO. VK2ZQH. Ph. (02) 498 7867 AH, (02) 270 4593 bus.

6m National Tcvr, portable AM/FM, battery or external P/S, 1 or 3W output, VFO control, tuneable 50-54 MHz, $195.00. Ken hand-held 2m Tcvr, complete, $150.00. Realistic AX190 communic. Rx in box, $190.00. Would swap any single item for solid state 2m car transceiver of equivalent value. VK3ZPV, 122 Mary Ave., Wheelers Hill. Ph. (03) 561 4885.

Estate Late VK2TA. FT2 Auto, $150. HT32, $100. SX115, $300. SR150 C/W mains and DC supplies, $300. Hammarlund HX500 Tx, $200. HQ170 Rx, $200. AVO meter EA113, $125. BC221 Freq. Meter, $45. Funke Valve Tester, $30. Drake Wattmeter, $20. Dynamic transistor tester, $20. Contact Pat Ashby, Ph. (02) 57 5033.

Toroids as on P.581 of 1977 ARRL handbook, take legal power 3-30 MHz, $7.55 ea. plus p&p 40c for one, 60c for two. Geoff Forrest VK3AGF, QTHR. Ph. (03) 379 6524.

Vintage Radio Books: Elementary Principles of Radio/Telegraphy, pub. 1917, parts 1 and 2; How to Conduct a Radio Club, pub. 1917; Practical Amateur Wireless Stations, pub. 1920; ARRL Handbooks 1929 & 1936, also other handbooks; QST from 1927 to 1971. All in good condition. Offers to Geoff Vaughan, VK2FY. Ph. (02) 602 9043 (ex. VK2ZYC, QTHR).

Antenna Tuners, 160-10m, one only each SST, T1 random wire tuner 4¼" x 2 3/8" x 3" at $39.95 plus p&p 60c and T2 for any coax fed antenna or random wire 5¼" x 2¼" x 2½" at $64.95 plus p&p 60c. Both brand new, manfs. samples, both handle 200W output. As advertised in Ham Radio, OST, etc. Geoff Forrest VK3AGF, QTHR. Ph. (03) 379 6524.

Computer Power Supplies: 2 units only, both working. Silicon technology unit, +20V at 4.5A, +10V at 5A, —10V at 5A, —20V at 1.6A, $50 ONO. Germanium Beast, +30V at 1.5A, +12V at 1A, +10V at 1A, +8V at 1A, +4V at 0.5A, —8V at 1A, —11V at 0.25A, —30V at 1.5A and —90V, $25 ONO. Kris McLean VK2AJS. Pr. (02) 604 4137.

FT620 6m SSB/AM Transceiver, plus homebrew 146 linear/FET preamp. and associated AC PSU, $365 the lot. Also transformer for Scope soldering irons, 30A at 3.3V intermittent rating, $7. Alan Woods VK3ZMN, QTHR. Ph. (03) 544 9955, ext. 34.

Digital Readout for FT101, PC boards (see article January 1978 AR), now available from the author. 2 boards tin plated and drilled, single sided, $18, including detailed layout etc. and postage. Keith Gooley VK2BGZ, QTHR. Ph. (02) 61 6791 bus, (02) 908 2754 AH.

Transverter, 11m to 80m, will cover full 80m band on 23 channel CB set, $60 ONO. Richard Cowles VK2ANB. Ph. (02) 699 9403 AH.

Galaxy 5 Transceiver, 80-10m, good order, with P/S, manual, circuit, suit novice, less mic. ant. relay wants attention (it's not burnt out), $200. Vinten MTR13, 6 chs.: 2, 3, 4, 7, 8, 40, very clean, also MTR12, Ch. 52-524, very clean. Any reasonable offer, will separate. Steel wind-up tower, goes 75 feet, want a little attention, $65. VK3FO, QTHR. Ph. (054) 75 2378.

Kenwood TS820S, digital readout, with mic., little used, mint condition, in original carton, $925. VK3ACN, QTHR. Ph. (054) 42 1288 bus.

FT101 Transceiver, as new, with CW filter, 160 and 11m, fan, spare Rx front end, $550. VK1VP, QTHR.

WANTED

Collins Filter for 75S3B 500 to 750 Hz. Roth Jones VK3BG, 23 Gaudion Rd., Doncaster East 3109.

Trio 9R59DS Rx, reasonable condition, preferably going. N. Mattick, Hill Top, Hargraves, N.S.W. 2850.

Transceiver HF SSB, working or otherwise, for blind amateur. C/- VK2JO. Ph. (02) 36 2981.

FV400 Ext. VFO for FTDX400 frequency mater, AC supply pref., ch. 7 xtals for MR6, Vibroplex or similar key. VK3LP, QTHR.

FL400 Yaesu Tx, details and price to P. Squire VK2NMG, Box 5, Quirindi, N.S.W. 2343.

Communications Rx, valve type o.k., accuracy to within 5 kHz, HF band, under $100. R. Silcock VK4NBC, QTHR. Ph. (074) 62 1294.

Padder Condenser for 3-6 MHz command Rx. Would consider going, butchered or cannibalized set. Also up to 2 24 gene motors for same. John Mackie VK2ZDM, Hillston. Ph. 069 6711 and ask for me.

B-60 Microwave link. Doug Johnson VK3YMG, 25 Verney Road, Shepparton, 3630. Ph. (058) 21 2309.

HF Transceiver FT200 etc., under $400 or will swap SX101 Rx with cash adjustment. VK3AWD, QTHR. Ph. (03) 338 8574 AH.

Collins 75S-3C Rx, Collins 32S-3A Tx, 516F2 AC power supply, Collins KWM-2, 2A transceiver, must be mint condition, preferably round emblem, reasonably priced. VK2JO. Ph. (02) 36 7756.

Radio and Hobbies Magazines, pre-1960, 69 copies required to complete my collection and enable them to be bound into volumes. Jim VK3ZKK. Ph. (03) 870 1745.

Replacement Tube for Telequipment Type D52 CRO. T. Harkness, 38 Dunblane Road, Noble Park. Ph. (03) 546 9176.

SILENT KEYS

It is with deep regret that we record the passing of —

Mr. A. E. BRUCE	VK5NLS
Mr. A. D. PRIDGEON	VK3ZCP
Mr. K. J. WILLIAMS	VK2XD
Mr. W. H. SORENSEN	L40669
Mr. DUDLEY McDONALD	VK4MY
Mr. ALAN J. SUTHERLAND	VK4AKY
Mr. A. J. SUTHERLAND	VK4AKY

"NED" WHITE VK2HA

The passing of Flt Lieut. Elwyn, Boyce ("Ned") White M.B.E., owner-operator of amateur radio VK2HA, at hospital on the 30th January last not only leaves a "silent key" but adds a glowing new tribute to Amateur Radio in both peace and war.

"Ned", as he was generally known on the air, had a nick-name which he earned during the Middle East conflict and which stuck to him all through the war. The nick-name was "Cliffy" which is an Arabic title well known among every member of the Middle East Forces, and referred to "Ned's" uncanny ability to unearth the whereabouts of carefully hidden enemy stores of radio parts, valves etc.

To his family and friends, we extend our deepest condolences.

From Frank Carey VK2AMI

DUDLEY McDONALD VK4MY

"Dud", who just missed his 70th birthday, was well known in the early days of broadcasting, working at 3LO and 3AR, Melbourne.

He decided to take up amateur radio as we know it about 1932 as VK3DM. With this call sign and VK4MY since 1964, Dud filled his shack walls with almost every certificate that became available to DXers and old-timers.

His main operations were CW, which he enjoyed working to all, every night up to his final day.

Our sympathy to his wife and her sister.

Peter H. Brown VK4PJ,
Hon. Secretary Qld. Division.

WWII Communications Receivers and any Spark or pre-war II gear and parts, morse keys, and sockets for 813 valves, cables or plugs for AWA No. 11 set. Write A. Shawsmith, 35 Whynot Straet, West End, Brisbane, Qld. 4101, or ph. (07) 44 [illegible].

SSB HF Transceiver or separates wanted, 10-[illegible], preferably Collins, Drake, Heath, Galaxy, Hallicrafters. KV2JO, GPO Box 5076, Sydney, N.S.W. 2001. Ph. (02) 36 7756.

beginners in Electronics — sample the famous NSW YRS texts — Elementary I or II Theory Notes ($1.00 posted); or the new 50 Projects Text ($1.50 posted). VK2ZCA, Services Officer, C/- PO Box 109, Toongabbie, 2146.

Collins KWM-2A Transceiver, 516F-2 power supply, 312B-5 VFO, mint condition only, Melbourne replies only. VK3BR, QTHR.

Transmitter, old fashioned, like KWS-1, CE-200V or similar. Price and condition to VK1VP, QTHR.

TUITION

Novices — study for your full AOCP licence using the "B course study guide". In 15 sections, it takes you through the topics with self-testing questions. Used along with either ARRL or Radio Handbook by Orr you can convert to full or limited AOCP. Don't miss out!! Reasonably priced at $4.00, postage paid Orders to: Ann Davis VK4AYL, P.O. Box 200, Alderley, 4051.

Morse Code — The now famous "Sound Only Method" of learning the morse code has been further upgraded. New edition of cassette lesson now on C90. The notes "Learning the Morse Code for Amateur Radio Purposes" now published in book form — 60 cents. The new C90 lesson and booklet $4.50, plus 60 cents postage, from Roger Davis VK4AAR, P.O. Box 200, Alderley, 4051.

ARE YOU A FRUSTRATED KNOB TWIDDLER ?

ICOM IC-22S FM transceiver Price $279

Many other synthesised digital readout rigs are excellent for fixed portable or base station operation – as a mobile unit they fall down on several counts.

1. Difficult to tune when driving
2. Difficult to see readout when driving
3. Difficulty in memorising frequencies when selecting a repeater or simplex.

Image (when belting along at 100Km/hr) the following scenario:

1. VK3XXX says "QSY repeater 7".
2. You say – "er, roger". (think R7, is it 146.95 or 146.75 receive – how many clicks from where I am to whatever I think it is – do I have to press the 5KHz button?)
3. "Oh!. QRX one"! (Sorry officer, I didn't see him as I was tuning my radio!!)

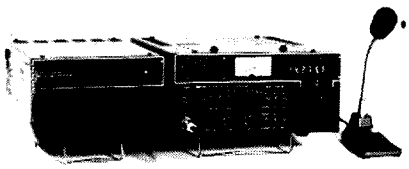
So-o-oo . . . that leaves you with the IC22S:

- * easy channel selection – you know where they are, and you can arrange channels exactly where you need them.
- * Diodes replace crystals.
- * Reverse repeater at a flick of a switch.
- * Add a scanner.

It's Crystal Clear

The IC22S comes complete with mic, mobile bracket and manual plus VICOM 90 day warranty. Ask yourself the question. Why IS the IC22S the best choice?

ICOM'S DIGITAL ALL SOLID STATE
HF TRANSCEIVER



- All Solid State, even the finals
- 100W Continuous Duty on All Bands, All Modes
- All Bands 1.8 ~ 30MHz
- USB, LSB CW, CW-N(Narrow), RTTY
- Double Balanced Schottky Diode Mixer used in both receive/transmit
- Dual built-in individual Digital VFO's offer split frequency operation
- ICOM's unique Pass Band Tune
- VOX, Semi break-in CW, RIT, AGC, Noise Blanker
- Built-in Speech Processor
- Full Metering
- Extremely compact
- Digital readout and all filters built in
- Built in DC power supply
- Optional AC power supply/speaker
- Full line of accessories to come

IC701

ICOM

IC701 TRANSCEIVER $1160
IC701PS optional AC supply $239

MICROPHONES

VM-1 ptt lowZ, noise-cancelling	$8.90
VM-2 base with preamp, low Z	$29.80

Antennas!

You know you can count on

hy-gain

Hy-Quad 2el 10/15/20m	$ 299
TH3Jr tribander, 3el	$ 199
TH3MK3 3el, 10/15/20	$ 269
18AVT/WB 80-10m trap vertical	$ 139
14AVQ/WB 40-10m trap vertical	$ 99
TH6DXX Thunderbird 6el tribander	$ 345
204BA 4el 20m monobander	$ 249
203BA 3el 20m monobander	$ 190

TWO METRES

ARX-2 Ringo Ranger base antenna	$49
AS210BN twin 10el 2m beam	$ 119
42S ¼ wave mobile whip with cable	$14
82D wave mobile whip with cable	$26

TRAP VERTICALS

V5Jr 6.7m high, 80-10m, no guys	$ 129
V4Jr 4.25m high, 40-10m, no guys	$ 95

TRAP DIPOLES

Midy VNB 80 thru 10m, 23m long.	$ 99
AL48DXN 40/80m, 2Kw pep max.	$ 59

Warning: The law requires that a licence be held for all transmitting equipment. Purchasers may be asked to provide evidence that he/she is the holder of an appropriate certificate of proficiency. Prices and specifications are subject to change without notice.

ALL-MODE for TWO NOW $750

ICOM IC211 2m fm transceiver
The new IC211 from VICOM is the last word in digital 2m, all-mode transceivers. Fully synthesised in 100Hz or 5KHz steps, has dual tracking, optically coupled VFOs with 7 digit LED readout. One knob controls all frequencies. Modes fm, usb, lsb, cw. Internal 240vac and 13.8vdc power supply. Comes complete with VICOM 90 day warranty.

ICOM

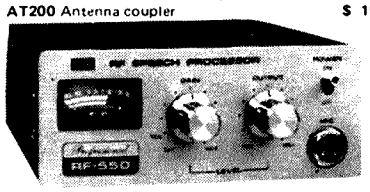
IC202E 2m ssb portable transceiver	$ 219
IC502 6m ssb portable transceiver	$ 219
IC245 2m fm digital mobile transceiver	$ 450
IC215 2m fm portable with 9 chs. installed	$ 219

YAESU

FT101E HF transceiver	$ 849
FT7 HF mobile solid state	$ 569
FL2100B HF linear amplifier	$ 578

KENWOOD

TS820S HF digital transceiver	$1105
TS520S HF digital transceiver	$ 705
VFO820S vfo for TS820S	$ 155
TV502 2m transverter	$ 260
TV506 6m transverter	$ 229
MC50 high Z desk mic.	$ 55
MC10 high Z hand ptt mic.	$ 15
TL922 linear amplifier 2Kw input	$1045
AT200 Antenna coupler	$ 159



DAIWA RF SPEECH PROCESSORS
Daiwa have introduced a new range of RF speech processors which are simply attached into the microphone line. Two new models are available, model **RF440** which features a phase shift network and model **RF550** which utilises a crystal filter. The processors are a suitable alternative to a linear amplifier – up to 6dB gain (4 times) improvement on the signal can be expected! Both models feature 240vac/13.9vdc operation and include compression level monitoring via a front panel meter. Impedance is switchable 50K/600ohms with distortion better than 3%.

Model RF440 (phase shift)	$119
Model RF550 (crystal Filter)	$159
Model MC330 (audio compressor)	$71

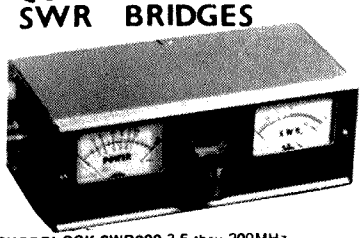
MORSE KEYS

HK702 deluxe key with marble base	$ 35
HK708 economy key	$ 19
HK706 operators key	$ 20
MK701 manipulator	$ 29
EK103W electronic keyer	$ 159

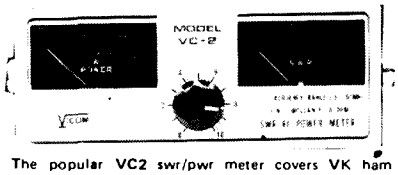
STATE OF THE ART

Ic211

QUALITY SWR BRIDGES



OSKERBLOCK SWR200 3.5 thru 200MHz, 2/20/200/2000w pwr $ 75



The popular **VC2** swr/pwr meter covers VK ham bands plus CB. Each unit fully calibrated for high accuracy with power measurements 12/120w. Complete with informative instructions. Price $34.

SW410A 140 thru 500 MHz, 20/120w, direct reading – no freq. adjustment required $ 99

SW210A 1.8 thru 150MHz 20/200w, direct reading $ 79

LOW PASS FILTERS

FD30M 32MHz cut-off, 1Kw max.	$ 30
FD30LS 32MHz cut-off, 200w pep max.	$ 20

ROTATORS

ART8000 super heavy duty	$ 478
ART3000C heavy duty with control box	$ 199
AR22XL light duty, OK for small beams	$ 109

FOR THE SWL

Yaesu **FRG7** receiver	$ 349
Barlow Wadlay portable with fm	$ 339
UP-3 receiver preamplifier	$ 35
Listener-3 antenna for short wave	$ 49
NRD505 professional receiver	$2499

FOR PERSONALISED SERVICE & CONSTANCY . Dealer enquiries invited

VICOM

139 AUBURN RD.
AUBURN VIC 3123

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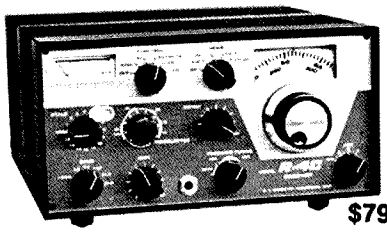
Perth	446.3232	Canberra	82.3581
Adelaide	43.7981	Brisbane	38.4480
Gold Coast	32.2644	Hobart	43.6337

DRAKE®

C-Line Amateur Equipment



$795

Drake R-4C

Solid State Linear permeability-tuned VFO with 1 kHz dial divisions. Gear driven dual circular dials. High mechanical, electrical and temperature stability.

Covers ham bands with crystals furnished. Covers all of 80, 40, 20 and 15 meters, and 28.5-29.0 MHz of 10 meters.

Covers 160 meters with accessory crystal. In addition to the ham bands, tunes any fifteen 500 kHz ranges between 1.5 and 30 MHz, 5.0 to 6.0 MHz not recommended. Can be used for MARS, WWV, CB, Marine and Shortwave broadcasts.

Superior selectivity: 2.4 kHz 8-pole filter provided in ssb positions. 8.0 kHz, 6 pole selectivity for a-m. Optional 8-pole filters of .25, .5, 1.5 and 6.0 kHz bandwidths available.

Tunable notch filter attenuates carriers within passband.

Smooth and precise passband tuning.

Transceive capability; may be used to transceive with the T-4X, T-4XB or T-4XC Transmitters. Illuminated dial shows which PTO is in use.

Usb, lsb, a-m and cw on all bands.

Agc with fast attack and two release times for ssb and a-m or fast release for break-in cw. Agc also may be switched off.

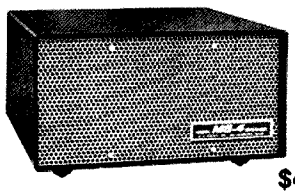
New high efficiency accessory noise blanker that operates in all modes.

Crystal lattice filter in first i-f prevents cross-modulation and desensitization due to strong adjacent channel signals.

Excellent overload and intermodulation characteristics.

25 kHz Calibrator permits working closer to band edges and segments.

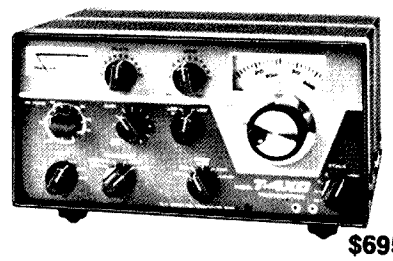
Scratch resistant epoxy paint finish.



$47

Drake MS-4

Drake MS-4 Matching Speaker for use with R-4, R-4A, R-4B and R-4C Receivers. (Has space to house AC-3 and AC-4 Power Supplies).



$695

Drake T-4XC

Solid State Linear permeability-tuned VFO with 1 kHz dial divisions. Gear driven dual circular dials. High mechanical, electrical and temperature stability.

Covers ham bands with crystals furnished. Covers all of 80, 40, 20 and 15 meters, and 28.5-29.0 MHz of 10 meters.

Covers 160 meters with accessory crystal. Four 500 kHz ranges in addition to the ham bands plus one fixed-frequency range can be switch-selected from the front panel.

Two 8-pole crystal lattice filters for sideband selection.

Transceives with the R-4, R-4A, R-4B, R-4C and SPR-4 Receivers. Switch on the T-4XC selects frequency control by receiver or transmitter PTO or independently. Illuminated dial shows which PTO is in use.

Usb, lsb, a-m and cw on all bands.

Controlled-carrier modulation for a-m is compatible with ssb linear amplifiers.

Automatic transmit-receive switching. Separate VOX time-delay adjustments for phone and cw. VOX gain is independent of microphone gain.

Choice of VOX or PTT. VOX can be disabled by front panel switch.

Adjustable pi network output.

Transmitting agc prevents flat-topping.

Meter reads relative output or plate current with switch on load control.

Built-in cw sidetone.

Spotting function for easy zero-beating.

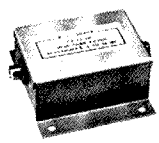
Easily adaptable to RTTY, either fsk or afsk.

Compact size; rugged construction. Scratch resistant epoxy paint finish.

High Pass Filters for TV Sets

provide more than 40 dB attenuation at 52 MHz and lower. Protect the TV set from amateur transmitters 6-160 meters.

Drake TV-300-HP
For 300 ohm twin lead **$13**



Drake TV-75-HP
For 75 ohm TV coaxial cable; TV type connectors installed **$17**

$165

MN-4 (Model No. 1507)

$310

MN-2000 (Model No. 1509)

Drake MN-4 & MN-2000 Matching Networks

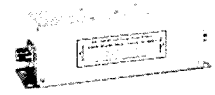
• Integral Wattmeter reads forward power in watts and VSWR directly; can be calibrated to read reflected power • Matches 50 ohm transmitter output to coax antenna feedline with VSWR of at least 5:1 • Covers ham bands 80 thru 10 meters • Switches in or out with front panel switch • Size: 5½"H, 10¾"W, 8"D (14.0 x 27.3 x 20.3 cm), MN-2000, 14⅜"D (36.5 cm).
• Continuous Duty Output: MN-4, 200 watts; MN-2000, 1000 watts (2000 watts PEP) • MN-2000 only: Up to 3 antenna connectors selected by front panel switch.

TVI Filters

Low Pass Filters for Transmitters

have four pi sections for sharp cut off below channel 2, and to attenuate transmitter harmonics falling in any TV channel and fm band. 52 ohm. SO-239 connectors built in.

Drake TV-3300-LP

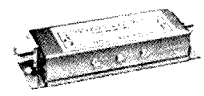


1000 watts max. below 30 MHz. Attenuation better than 80 dB above 41 MHz. Helps TV i-f interference, as well as TV front-end problems. **$32**

Drake TV-5200-LP

200 watts to 52 MHz. Ideal for six meters. For operation below six meters, use TV-3300-LP or TV-42-LP. **$32**

Drake TV-42-LP



is a four section filter designed with 43.2 MHz cut-off and extremely high attenuation in all TV channels for transmitters operating at 30 MHz and lower. Rated 100 watts input.

$19

Prices shown include Tax

Write, 'phone or call for technical information.

ELMEASCO Instruments Pty. Ltd.

P.O. Box 30, Concord, N.S.W. 2137.
Telephone: 736-2888.
Melbourne: P.O. Box 107, Mt. Waverley, Vic. 3149.
Telephone: 233-4044.
Adelaide: 42-6666; Brisbane: 392 2884.
Perth: 25-3144.

amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

VOL. 46, No. 5 MAY 1978

CONTENTS

COVER PHOTO

Jim Davis VK7NOW at the controls of his impressive Novice station. Further details on page 26.

Photo by Phillip Payne of "The Advocate", Burnie.

HAM RADIO SUPPLIERS

323 ELIZABETH STREET, MELBOURNE, VIC., 3000

Phones: 67-7329, 67-4286

Our Disposals Store at 104 HIGHETT ST., RICHMOND (Phone 42-8136) is open Mondays to Fridays, 9.00 a.m. to 5.00 p.m., and on Saturdays to midday.

WALKIE TALKIE

SPECIFICATIONS:

TRANSMITTER — Frequency: in 27 MC citizen band, 27240. Final input power: 100 mW (max.). Communication Mod.: (AM) balanced mod. Oscillator: Crystal controlled. Antenna: Vertical type, telescopic antenna, 37" fully extended.
RECEIVER: Receiving System: Crystal controlled superheterodyne system. Sensitivity: S/N 10 dB or better at 10 uV 5 mW output. Selectivity: Thermistor: D-32S. Power Supply: 006p 9V. Dimensions: H — 17.6 cm, W — 6.5 cm, D — 4.4 cm. Weight: 500g.
PMG approved.

PRICE $58.90 PAIR
Postage $2.40

POWER-SWR METER

This is an in-line and SWR meter tor ham radio and CB radio. This power meter indicates the output power of your transmitter and SWR meter reads the ratio of travelling power to your antenna and reflected back from antenna. Compact and inclined front design meet any radio operation desk.
SPECIFICATIONS — Range measured: Power meter 0-10, 100 watts, 2 ranges VSWR 1:1 — 1:3. Freq. response: 3-150 MHz. Impedance: 50 ohm. Dimensions: 70 x 98 x 100 mm. Weight: 900g.

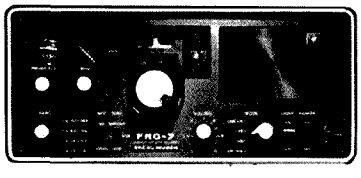
PRICE $38.90
Postage $2.40

PL-259 Plug W/Reducer	$1.50
PL-259 Plug W/O Reducer $1.80 (Adaptors 85c)	
SO-239 Chassis Socket	$1 50
Right-Angle Joiner	$2 75
"T" Connection	$3.50
PL-259 to R C.A. Adaptor	$2.75
Coax Joiner, female to female, male to male $2.75	
BNC Plugs	$1 95
BNC Sockets	$1 75
Belling Lee Plugs	75c
Balling Lee Sockets	50c
Belling Lee Joiner	85c
100 Metere Roll Hook-Up Wire	$4.50

All above items plus postage

YAESU FRG-7

THE RADIO FOR WORLD-WIDE LISTENING AT ITS BEST — 0.5-29.9 MHz COVERAGE SYNTHESIZED COMMUNICATION RECEIVER



The model FRG-7 is a precision built high performance communication receiver designed to cover the band from 0.5-29.9 MHz. Its state of the art technology offers an unprecedented level of versatility. The Wadley Loop System (drift cancellation circuit) coupled with a triple conversion super heterodyne system guarantees an extremely high sensitivity and excellent stability. It provides complete satisfaction to amateurs as well as BCLs with superb performance and many features such as RF attenuator, selectable tone, and automatic noise suppression circuit.

$338

BULK STORE *DISPOSALS*

AT 104 HIGHETT STREET
RICHMOND, 3121
Phone (03) 42-8136

NEW AWA-THORN TV TUNERS

Type ENR5758, fitted with 6GK5 and 6G57 valves.

$2 each plus P&P

NEW MAGNAVOX 53TS SPEAKERS

5" x 3" 8ohm, Ideal for small extension speaker for communications equipment.

$1.95 each plus P&P

CRYSTALS FOR CITIZENS RADIO

Channel No.	Freq. MHz	Channel No.	Freq. MHz
1	27.015	11	27.135
2	27.025	12	27.155
3	27.035	13	27.165
4	27.055	14	27.175
5	27.065	15	27.185
6	27.085	16	27.195
7	27.095	17	27.205
8	27.105	18	27.225
9	27.115	19	27.880
10	27.125	20	27.240

$7.50 PAIR — Postage 25c

CRYSTALS MADE TO ORDER

$9.50 — Postage 25c

HANSEN SWR6

POWER METER & FIELD STRENGTH INDICATOR

Handy for checking transmitter operation. Uses bridge method for SWR measurements. Simple and accurate operation. CM method employed for RF power measurement.

PRICE $22.00
Postage $1.80

100 METRE ROLLS SPEAKER WIRE

$11.90 per roll — Post free

2 STN INTERCOM and battery 9V $12 90
3 STN INTERCOM and battery 9V $18.90 ea.
4 STN INTERCOM and battery 9V $26.90 ea.

Complete with 60 ft. wire, ideal for garage, baby room, etc. — Postage $1.50

ARLEC PLUG-PACK

PLUG-IN POWER SUPPLY

Plugs directly into 240 volt mains supply power sockets and provides 12 volt 1 amp smoothed DC tor powering low voltage and battery operated equipment — Transceivers, cassette recorders, cartridge players, burglar alarms, electric models and toys, car radios, etc. 12 Volt 1 amp SEC approved, double insulated, overload protected.

PRICE $16.90
Postage $1.80

We also have a large range of **ELECTRONIC DISPOSALS EQUIPMENT**, including TRANSFORMERS, CABLE, TEST EQUIPMENT, TRANSMITTERS, METERS, etc.

You are invited to call in and inspect. **NO PARKING PROBLEMS A 104 HIGHETT STREET RICHMOND.** Phone 42 8136.

WE STOCK CB GEAR AS WELL AT VERY COMPETITIVE PRICES, INCLUDING ANTENNAS AND ACCESSORIES.

KEMTRONIC SSB1000

SSB/AM TRANSCEIVER
27 MHz CITIZENS RADIO SERVICE

The SSB 1000 embodies the latest in high frequency transceiver design techniques. It is designed to operate on either AM, USB or LSB. It is capable of transmitting and receiving on a total of 54 channels (18 AM, 18 USB, 18 LSB). The 18 channels are in accordance with the P&T Dept conditions for operation of the Citizens Radio Service.

NETT PRICE $220.00
Registered Post — $4.00

TRADIPER MODEL TE-15

The Model TE-15 Transistorised Grid Dip Meter is a very accurate instrument operating from a 9 volt battery power supply. Six plug-in coils are supplied with each unit, covering the frequency range of 360 kHz to 240 MHz.
The Model TE-15 can be used for a number of useful purposes. With the most common use as a Grid Dip Meter, can also be employed as a relative field strength meter. It is ruggedly constructed and very light in weight. Because ol transistorised circuit employed there is no need for an AC power supply as used in many other models. The Model TE-15 will certainly prove invaluable to radio amateurs.

PRICE $65.00
Postage $2.40

ARLEC PLUG-IN BATTERY CHARGER

Delivers 1 amp output at 12 volts. Designed to run continuously over long periods, will maintain a fully charged battery in peak condition or recharge flat battery. Double insulated for max. safety, electrically protected by fuffy automatic circuit breaker. No mains leads to get tangled, plugs directly into power socket. Comes with 3 metre battery leads fitted with clips. For use on 240V, 50 Hz supply.

PRICE $14.90
Postage $1.80

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9" x 6" SPEAKERS — brand new in cartons — 4 ohm impedance — ideal for car cassettes, radios, etc.

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10 FOR $3.00 — BULK BUY

MAIL ORDERS WELCOMED. Please allow pack and post on items listed on this page. If further information required send a stamped **SAE** for immediate reply from the above address. Larger items can be sent F.O.B. Due to circumstances beyond our control, prices quoted in this advertisement are subject to alteration without notice.

amateur radio

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QSP —

SPECIALIST ADVICE NEEDED

It is now some time since the three Regional Conferences of the IARU decided upon a common amateur radio position to be put forward to Administrations when considering WARC79.

Amateur radio societies throughout the world adopted the common position with details and a model paper drafted by the dedicated band of workers led by IARU President Noel Eaton VE3CJ. The work of this international group is a continuing process but the IARU as a whole and many member societies have become most anxiously aware that the preparations for WARC79 require specialised technical treatment.

To this end IARU has sought the very best advice obtainable throughout the world for the benefit of a great many countries unable to secure access to this kind of information. The IARU in this respect acts as a co-ordinating agency and members may be assured that no stones are being left unturned both at the national and international levels.

However, the recent meeting chaired by Noel Eaton VE3CJ recognised the need for specialist advice to be obtainable during the actual WARC itself at short notice on any unforeseeable questions.

Thus, any comments relating to WARC79 matters would be welcome in this context. Although tremendous thought has been put into considering every conceivable angle relating to technical matters, there always seems to be something not given the proper perspective in advance.

D. A. WARDLAW VK3ADW, Federal President. ■

WIRELESS INSTITUTE OF AUSTRALIA

Federal President: Dr. D. A. Wardlaw VK3ADW

Federal Council:
VK1 Brig. R. K. Roseblade VK1QJ
VK2 Mr. T. I. Mills VK2ZTM
VK3 Mr. J. Payne VK3AED
VK4 Mr. N. F. Wilson VK4NP
VK5 Mr. I. J. Hunt VK5QX
VK6 Mr. N. R. Penfold VK6NE
VK7 Mr. P. D. Frith VK7PF

Staff: Mr. P. B. Dodd VK3CIF, Secretary.
Part-time: Col. C. W. Perry, Mrs. J. M. Seddon and Mr. P. Simmons (AR advertising).

Executive Office: P.O. Box 150, Toorak, Vic., 3142. 2/517 Toorak Rd, Toorak, Ph. (03) 24 8652.

Divisional Information (all broadcasts are on Sundays unless otherwise stated):

ACT:
President — Mr. E. W. Howell VK1TH
Secretary — Mr. Ted Radclyffe VK1TR
Broadcasts— 3570 kHz & 146.5 MHz: 10.00Z.

NSW:
President — Mr. T. I. Mills VK2ZTM
Secretary — Mr. I. A. Mackenzie VK2ZIM
Broadcasts— 1825, 3595, 7146 kHz, 28.5, 52.1, 52.525, 144.1, Ch. 8 and other relay stations: 01.00Z. (Also Sunday evenings 09.30Z and Hunter Branch, Mondays 09.30Z on 3570 kHz and ch. 3 and 6).

VIC.:
President — Mr. S. T. Clark VK3ASC
Secretary — Mr. J. A. Adcock VK3ACA
Broadcasts— 1825, 3600, 7135 kHz — also on 6m, 2m SSB and 2m Ch. 2 repeater: 00.30Z (Also on Radio 3HA).

QLD.:
President — Mr. A. J. Aarse VK4QA
Secretary — Mr. W. L. Gielis VK4ABG
Broadcasts— 1825, 3580, 7146, 14342 kHz: 09.00 EST.

SA:
President — Mr. C. J. Hurst VK5HI
Secretary — Mr. C. M. Pearson VK5PE
Broadcasts— 1820, 3550, 7125, 14175 kHz; 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.

WA:
President — Mr. R. Greenaway VK6DA
Secretary — Mr. N. R. Penfold VK6NE
Broadcasts— 3600, 7080, 14100, 14175 kHz, 52.656 and 2m (Ch. 2): 01.30Z.

TAS.:
President — Mr. R. K. Emmett VK7KK
Secretary — Mr. H. E. Hewens VK7HE
Broadcasts— 3570, 7130 kHz: 09.30 EST.

NT:
Secretary — Mr. Henry Andersson VK8HA
Broadcasts— Relay of VK5WI on 3.55 MHz and on 146.5 MHz at 2330Z. Slow morse transmission by VK8HA on 3.555 MHz at 1000Z almost every day.

Postal information:
VK1 — P.O. Box 46, Canberra, 2600.
VK2 — 14 Atchison St., Crows Nest, 2065 (Ph. (02) 43 5795 Tues & Thurs (10.00-14.00h).
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 3535 Sat 10.00-12.00h).
VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton (Ph. (08) 254 7442).
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (incl. with VK5), Darwin AR Club, P.O. Box 1418, Darwin, 5794.

Slow morse transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

An Amateur Radio Community Service Announcement!

How to recognise the export quality set you should be getting for your money!

Are you concerned about warranty, after sales service, and spare parts availability for your purchase of amateur radio equipment? Would you pay for a transceiver and be happy to accept it without an English language instruction manual, made for operation only on 220V A.C. instead of the more usual Australian line voltage of 230-240V (250V in W.A.), equipped with a non-Australian standard (illegal) two core A.C. power cable, possibly less some features that may be considered normal or necessary by a conscientious factory authorised importer?

O.K., we believe we know the answers to these questions, but how can you identify the equipment?

First of all, check that your chosen dealer is a factory authorised agent or that he is an agent approved distributor. Is he prepared to spend a reasonable amount of time showing you the set, providing a genuine warranty, etc. or does he push a sealed carton under your nose with the suggestion that, e.g., "You are getting it cheap enough what more do you expect?"

Do ensure that your purchase of an A.C. operated transceiver is fitted with an Australian approved 3 core A.C. power cable and 3 pin plug. Look for the official approval numbers stamped on the cable and plug. Does it include an English language instruction manual? Amateur transceivers produced by the Yaesu Musen Co. Ltd. of Japan for authorised sale in Australia include the characteristic export blue and white covered English language manual, usually printed on glossy paper — not a black and white covered manual or a photo copy.

Check that the equipment is fitted with a 234V primary power transformer and carries the Yaesu factory 234V sticker, and that the serial number has not been removed or obliterated. As an example an authorised dealer imported FT-101E should include speech processor, cooling fan, crystals for all amateur bands 160M-10M with full coverage on all ranges, microphone, A.C. and D.C. power cables, accessory connectors, etc.

An FT-301S should have crystals installed for 80M-10M (28.5-29 MHz on 10M), reject control, connectors, microphone, VOX, crystal marker calibrator, etc.

in other words make sure that the set that you are purchasing is an Australian Standard export quality set and not an unauthorised imported ("bootlegged") job!

This space was donated in the interests of better amateur radio by Bail Electronic Services of Box Hill North, Melbourne, Australian Yaesu agent since 1963.

WIANEWS

REGULATIONS

A further letter from the Postal and Telecommunications Department arrived in March.

This was RB4/4/18 received on the 15th. This is the text —

Reference is made to your letter of 8 August 1977 concerning matters relating to the operation of the Amateur Service and in particular a request for permission for novice amateur licensees to use Variable Frequency Oscillator control.

The Department in investigating this matter agrees with the proposal and therefore is pleased to advise that, effective forthwith novice amateur stations may employ transmitter Variable Frequency Oscillator control.

This approval is on the understanding that the licensee of the novice amateur station shall take all steps necessary to ensure that emissions from his station are within the limits of the amateur frequency band authorised for novice station transmissions.

Would you please give this matter publicity through the avenues available to the Institute. Offices of this Department have been notified accordingly.

NOVICE EXAMINATION

WIANEWS in April AR reported a meeting with Departmental officers during February. A further meeting with them was attended on 16th March during which the Department presented the WIA with a new draft syllabus for the Novice exams under cover of letter RB4/4/4 of that date. This draft went some way towards meeting the Federal Education Co-ordinator's objections that the first draft received in February lacked depth.

Unfortunately the new draft introduced a number of subjects which did not appear in the February draft. Further negotiations ensued with the result that some of these new subjects were deleted but the Department insisted upon the retention of several others. When these further negotiations concluded on 21st March, the Federal Education Co-ordinator, Graeme Scott VK3ZR, and his assistants sat down and revised the carefully prepared WIA syllabus to conform with the "final" draft of the Departmental syllabus. The WIA syllabus then became a study guide to give some indication to instructors of the depth of teaching to be given to candidates bearing in mind that Novice theory deals in an elementary manner with the subjects concerned.

This study guide has been submitted to the Department for endorsement as suitable for Novice level candidates and will be published as soon as possible thereafter.

However, a problem still appears to remain concerning the Novice theory question bank. One batch of nearly 200 questions (without answers) prepared by Graeme Scott, assisted by John Kolm VK3YJK, Brenda Edmonds VK3KT, and Danny McManus VK3NG, were handed over to the Department at the meeting on 16th March. Another similar batch is under preparation. The questions were culled from many sources and were carefully scrutinised before being considered suitable for submission. The reactions of the Department are awaited.

Meantime letter 7/3/78 of 17th March arrived from the Department confirming the points discussed with them at the meetings on 23rd February and 16th March. This letter confirmed that the WIA syllabus would serve admirably as a study guide and would be endorsed for that purpose. It also confirmed that the WIA Novice exam questions would be used for inclusion in the bank of Departmental questions for setting Novice exams. Once this bank has been established there seemed no reason why they should not be published by the WIA to assist students, stated the letter.

Thirdly the letter stated: "a joint WIA/Department committee will be established to discuss the activities and administration of the Amateur Radio Service in order to resolve any difference of opinion which may arise from time to time". The suggestion was made that the committee should meet at an early date to examine

the issues raised in the submission to the Department of 8th August 1977 (published in AR September 1977).

1978 CONVENTION AGENDA ITEMS

Since this issue of AR will reach members after the Convention there is little point in quoting the Agenda Items received too late for inclusion in April AR. Nevertheless members might be interested in the general tenor of these items. VK1 Division submitted two items seeking discussion on enlarging the frequencies available tor Novices. VK3 Division submitted 7 items dealing with —

Contributions for WARC79 from non-members; handling of QSL cards tor non-members; common band segment for all grades of licensee; morse speed endorsements; Novice conditions; four tier licensing structure; RD contest SSB segment.

VK5 Division submitted 6 items on —

ATV calling channel on 2m; CB relations; Novices on WICEN frequencies; removal of log book requirement; engaging public relations firm; 10m beacons.

VK2 Division submitted 14 items —

25 kHz spacings on 2m; designation of numbers for 2m repeaters; review of 70cm band plan; 2m ATV liaison frequency; 70cm upper segment ATV frequency; common band for all licensees; 6m band repeaters; 10m band repeaters; band 4 TV segment; discuss Novice conditions; multimode stations one licence fee; compensation if bands lost; increased power for loss of 11m band.

This concludes the Agenda Items tor this Convention. A considerable range of other matters will be discussed during the debates on the various Annual Reports, as well as latest reports about WARC79 preparations.

MEDIA PUBLICITY

At the end of March much time and effort were expended in preparations for a 25 minute programme on amateur radio for showing on the HSV7 network's "This week has seven days" on dates later in April. Many amateurs were involved under the chairmanship of Peter Wolfenden VK3ZPA, Executive Vice-Chairman. It is hoped to obtain a videotape of this show to add to the Executive's small library of videotapes available for loan to Divisions and clubs. These include the ARRL publicity films in colour, and the "Aerial Circus" videotape which is currently being edited and improved.

POSTAL MOTION AND EDP

A postal motion circulated to Divisions, seeking covering approval of the expenditure of funds to convert the WIA programmes to the 6700 computer, was passed. The Executive was also examining the costs of an in-house computer but it is expected these will still be too great tor WIA requirements.

PUBLICATIONS COMMITTEE

One matter exercising the minds of Committee members is the dearth of material in AR suitable for Novices and SWLs. The reason is simple. AR is your journal. It cannot exist without articles and contributions by members. If there is very little suitable tor Novices and SWLs it is because no one is contributing useful publishable material for them.

HANDBOOK REVISION AND CUSTOMS

At the Executive meeting on 23rd March Jim Lloyd VK3CDR/1 agreed to undertake the task of handling this revision. Bill Colborne VK3BP agreed to undertake an Investigation into and give a report on the problems of Customs duties on amateur aerials and 70cm transmitting equipment. ■

QSP

SATELLITE ELECTROSTATIC CHARGES

"Communications satellites are usually placed in a geostationary orbit some 35,400 km above the earth, where local conditions are greatly influenced by the Ionosphere below and the magnetosphere above. Plasma gases (hydrogen, helium, oxygen) escaping from the magnetosphere bombard satellites in geostationary orbit with electrically charged particles, sometimes causing a static electricity build up of dangerous proportions. The static electricity can then cause arcing on the satellites' surface that in turn can damage solar power cells and thermal insulation; and can generate interference with transmission of signals, resulting in garbled information and spurious switching of spacecraft functions." Continuing this article in December 1977 Telecommunication Journal news is given of the intention by the USAF to launch a satellite in January 1979 to study such effects.

CANADIAN CB

December 1977 Telecommunication Journal quotes a Canadian Department of Communications release that more than 600,000 Canadians hold licences for the General Radio Service Citizens' Band (CB) radios. This is over twice as many as one year ago and GRS operators now outnumber all other classes of Canadian radio users combined.

ARRL THREATENED WITH $50 MILLION LAW SUIT

The ARRL has been threatened with a law suit claiming damages of $50 million. This has been due to the ARRL adopting an advertising policy known as The ARRL Code of Ethics.

This policy would involve refusing advertisements in QST from traders who sell amateur gear to non-amateurs.

A group known as the Communications Attorney Service has threatened the law suit as they claim the policy contravenes US trade laws.

This confrontation could mean heavy liabilities for the ARRL and echoes the recent reply published in AR in response to a letter protesting the sale of Amateur Linear Amplifiers in CB publications. From Jan. 1978 CQ.

OFFICIAL INTEREST

The photograph indicates the amount of interest DOC (Canada) have in communicating with the Amateur fraternity.

Both FCC and DOC make extensive efforts to have their field officers attend ham and CB conventions to facilitate good communications with the users.

Perhaps the Australian authorities could take a leaf out of their book!

Photograph supplied by Vicom International Pty. Limited.

AMATEURS AND CB

"The radio hobbyist should be given a friendly hand into amateur radio before he or she gets caught up in the ideas of modifying their CB, building beams, adding *linears and using any* frequency one desires (piracy). Such a state of affairs does not benefit either service. Within CB the first step is to know that a hobby called amateur radio exists, the second is to offer an opportunity to get involved in the hobby, and the third step is to become sufficiently enthusiastic so as to personally commit oneself to studying for the amateur licence. As the CB user becomes interested in radio as a hobby the VKCB club *members are able* to direct the *energies of* such enthusiasts in the right direction." Report of activities of the Amateur and Citizen Radio (VKCB) Club, August 1977 to February 1978.

OT's MEET AGAIN

On 14th March 1978, a CW QSO between VK2BWC and VK3TJ revealed that these two had met in Hong Kong on February 2, 1939 and had not seen or heard of each other since that date.

OSL 3B8DA

All stations wishing to QSL 3B8DA and 3B7DA are requested to forward SAE and IRC to: Alex Mootoo, 3B8DA, 39 Brown Sequard Ave., Vacos, Mauritius.

VK1 REPEATER STOLEN

A message from the President of the WIA ACT Division advises that the ACT Division's channel 7 repeater installation on Mt. Gininl was stolen on the night of 1st/2nd April. This was a home brew rig and members are asked to keep an eye and ear open respecting anything unusual concerning such a rig. Please advise WIA ACT Division, Box 46, Canberra, 2600, on any information.

NSW DIVISION MORSE TAPES

A message from the NSW Division is that the morse tape loan service has been discontinued. This service has been replaced by the sale of pre-recorded C60 cassettes with any speed 5 to 12 w.p.m. Send stamped, self-addressed envelope with $2 per cassette, stating morse speed required, to WIA NSW Division, 14 Atchison Street, Crows Nest, NSW 2065. Price is post paid.

RTTY CONTEST

Are you making preparations to participate in the RTTY Section of the VK/ZL/O DX contest on the 7th/8th October. This RTTY contest will be administered on behalf of the Executive by the New South Wales RTTY group. The rules will be published shortly. ■

AFTERTHOUGHTS

An error occurred in the circuit (Fig. 2) of "Modifications To The Yaesu FT-100B", page 10, March '78 AR. The two capacitors in series between the collector and base of the BC208 transistor are shown as 0.002 uF. The correct value for each capacitor is 0.022 uF.

A SOLID STATE VIDEO MODULATION SYSTEM

AR, JULY 1977, page 6

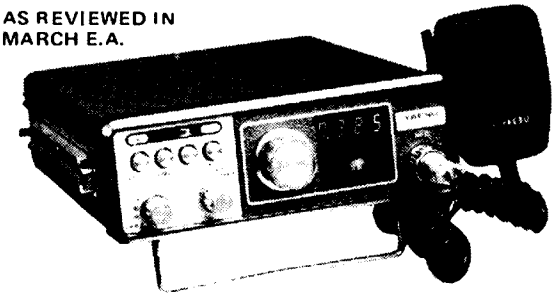
The 6.8k bias resistor, Fig. 2, should be returned to the collector of the MPS6514 transistor and not to the +12 volt rail as shown. ■

YAESU from DICK SMITH

WHEN YOU REALLY CONSIDER THE ALTERNATIVES – THERE ARE NONE!

COMPUTER TECHNOLOGY COMES TO VHF COMMUNICATIONS

AS REVIEWED IN MARCH E.A.



FABULOUS YAESU FT227R 2m FM MOBILE $335

WHAT ARE THE FREQUENCY SPLITS FOR REPEATERS?
Don't worry! Yaesu has computerised it. In addition to a conventional ±600kHz split, any transmitter offset frequency is memorised with the touch of a button.

WHAT WAS MY LAST FREQUENCY?
Don't check – a touch of a button will bring you back to the memorised channel instantly.

WHY ONE KNOB TO SELECT A CHANNEL OUT OF 800?
Yaesu utilises an 'OPTICAL COUPLING' system to select each channel in 10kHz steps and the channel may be offset 5kHz higher with the touch of a button. Thus 800 fully synthesised channels are provided with one knob and no rotary switches to get oxidised or noisy.

WHAT ARE THE OTHER FEATURES OF THE 227R?
Many. Just to name a few – tone burst accessed repeater operation; automatic final protection; busy channel indicator; high and low power output selection . . . we could go on & on.

WHY SETTLE FOR ANYTHING LESS THAN THE 227R?
The fabulous FT-227R. Yours for the low, low Dick Smith price of only $335.00. Cat. D-2890

GREAT CIRCLE WORLD MAPS: Ideal for the shack – based on Australian east coast. Mount under the rotator pointer for true bearings
Cat B-4502 . . . . . $3.00
CLUBS – Apply on your club letter-head and we'll send you a copy of the world map FREE! (Limit one per club)

WORLD CALLSIGN MAP: Shows prefix on each country plus capitals and major cities, also DX zones. Cat B-2264 . . . . . $1.95

SHINWA TVI FILTER: We don't have to tell you how good the Shinwa is! 1dB insertion loss, 30MHz cut-off, max. attn from app. 50MHz.
Cat D-7080 . . . . . $19.50

2m 45W AMPLIFIER KIT: 8-12W of drive for 35–45W of output. F'glass pcb, instructions inc.
Cat K-3132 . . . . . $27.50

80m 30W AMPLIFIER KIT: Ideal for novice! F'glass pcb, 13.8V required. Full instructions
Cat K-3133 . . . . . $34.95

AIR-WOUND COILS: Make your own antenna tuning units and high power linears. Separately boxed coils with full data.
Cat D-7050 (20mm) $4.70
Cat D-7052 (40mm) $5.50
Cat D-7054 (40mm) $6.60
Cat D-7056 (60mm) $7.90

OSKER BLOCK: The SWR & power meter for the amateur operator. Through-line type metering. 2kW rating.
Cat Q-1340 . . . . . $67.50

G6-144 2M COLINEAR: 117" high for repeater or fixed operation. 1kW rating, low SWR. 6dB gain over 1/2 wave dipole.
Cat D-4200 . . . . . $89.00

WORLD ATLAS: A favourite with all DXers contains 20 pages of world maps. 4 colours.
Cat B-2268 . . . . . $3.90

CO-AX SWITCHES: Will handle 1kW at 150 MHz. Save $4.00 while stocks last.
Cat D-5204 . . . . was $22.50 . . . . $17.50

LOW POWER TYPE: Handles 150W at 30MHz (although we've used them at 144MHz). 3 positions. Cat D-5206 . . . . . $11.75

RG58RU CO-AX: Quality black co-ax at a bargain price –30 cents per metre for 100 metres or more. 52 ohm, light duty.
Cat W-2090 . . . . 40c/m . . . . 30c/m – 100m +

UR67 CO-AX (RG8U): Low loss, ideal for feeder systems. Maximum signal transfer.
Cat W-2095 . . . . $1.35/m . . $1.13/m 100m +

PRE-AMPLIFIERS: For 27MHz, 52MHz & 144MHz. Mount in aerial circuit, fully tested units. Big savings NOW!
27MHz (ERB27) Cat D-3827 . . . . $25.90
52MHz (ERB6) Cat D-3806 . . . . $25.90
144MHz (ERB2) Cat D-3802 . . . . $25.90
These were selling for up to $39.00 each!

BUILD A BEAM: Our antenna brackets make it easy. Insulating nylon bracket accepts 10mm elements, up to 17mm boom.
Cat D-4650 . . . . . 55c ea

Cadmium plated brackets for larger beams – 17mm elements and 20mm booms.
Cat D-4652 . . . . . $1.00 ea

VHF TRIMMER CAPACITORS: Compression type, 1001 uses. 3 capacitance ranges:
1.5 – 20pF Cat R-2900 . . . . . 70c
7 – 60pF Cat R-2905 . . . . . $1.30
15 – 115pF Cat R-2910 . . . . . $1.75

VHF CONVERTERS: For 6 & 2 metres, output on 28–30MHz. 9–12V DC @ 15mA. Supplied complete with circuit. Save $6.00 on each!
6 metre (EXC 6) Cat D-3836 . . . . $29.50
2 metre (EXC 2) Cat D-3832 . . . . $29.50
(Both these converters were selling for $35.50!)

RAK BL50A BALUN: T shape, ideal for use as centre support for dipoles or yagis. 1kW rating.
Cat D-5310 . . . . . $21.50

A-5BQN ANTENNA: Deluxe multiband transmitting/receiving antenna. 80 thru 10mx, full 2kW rating. Complete.
Cat D-4705 . . . . was $51 . . . . $39.50

CG-144 2M ANTENNA: 5.4dB gain over 1/4 wave mobile, suitable for any ball mount (not included). 200 watts rating. 85" high.
Cat D-4192 . . . . was $49 50 . . . . $29.50

4BTV VERTICAL: Four band trap vertical covers 40, 20, 15 & 10. Optional 80m resonator. 2kW rating, low SWR. Strong!
Cat D-4150 . . . . . $115.00

Optional 80 metre resonator for the 4BTV vertical: Cat D-4156 . . . . . $29.50

MOBILE ANTENNA BASE: Quality base designed for any antenna using the standard 3/8 24TPI thread. Through-roof mount (5/8" hole required) Cat D-4056 . . . . . $4.50

VHF WHIP ANTENNA: Suitable for 70 to 500 MHz depending on cut. Stainless steel & chrome, use with above base. Cat D-4015 . . . . . $5.00

BALUN KITS: Contains a quality ferrite ring with enamelled copper wire and winding details for baluns from 1:1 to 1:9 ratio. Save $3.50 – was $12.50! Cat D-5350 . . . . . $9.00

DID YOU GET YOURS?

THE 1978 DICK SMITH SUPER-CATALOGUE WAS IN ELECTRONICS AUSTRALIA LAST MONTH.
If you missed out, copies are still available from your nearest Dick Smith store or dealer for only 75c.
Also available through the mail order department – P.O. Box 747, Crows Nest, NSW, 2065.

Sideband Electronics Sales

Distributors of COMMUNICATIONS TRANSCEIVERS

STOP PRESS NEW! 2 M TRANCEIVERS — GEAR by F.O.K. TYPE I — $769 ALL MODE TY II — $385 25W OUTPUT FM 800 CHANNELS

HF TRANSCEIVERS

ASTRO - 200 digital solid state 200 W.P.E.P.	$1,000
TRIO KENWOOD new model TS-520-S	$ 685
TRIO KENWOOD model TS-820S AC only 160 to 10 M with digital readout.	$1,050
TRIO KENWOOD MODEL TS-820 AC only 160 to 10 M.	$ 900
TRIO KENWOOD model TS-600-A FM - AM	$ 680
TRIO KENWOOD model TR-7400 2 meter FM transceiver 10 to 25 watts output Frequency range 144.00 to 147.995 MHz	$ 400

ICOM

VHF TRANSCEIVERS SSB

ICOM model IC-502 6 M SSB portable transceivers 52-53 MHz	$ 215
ICOM model IC-245	$ 450
ICOM 701 new model	$1,160
ICOM model IC-211	$ 785
YAESU MUSEN FT 901 new model	$1,575
YAESU MUSEN FT 7 new model	$ 570
YAESU MUSEN model FT-101-E AC-DC transceivers 10 to 160 M with speech processor	$ 849
YAESU MUSEN model FL-2100-B Lineal Ampl.	$ 569
YAESU MUSEN FRG-7 Wadley Loop Receiver All solid state, 0.5-29.9 MHz in thirty 1MHz bands. Electronic band selection	$ 338
YAESU MUSEN FL110 Solid State Linear Amplifier. Companion unit to FT-301S. 10-15W drive, 200W PEP Input, 160-10mx.	$ 249
YAESU MUSEN YC-500E 500MHz Freq. Counter. Accurate to .02ppm.	$ 574
YAESU MUSEN YC-500S 500MHz Freq. Counter. Accurate to 1ppm.	$ 446
YAESU MUSEN YC500J 500MHz Freq. Counter. Accurate to 10ppm.	$ 319
YAESU MUSEN YO100 Monitorscope. Matches the FT-101E, but can be used with other Yaesu equipment. (IF kits 455 kHz and 9MHz optional extra). (IF Kits $12.00 each)	$ 285
YAESU MUSEN FTV-650B Six Metre Transverter. Converts 28 MHz. SSB to VHF, and includes receiving converter. 50W PEP. Primarily designed for coupling with Yaesu transmitters.	$ 249
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HOW TO MAKE YOUR VFO AS SOLID AS A ROCK

John F. Ingham VK5KG
37 Second Avenue, Sefton Park 5083

John Ingham VK5KG in HF section of his shack.

From the beginning amateurs have strived to maintain frequency stability over their transmitters and receivers. Until now the methods which combine the ability to change frequency with the ability to maintain frequency have come under either of two headings.

(1) Stable variable frequency oscillators.

(2) Synthesized variable frequency oscillators.

Although the manufacturers of modern HF transceivers using stable VFOs claim drift figures such as 100 Hz/hour, they put in the proviso "after warm-up". Just how much drift occurs during warm-up and how long warm-up takes is not often stated, but figures like 2 kHz in the first hour are not uncommon. How many amateurs have the time to let their rigs warm up for an hour or so before use?

Synthesized variable frequency oscillators are coming into their own on VHF where operation (particularly on FM) is often confined to a finite number of channels each some 25 kilohertz apart. However HF operation requires continuous tuning and the ability to operate on any of an infinite number of closely spaced frequencies. This poses almost insoluble difficulties for the synthesized VFO approach.

So far, Frequency Locking has been limited to Automatic Frequency Control Systems which lock on to an existing carrier, e.g. AM, FM, TV, DSB. Even the proposal to lock a SSB receiver to a transmission by the use of a narrowband notch in the transmitter spectrum requires the transmission to be present, thus negating its advantage for long-term frequency watch-keeping or indeed transmission.

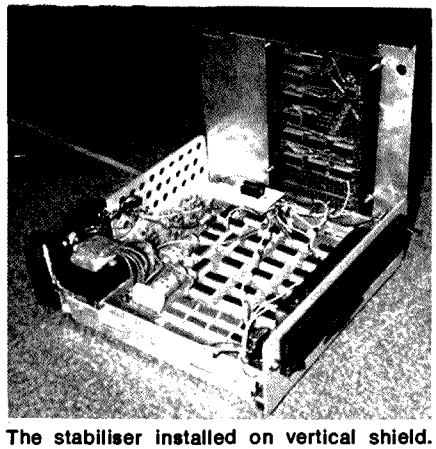
The system to be described is used with a Heathkit HW101 transceiver and a Heathkit SB650 digital readout. However the idea is adaptable to any transceiver and counter. (The SB650 computes and displays the actual operational frequency from the various local oscillators present in the transceiver; such a complex instrument is unnecessary for this project and a simple counter for just the VFO will suffice as long as the other local oscillators are crystal controlled — more on this later.)

Imagine a system which could record in a memory all the digits of the *"required"* frequency, compare these to those of the *"actual"* frequency and generate a correction voltage which is fed to the VFO. Because of the number of registers and comparitors required this approach would be expensive. However, to achieve our purpose of eliminating frequency drift, it is only necessary to compare the least significant digits (the righthand digit of a frequency readout). For as soon as drift commences it is this digit which will be first to change and as long as the rate of control is faster than the rate of drift all the other digits will stay constant and thus be of no consequence.

However by the use of only the least significant digit (LSD) an ambiguity of direction of control can occur. As an illustration suppose the "required" frequency has an LSD whose value is 9. Further, suppose that the frequency drifts *low* so that "actual" frequency has an LSD of 8. A comparison of 9 and 8 will show that the VFO has drifted *low* and the appropriate control voltage is generated. But, using the same starting LSD of 9, if the frequency drifts *high* by one unit, the displayed LSD is 0. A comparison of 9 and 0 will show that the VFO has drifted *low* (instead of high as has in fact happened) and so the control voltage generated will reinforce rather than correct the frequency drift.

To avoid this ambiguity the "required" LSD (no matter what it actually is) is offset to midrange between 0 and 9, i.e. 5. The "actual" display can now show a drift of as much as 4 units high or 5 units low before an Incorrect control voltage is generated. In practice this is ample as any frequency drift is continuously corrected long before an error of this magnitude is allowed to accumulate. When the offset "actual" LSD digit is compared to the offset "required" LSD digit (which is now always "5") we get 3 possible output states from the comparator; frequency too high, frequency too low or frequency correct.

The *magnitude* of the error is determined and corrected as follows. A digitally controlled DC voltage source capable of producing a monotonic voltage staircase of 1024 steps has its output fed to the incremental tuning (or clarifier) line of the transceiver's VFO. When a frequency drift is detected by the above means the controlling voltage is incremented up or down (as appropriate) one step per frequency counter cycle until the error is cancelled



The stabiliser installed on vertical shield.

whereupon the controlling voltage is held steady at the new level until further drift occurs.

For consistent control the voltage generator should be linear throughout its range, i.e. each up or down increment should lead to an identical increase or decrease in control voltage. It is more important, however, that the generator be monotonic — i.e. each positive (or negative) input increment leads to a positive (or negative) change in output voltage. Any part of the range which is not monotonic will lead to hunting of the VFO around one frequency.

To ensure that the circuit does not run out of range the output is initially centred on the middle step of the staircase so that both positive and negative frequency drift may be corrected.

In deciding the specifications for the project certain objectives must be kept in mind. The range of control must be adequate to handle the expected drift – approximately 3 kHz should be ample and this is primarily determined by the sensitivity of the transceiver's Incremental tuning and the total available swing of the control voltage.

For a given range of control, the smallest change in control voltage should produce a barely perceptible change in note when listening to a CW signal. If the control is too fine the total available range of control will be restricted, if too coarse the operation of the device will be obvious. Also the smallest change in frequency must be smaller than the resolution of the counter, or the control voltage will continuously hunt or oscillate around the required level. As the maximum resolution of my counter is 10 Hz (see reference 1), I chose 3 Hz per step, a nice compromise of all the above factors.

The cycle rate of the counter plays an important part in determining the speed of correction after a step change in frequency (such as when the VFO knob is bumped) because there is only one correction step available for every counter cycle. Generally a counter's resolution is inversely proportional to its cycle rate. For example, the

cycle rate of my counter at 100 Hz resolution is 160 msec.; at 10 Hz it's 1.6 secs. (The *accuracy* of control achieved is the same for both ranges; the 100 Hz resolution gives "channels" at 100 Hz spacing, the 10 Hz gives 10 Hz spacing. The higher the resolution of the counter the smaller is the maximum permissible step-change in frequency, and the slower is the rate of correction of frequency. However, if the rate of control is faster than the rate of drift, and if there are no large jumps in frequency, effective control is maintained.)

DETAILS OF CIRCUIT

Referring now to the circuit diagram (Fig. 1), IC (b) is a 4 bit latch in which the required LSD is loaded in binary coded decimal form. IC (a) is a 4 bit programmable up/down decade counter which at the end of every frequency counter cycle is loaded with the *actual* LSD.

IC (c) is a 4 bit comparator whose A = B output is high only when the two LSDs are the same. If the two LSDs are not the same the low output from IC (c) is inverted in IC (d) and used to gate clock pulses (approximately 100 x the counter cycle rate) through IC (e) to the up-count input of IC (a). If the digit from IC (b) is larger than IC (a) only one or two clock pulses are required to step the digit in IC (a) up to that in IC (b) at which time IC (c) detects A = B and via IC (d) closes gate IC (e). If the digit from IC (b) is smaller than that from IC (a) 8 or 9 clock pulses will be required to step the digit in IC (a) right around the decade until IC (c) detects that both digits are the same and via IC (d) closes gate IC (e).

Gated clock pulses are also fed to IC (f) another programmable up/down decade counter identical to IC (a). Whenever IC (a) is loaded with the latest counter LSD, IC (f) is loaded with binary coded "5" which is "hard wired" into its programmable inputs. After IC (c) has allowed clocking to take place IC (f) will contain a digit either greater than 5 (if only one or two clock pulses were gated) or a digit less than 5 (if 8 or 9 clock pulses were required). IC (g), a 4 bit comparator identical to IC (c), continuously compares a binary "5" hard-wired into one set of inputs with the output of IC (f). If the digit in IC (f) is 5 both the used outputs of IC (g) are low. If the digit in IC (f) is greater than 5 the A > B output of IC (g) goes high; if less than 5 the A < B output goes high.

ICs (j), (k) and (l) are 4 bit programmable up/down binary counters which, together with the following R/2R digital-to-analog convertor, generate an increasing staircase output voltage when IC (j)'s "Up" input is pulsed, or a decreasing staircase output voltage when IC (j)'s "Down" input is pulsed. In order to give IC (j) one pulse per Frequency Counter cycle, a suitable pulse from IC (c) is gated by the A > B or A < B signals in IC (h) and IC (l).

Whenever power is applied to the equipment the reset switch should be operated momentarily; this sets the output voltage to a point midway up the staircase by loading a hard-wired binary 512 (half way point of the possible 1024 steps) into the inputs of the 74193s. (Although this could be done automatically it is in any case desirable to have this function under manual control if need be.)

The 10 parallel output bits from ICs (j), (k) and (l) are converted to a staircase output voltage by the digital to analog converter, which is arranged so that in moving from the most to the least significant bit, each successive step has exactly half the control over the output voltage as the preceding one. The 741 Operational Amplifier IC (m) converts the available range of control voltage from the D/A converter to that required by the VFO and provides, if necessary, a DC offset.

CONSTRUCTIONAL DETAILS

I have not included a layout because my unit never proceeded past the initial layout which, although is a little messy, works well. However, if you use a Veroboard layout roughly similar to the layout of the circuit diagram, you should have no problems. The system works at a 1 or 2 Hz rate (the fastest rate is that of the clock which need to be only 100 x that of the cycle rate) so the layout from this viewpoint is non-critical.

To maintain monotonic operation of the D/A converter the resistors in the R/2R

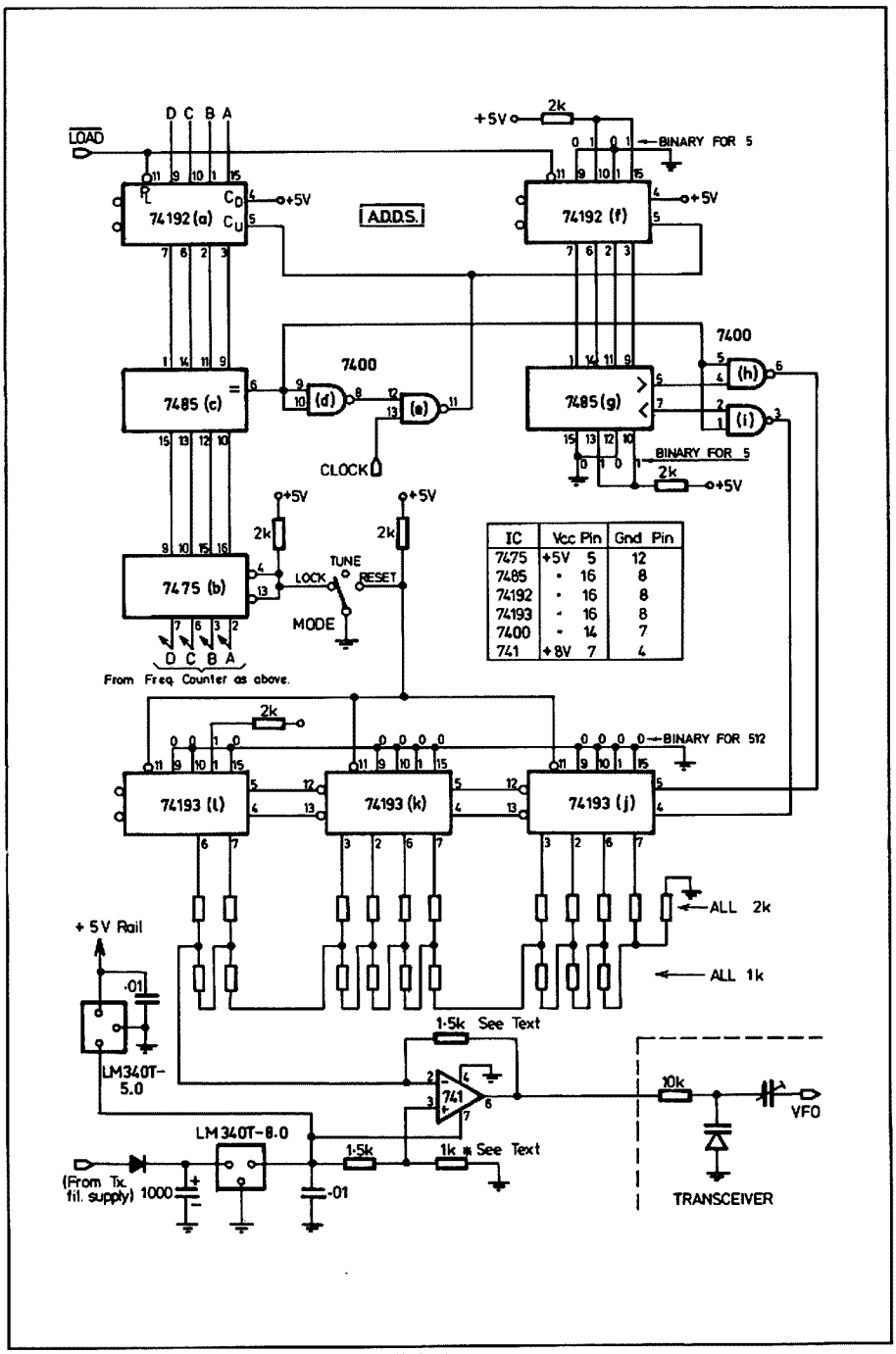


FIGURE 1

circuit should be as close as possible to the same value. I purchased 100 x 2 KΩ resistors for only several dollars and by the use of a digital VOM chose those closest together in value for the R/2R network. The actual value is unimportant; the uniformity is. Two such resistors were used in parallel to make up each 1 KΩ resistance, thus ensuring smooth A/D performance.

The *range* of output voltage is determined by the precise value of the 1 K 5 Ω feedback resistor between pins 2 and 6 of IC (m). The 1 KΩ resistor marked * may be trimmed if compression of output voltage is experienced at either end of its range.

The connections from this circuit to the Heathkit Frequency Display SB650 are as follows —

BCD data —

A connect to IC18 pin 16
B connect to IC18 pin 15
C connect to IC18 pin 10
D connect to IC18 pin 9
— in SB650

Load connect to IC33 pin 6 in SB650.
Clock connect to IC6 pin 11 in SB650.
Ground connect to Ground in SB650.

Those who have an SB650 can refer to their unit's manual for more information. Those without will find an almost identical circuit described in AR not long ago (reference 2). (Even the same IC types, numbering and pin numbers!)

If you plan to use an altogether different counter, similar points no doubt can be found; however the following criteria must be met —

(1) BCD data lines connected to LSD BCD require positive logic, TTL level and polarity, connected as follows: Data line A to the least significant bit, B to the next least, and so on.

(2) Load requires a TTL level positive pulse at the completion of each counter cycle.

(3) Clock requires a TTL level continuous square wave some 100 times that of the counter cycle rate, either synchronous or asynchronous. (This may be developed by a suitable astable such as an LM 555.)

If your unit aids the drift instead of correcting it, transpose the connections between ICs (h) and (j), and (i) and (j).

If your transceiver always drifts in the one direction, more control range in that direction may be obtained by reprogramming the digital "512" hard-wired into the three 74193s to 768 or 256 as appropriate.

ADDITIONAL COMMENTS

Because this is a new approach to an old problem, all the possibilities of this circuit have not been worked out. For instance, a complete final frequency readout is not required for successful operation of this circuit. If your BFO and first local oscillator are crystal oscillators it would be acceptable to count the frequency of just the VFO.

Access to the least significant digit is all that is required. If you don't have a counter you don't even have to build a display as such — all that is required is a count of the LSD and a single 4 bit up counter such as 7490 fed from your VFO and gated on for any constant period of time. The actual value or meaning of the digit is unimportant so long as it gives an indication of frequency drift to the required resolution.

Of course, when using this frequency stabiliser, the use of a clarifier or incremental tuning is not possible as the circuit interprets this as drift and correct accordingly. However, the circuit could be modified to allow for a second latch to replace IC (b) whenever the clarifier was used. The clarifier itself would be a pot switched to replace the resistor marked thus *.

All that is needed to trouble shoot this unit is a VOM and a thorough understanding of how the unit is intended to operate. Key test points are as follows:

IC (c) pin 6 — always a "high" in Reset and Tune modes, dips momentarily in Lock mode each counter cycle only if *actual* LSD is different from *required* LSD.

IC (g) pin 6 (Unused) always a "high" in Reset and Tune modes; in Lock mode stays low (with one kick up each counter cycle) only if *actual* LSD is different from *required* LSD.

To test the A/D converter, connect the VOM to IC (m) pin 6 and feed the Clock into IC (j) pin 5 (disconnect other lead). The voltage should smoothly rise over entire range, falling back to minimum again. This movement should be smooth with no backwards steps (check connections and values of the R/2R network) and no flat spots at either end of the range (check IC (m) feedback resistor and offset resistor marked *).

To check operation with the transceiver, lock on to some convenient frequency where a heterodyne with your calibrator may be heard (e.g. 14.1 MHz). Now tune the VFO about 400 Hz high and allow the unit to do its work. Repeat over and over until the heterodyne suddenly disappears. Now switch to Reset and read the counter which will show the range available from centre. Repeat this procedure this time tuning 400 Hz low. These tests will determine the total range of control. Be alert for any abnormal jumps in the heterodyne or any flat spots where control is lost, as these faults point to a problem in the A/D converter.

ACKNOWLEDGEMENTS

Although the original concept of the described circuit is my own, I am greatly indebted to Howard Harvey VK5ZBE for his solution to the Rollover Ambiguity problem, the A/D converter, and his helpful comments during the development stage. I also thank Michael Phillips who made a number of valuable suggestions pertaining to the final manuscript.

REFERENCES

1. "Better Performance for your Heath SB650", J. F. Ingham, AR August 1976.
2. "A More Versatile Station Frequency Counter", D. J. McWilliam, AR November 1976. (Incidentally, the modifications described in 1 are also applicable to the unit described in 2.) ■

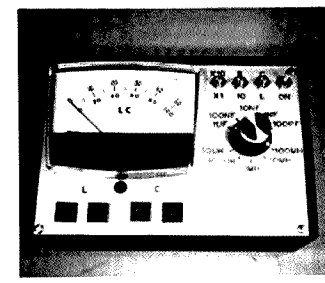
A DIRECT READING INDUCTANCE AND CAPACITANCE METER

Greg Brown VK3YGB
18 Hedderwick Street, Essendon 3040

A recent article (by A. Willcox, in "Television" of May 1976) described a direct-reading capacitance meter based on energy-storage considerations. The present author has extended this idea to measure both inductance and capacitance, and describes in detail the resulting test instrument.

Willcox's circuit operated by repetitively charging the unknown capacitor to a fixed voltage, then allowing it to discharge through the metering circuit. Provided that the fixed repetition period is long compared with the time-constant of capacitor and meter, the average current is proportional to the capacitance. The energy stored in a capacitance is $\frac{1}{2}CV^2$ and in an inductance $\frac{1}{2}LI^2$, so there appeared good reasons why the measurement concept could be extended to inductance, using the same oscillator and metering circuit, but charging the inductor with a fixed current.

The idea was soon tried, and proved to be practicable. A current is passed through the inductor to be measured, and allowed to stabilise. This current and the inductance value determine the stored energy. If the current flow is now diverted from the charging circuit into the metering circuit, it decays to zero with a time con-



View of Bridge.

stant proportioned to the inductance. Thus this repetitive discharge pulse produces a meter reading proportional to inductance (see analysis of Operation below).

Fast switching is essential for operation and is achieved by using non-saturating switches for controlling the inductor current. Wiring requiring low capacitance is space wired and not included on the PCB.

To calibrate the unit a standard capacitor and a standard inductor are required. Adjustments are provided for setting the oscillator frequency (see cal. C in schematic) and a divide reading by two (cal. ÷ 2) which doubles the oscillator frequency.

High frequency performance varies from one IC to another, and the 820 ohm resistor on the t00 pF/10 uH range may need to be adjusted to calibrate that range. This adjustment is best made by monitoring the oscillator frequency and calibrating for a 10 : 1 change when switching between tne 100 pF and the 1000 pF (1 nF) ranges. Other adjustments set the inductor drive current (cal. L) and the meter shunt (cal. × 10) which is intended to be used only on the 1 uF range of capacitance.

Calibration should be made as follows:

1. Adjust cal. C (1 nF range) using standard capacitor.
2. Trim 820 ohm resistor to set 100 pF range.
3. Adjust ÷ 2 cal. for doubling of oscillator frequency (1 nF range).
4. Adjust cal. × 10 with the range switch set to 1 uF and a 1 uF capacitor connected, to produce an accurate reading when the × 10 switch is operated.
5. Adjust cal. L for an accurate reading with the standard inductor on the 100 uH or 1 mH ranges.

Battery Voltage: 6.5V to 9.0V.
Battery Drain: 4.5 mA to 10 mA, depending on range.
Residual reading:
Capacitance: Less than 1 pF.
Inductance: Less than 0.1 uH.

Applications for such an instrument seem to be endless and include easy measurement of the range of adjustable inductors and capacitors, junction capacitance of semiconductors (at approximately 5V), cable length, or if cable length is known, the impedance of the cable. Ferrite chokes and coils for transmitters and receivers may easily be wound and checked as hand capacitance effects are minimal. Recent uses have been the measurement of whip capacitance and the base loading coil Inductance for an HF mobile antenna tuner for 20, 15 and 10 metres.

CONSTRUCTION

The Instrument wiring is largely contained on a PCB, measuring 3.6 cm x 19.7 cm, which is housed in a 16.5 cm x 11.7 cm x 5.0 cm instrument case. Power is provided by six penlight cells and a LED indicator has been included to remind the operator the unit is on. This indicator has found many uses in battery powered equipment and consists of a complementary pair of transistors connected in an astable circuit. The benefit gained by using this

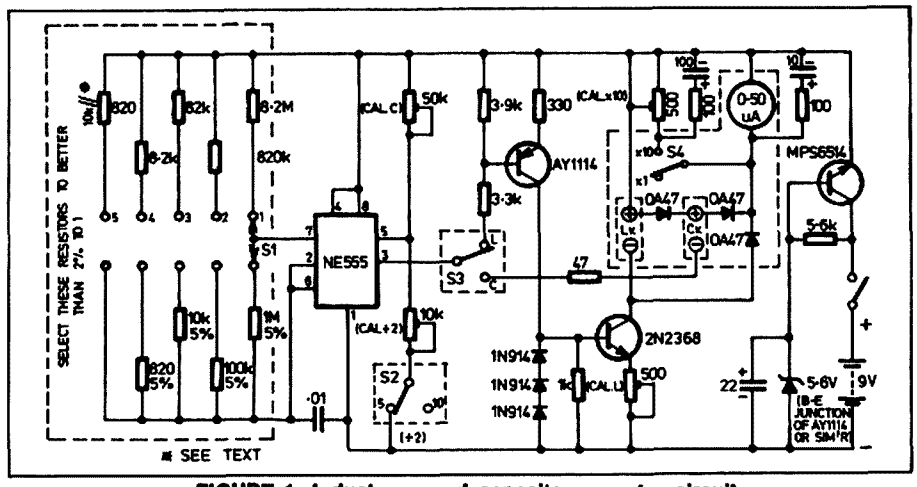


FIGURE 1: Inductance and capacitance meter circuit.

Capacitance FSD	S1 Position	S2 Position	S4 Position	Inductance RSD	S1 Position	S2 Position	S4 Position
50 pF	5	5	x 1	5.0 uH	5	5	x 1
100 pF	5	10	x 1	10 uH	5	10	x 1
500 pF	4	5	x 1	50 uH	4	5	x 1
1.0 nF	4	10	x 1	100 uH	4	10	x 1
5.0 nF	3	5	x 1	500 uH	3	5	x 1
10 nF	3	10	x 1	1.0 mH	3	10	x 1
50 nf	2	5	x 1	5.0 mH	2	5	x 1
100 nf	2	10	x 1	10 mH	2	10	x 1
500 nf	1	5	x 1	50 mH	1	5	x 1
1.0 uF	1	10	x 1	100 mH	1	10	x 1
5.0 uF	1	5	x 10				
10 uF	1	10	x 10				

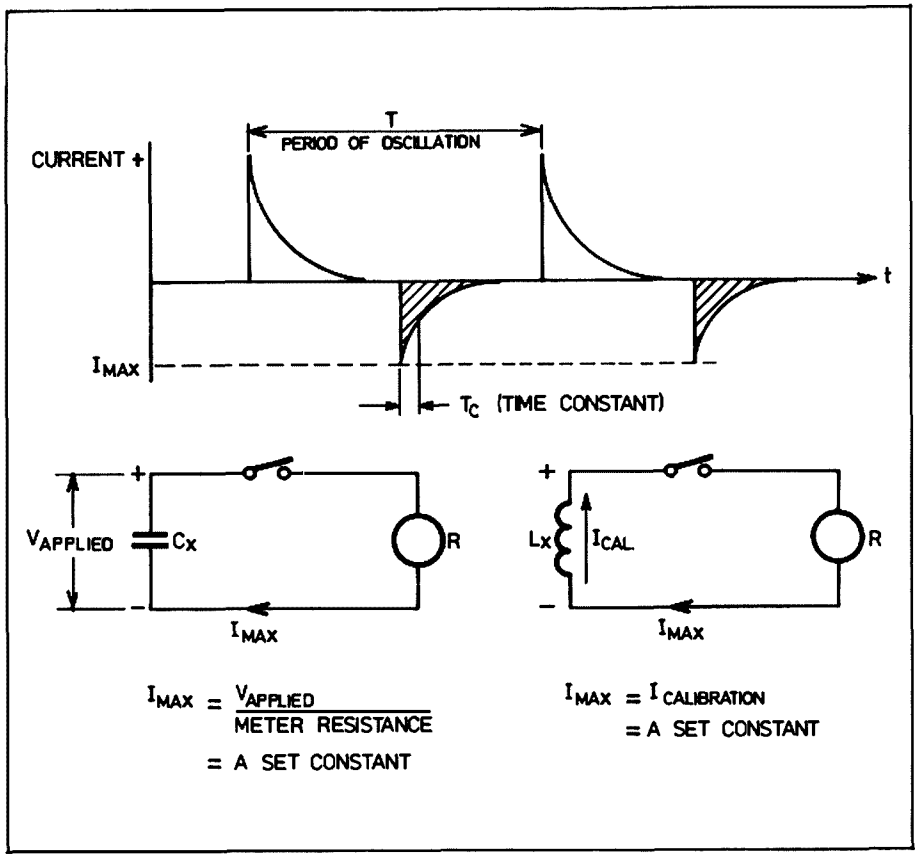


FIGURE 2: Current waveforms.

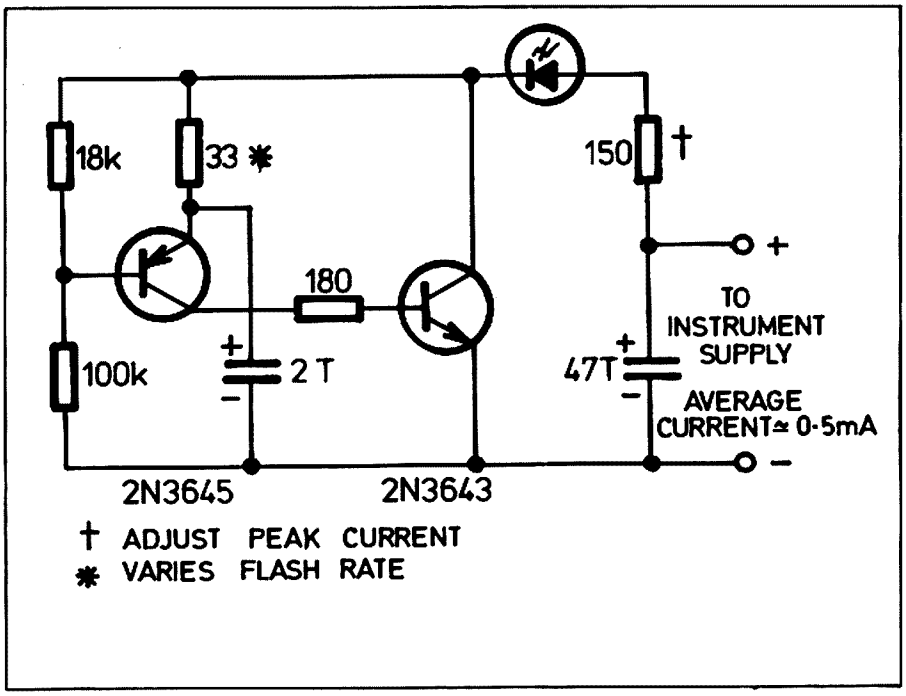


FIGURE 3: Battery saver circuit.

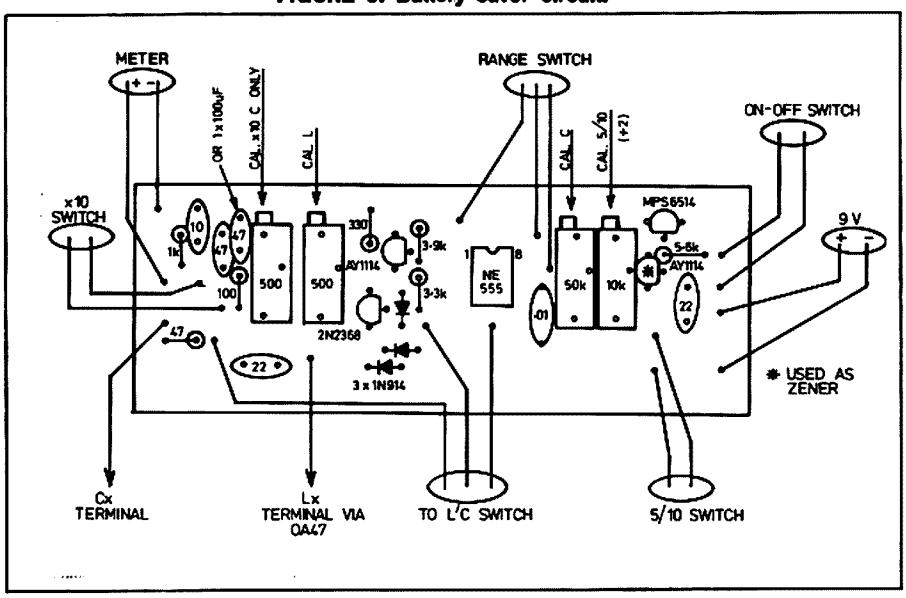


FIGURE 4: Board lay-out.

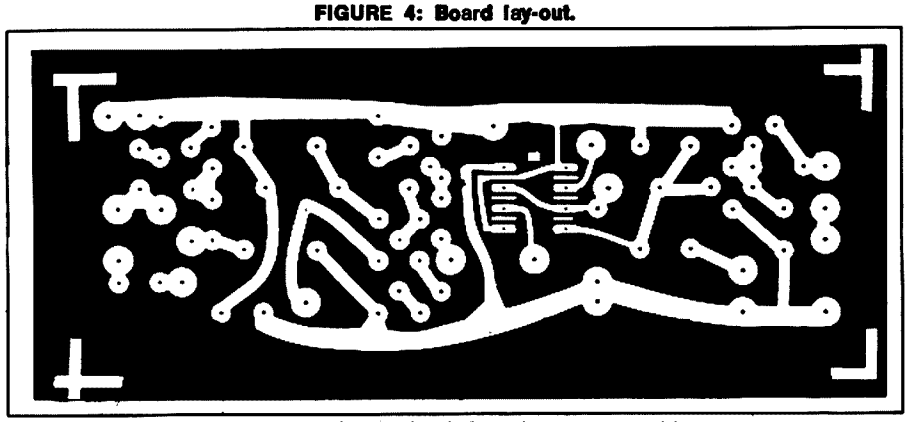


FIGURE 5: Printed circuit board — copper side.

circuit is that both transistors turn on together and their total current is passed through the LED. Average current drain is 0.5 mA, a small price to pay for power on indication. The indicator is wired on a separate PCB.

INDUCTOR MEASUREMENTS

When measuring inductors errors may arise due to approaching the self-resonant frequency. For measurements at not greater than 80 per cent of the self-resonant frequency

$$\text{Apparent Inductance} = \frac{L}{(1 - m^2)}$$

$$\text{where } m = \frac{\text{actual frequency}}{\text{self-resonant frequency}}$$

If m is less than 0.1 the correction is negligible.

In practice errors have only been apparent when measuring multi-layer coils of single section. An error of + 8% is typical for a coil of 15 mH wound with 770 turns of 18 B & S in a single section of 21 layers. Inductors of this construction are generally only suitable for low frequency applications. ■

QSP

RADIO FIELD DAY AT THE BLIND CITIZENS' COMMUNITY CENTRE

A field day and barbecue to demonstrate a number of aspects of amateur radio was held at the Kooyong Blind Citizens' Community Centra on Sunday, 4th December.

Special emphasis was given towards providing an understanding of the potential this recreation activity has for people with a sight disability. A number of pieces of equipment were demonstrated, and were afterwards available for interested people to handle and examine.

Some of the specific pieces of equipment on display included:

— 2 general coverage HF transceivers;
— VHF equipment covering the 2 metre band for local communication;
— Exhibits of general radio components;
— A talking calculator which was modified tO work in conjunction with a digital volt mater;
— Demonstration of aerials;
— All band communications receiver;
— Morse code equipment with automatic dot memory.

A number of qualified operators gave their valuable assistance to make the day a success, and we thank them for this. They included — Rob Faravonle VK3ANI, Bob Byers (who is totally blind) VK3BHF, Dr. Gerald Unger VK3AOU, Bob Young VK3BIC, Bill Mudie VK3XS, Graham Scott VK3ZR, David Ditchfield VK3YSK and Collin Pomory VK3BLE.

It is hoped this field day will be the forereunner of other such activities, and may lead the formation of a club which can assist visually handicapped people to become more involved with this field.

Anyone wanting further information can contact Peter Rickards or David Ditchfield at the Association for the Blind, Kooyong, Phone 20 8701.

SELF-REGULATORY

The editorial in QST for Nov. '77 looks at the changes in their FCC amateur radio regulations from a period of over-regulation (especially for repeater stations and operation) some years ago to the present policy of easing restrictions generally. This, because of the acceptance that amateur radio is self-regulatory and self-policing. The example is quoted of the traditional image that amateur frequencies were available for use by all amateurs to the present situation of channelisation on VHF and UHF. This means that amateurs themselves must enter the spectrum management field in respect of their own bands and see to it that self-regulation and self-policy actually work.

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PMH/2C phasing harness	$ 17.00

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AS-BL for beams	$ 31.00
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HK702 deluxe key with marble base	$ 35.00
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HK706 operators key	$ 20.00
MK701 manipulator (side-swiper)	$ 38.00
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VM-1 noise-cancelling, dynamic, low Z	$ 8.90
VM-2 desk mic, dynamic with pre-amp	$ 29.80

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SS-56 6m 5el beam (NAGARA)	$118.00

Prices and specifications subject to change without notice.

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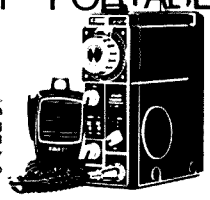
ICOM QUALITY PORTABLES FOR 6 & 2



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• 2 meter FM • 3 W PEP • 15 channels, 12 by selector, 3 by function switch • Dual power level, 3 W HI for long distance, 0.5 W LOW for local • Dial illumination for night use • Power pilot lamp • Frequency range 146 to 148 MHz.

IC202E 2m ssb portable transceiver	$ 219
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ICsM2 desk microphone	$54.00
IC50L 6m linear, 3w in, 10w out	$98.00
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FT101E transceiver, 160 thru 10M	$899.00
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RM20	20m	$16.00
RM40	40m	$20.50
RM80	80m	$22.00

M02	fold-over mast	$ 29.00
BM-1	bumper mount	$24.00

new address

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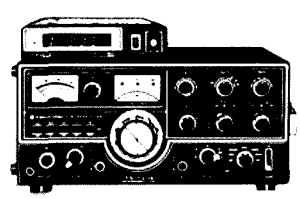
VICOM



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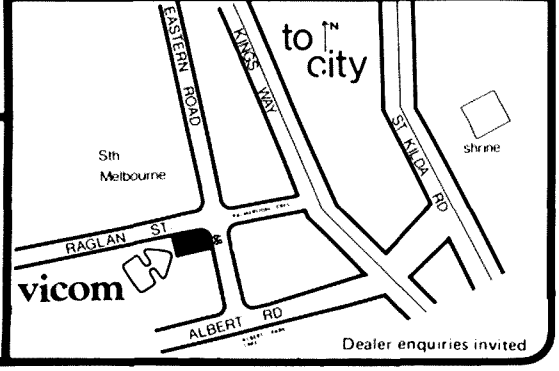

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AUSTRALIAN NATIONAL CONTESTS

FEBRUARY—SECOND WEEK-END
John Moyle Memorial National Field Day. This contest uses all bands and modes, and has a section to suit just about everybody, whether portable, mobile or fixed. An ideal time to have a group or club outing, and operate as a multi-operator station.

AUGUST—SECOND OR THIRD WEEK-END
Remembrance Day Contest. The friendly contest, and the major Australian contest for everyone. All bands and modes may be used. This contest is between the Divisions of the WIA, with certificates awarded for the best scores in each section in each call area of VK, ZL and P29.

OCTOBER—FIRST AND SECOND WEEK-ENDS
VK/ZL/Oceania DX Contest. This is the only international contest sponsored by Australia and New Zealand. All bands 1.8 to 28 MHz may be used. Phone on first week-end and CW on the second. The contest is run alternatively by VK and ZL.

DECEMBER THROUGH JANUARY
Ross Hull VHF/UHF Memorial Contest. VHF and UHF bands, single operator only. There are 7 day and 48 hour sections, Phone, CW and Open. Ideal for the Z and Y calls.

DIVISIONAL CONTESTS
The majority of Divisions have their own contests, both interstate and intrastate. Refer to "Amateur Radio" or Divisional broadcasts for further details.

MAJOR OVERSEAS CONTESTS
February: ARRL DX Contest, Phone first week-end, CW second week-end.
March: ARRL DX Contest, Phone first week-end, CW second week-end. BARTG Spring RTTY Contest. "CO", WW, WPX, SSB.
August: SARTG RTTY Contest. SEANET WW DX Contest. All Asian CW. European CW.
September: European Phone Contest.
October: RSGB 7 MHz CW. "CQ" WW DX Phone.
November: RSGB 7 MHz Phone. "CQ" WW DX CW.

There are many more contests, far too numerous to mention but when rules are available, they will appear in the Contest column of AR.

Your log will make any contest a success. ■

QSL CARDS — HOW TO QSL

QSL's are a vital requirement for most awards as before a certificate can be issued it is necessary that the applicant can show proof that he has contacted the stations claimed. The QSL card is still the only really acceptable way of doing this.

To have any value a QSL card must contain certain basic information about the QSO and if any of the following details are not included the recipient will be unable to use the card for award purposes.

The following information must be given:—

(1) Your call sign shown prominently.

(2) The words "To Radio .....confirming our QSO" or "This confirms QSO with..... " clearly showing the call sign of the station worked.

(3) The location of your station, including your full postal address. Remember, some stations will not have a current Call Book and otherwise will not be able to send their QSL to you in many instances without this information.

(4) Date and time of QSO. ALWAYS use GMT.

(5) Band and Mode used. If it was a QSO using the same mode both ways, mark this clearly as many awards are endorsed for a particular band and/or mode.

(6) Signal report using the standard RST report system.

When ordering QSL cards from a printer, remember that the above details are essential regardless of any additional information you may wish to add. A convenient way of presenting this information is to use the following format:

YOUR CALL SIGN
YOUR QTH

To Radio.....confirming our two-way QSO on .....MHz .....Mode at .....hrs. GMT on...../...../.....
Your signs here were R ...S ...T.....

It is recommended that a size of 5½ x 3½ inches should be used. This is a standard size fitting normal envelopes and conveniently handled by QSL Bureaux. If larger cards are used, they will require special envelopes and will not pack easily with other cards if sent in bulk.

If while writing out a QSL a mistake is made, do not make any attempt to alter it but write out a new card. Any card which has been altered is unacceptable for awards. ■

THE "Q" CODE AS USED BY RADIO AMATEURS

QRA What is the name of your station?
The name of my station is .....
ORG Will you tell me my exact frequency (or that of .....)?
Your exact frequency (or that of .....) is ....kHz (or MHz).
QRH Does my frequency vary?
Your frequency varies.
QRI Is my note good?
Your note varies.
QRK What is the intelligibility of my signals (or those of .....)?
The intelligibility of your signals (or those of .....) is ..... (1-5).
QRL Are you busy?
I am busy. Please do not interfere.
QRM Are you being interfered with?
I am being interfered with (1-5; nil, slightly, moderately, severely, extremely).
QRN Are you troubled by static?
I am troubled by static (1-5).
QRO Shall I increase power?
Increase power.
QRQ Shall I send faster?
Send faster (words per minute).
QRS Shall I send more slowly?
Send more slowly (.....words per minute).
QRT Shall I stop sending?
Stop sending.
QRU Have you anything for me?
I have nothing for you.
QRV Are you ready?
I am ready.
QRW Shall I inform ..... that you are calling him on .....kHz (or MHz)?
Please inform ..... that you are calling him on ..... kHz (or MHz).
QRX When will you call me again?
I will call you again at .....hours (on..... kHz) (or MHz).
QRZ Who is calling me?
You are being called by .....(on..... kHz) (or MHz).
QSA What is the strength of my signals (or those of .....)?
The strength of your signals (or those of .....) is ..... (1-5).
QSB Are my signals fading?
Your signals are fading.
QSL Can you acknowledge receipt?
I am acknowledging receipt.
QSO Can you communicate with.....direct (or by relay)?
I can communicate with..... direct (or by relay through).
QSP Will you relay to .....?
I will relay to .....
QSV Shall I send a series of V's on this frequency (or ..... kHz) (or MHz)?
Send a series of V's on this frequency (or ....kHz) (or MHz).
QSW Will you send on .....kHz (or MHz)?
I am going to send on.....kHz (or MHz)
QSX Will you listen to ..... (call sign) ..... kHz (or MHz)?
I am listening to .....(call sign) on .... kHz (or MHz).
QSY Shall I change to transmission on another frequency?
Change to transmission on another frequency (or on ....kHz) (or MHz).
QSZ Shall I send each word or group more than once?
Send each word or group twice (or..... times).
QTC How many messages have you to send?
I have ..... messages for you (or.....).
QTH What is your location?
My location is ....
QUM May I resume normal working?
Normal working may be resumed.

DISTRESS CALLS

The letters "SOS" used in telegraphy and the word "MAYDAY" used in telephony indicates that the sending station is threatened by grave and imminent danger and requests immediate assistance.

Any licensee hearing such a call must cease transmissions and listen for details on the frequency used. He should answer the transmissions, if he can provided he does not interfere with another station answering the call. All relevant information should then be conveyed as quickly as possible to the police or other appropriate Government Department.

When a distress call is not fully justified the letters "XXX" in telegraphy or "PAN" in telephony indicate a state of urgency and the same procedure is followed as for distress signals. As with distress, all such calls are repeated three times.

Licensees are advised that in certain circumstances false distress calls have been initiated in recent years and it is imperative therefore to note or record all possible information which can be of use to the relief services.

International distress and safety frequencies are 500 kHz for telegraphy, 2182 kHz for telephony, 8.463 MHz for survival craft, 121.5 MHz aeronautical (plus others), 156.8 MHz for maritime mobile and 243 MHz survival. ■

A VISIT TO CHINA

Gil Sones VK3AUI
30 Moore Street, Box Hill, 3128

At the beginning of September, a party of 20 Australian tourists left Kowloon by train for the Chinese border. In this party there were two amateurs, Lionel VK3NM and Gil VK3AUI.

When the train reached the border town of Lo Wu everyone was required to get off. After exit formalities we crossed the bridge to the Chinese town of Shum Chun, where the Immigration, health and customs formalities were carried out.

After these formalities the guides and interpreters assigned to the tour welcomed us. The welcome speeçh was accompanied by tea and cigarettes. This formal speech was to become very familiar as visitors are always welcomed and briefed at each place visited.

Then lunch was served in a dining hall and we received a lesson in the use of chopsticks. Very necessary as we were to use chopsticks for the next two weeks.

After lunch the tour proceeded by train to Kwangchow (Canton) and the start of the tour. Throughout the tour visits to places of interest were arranged and everyone was treated as a guest. Suggestions for specific interest items were noted and arranged whenever possible.

Photography was freely allowed except from aircraft during flights. No restrictions were placed at any other time on photography.

The tour, which was of fourteen days' duration, visited the towns of Kwangchow, Kweilin, Changsha, Shaoshan and Wuhan. These towns gave a considerable cross-section of China as well as showing some areas of scenic interest.

Visits were arranged to factories, schools, a commune, hospitals, a university and places of scenic interest

Also performances of plays, operas and concerts were included whenever they were available. The subject of these were usually revolutionary themes and they were played to packed houses.

The number of people doing manual labour is staggering and the amount of work done is very high. Mechanical aids are appearing but have not yet taken over in many cases.

Transport relies heavily on buses in the towns and people with handcarts for short distance goods transport. For longer distances trucks, tractors and trailers are used.

Between cities the train and the canal and river systems are used extensively. The railway system is heavily reliant on steam trains which are fuelled with coal.

Personal transport is by foot or by bicycle; there are 300 million bicycles in China and the traffic is little short of chaotic. The bicycles are quite dear at 200 Yuan or $100 Australian, which is four months salary for an average wage earner.

Wreaths at monument to Chairman Mao in Changsha on the first anniversary of his death.

Aqueduct in the country between Shaoshan and Changsha with children swimming in it.

On the subject cf money, the unit is the Yuan, which is approximately 50 cents Australian. All transactions must be in Yuan, unlike Russia, where goods are sold to tourists in western currency. The Yuan is divided into Jiao and Fen. There are 10 Fen to a Jiao and 10 Jiao to a Yuan. Both Yuan and Jiao are notes and the Fen are coins. It is quite novel to have a note which is worth 5 cents Australian.

Since all money to be spent must be converted at the bank to Yuan and only some travellers' cheques are negotiable, it is very wise to check up before you go there. In general bank notes are freely convertible but some of the popular varieties of travellers' cheques are either totally unacceptable or only occasionally acceptable. Information is available from China Travel Service in Hong Kong. The problem is not very great though, as prices are low and expenditure is really only on souvenirs.

Whilst travelling the communications systems and the broadcasting system were observed even though specific visits were not arranged.

The communications systems used were of interest. The phone lines were often of aerial construction, with both open wire lines and catenary cables. The cities had automatic telephones but trunks were all manually connected. The quantity of trunk lines was not great and the guides often had to book calls to make forward arrangements.

Local broadcast stations take Radio Peking off air and rebroadcast as well as using local programming. The broadcast stations cover the country. Foreign broadcasts are hard to copy as the QRM also covers the country very effectively and appears to emanate from a myriad of sources.

TV and FM broadcasting is in all major towns often using antennae placed in the middle of the town on a building. However, most TV sets are community owned due to the price of receivers which is 200 to 400 Yuan ($A100 to $A200). Wages are only 30 Yuan to 100 Yuan a month with an average monthly wage of 50 Yuan ($A25). This leaves only enough to save up for a bike and a few other luxuries and leaves TV a bad last.

Radio sets are more widespread but are dear with a 7 transistor model costing approximately 60 Yuan or $A30. The supply of radio parts is extensive with the more common parts freely available. Radio shops are often part of department stores or one half of a combined bicycle and radio shop. The radio shop sometimes has a small repair department.

Radio shops are full of people buying parts. Some of these people are probably hobbyists whilst others would be repairers of radio and electronic equipment.

The parts range from the basic resistors, capacitors, transistors, valves, transformers and loudspeakers right up to large transmitting type valves. Valve types 805 and 832 were on sale as well as some other larger unidentified types. These are probably for PA use or for industrial use.

To obtain some souvenirs I set out to purchase some small components in one shop and had no trouble in conveying my wishes to the assistant. Very soon the shop was full of interested shoppers anxious to see the fun. A chap from the repair department hurried forward and tried to guide my purchases along useful lines. He was anxious that I should obtain enough of the right parts to build something useful. Eventually, after much selection of the bits, I thanked the staff, paid the bill and left with my souvenirs.

Much to my astonishment only a few doors away was a disposals shop full of old CRO's, industrial electronic bits and a pile of command type condensers, large transmitting condensers, filter condensers and valves such as 832's, 805's and 833's. These were a most unexpected find in the middle of China at Wuhan. However, the bulk of them prevented me buying any as souvenirs.

By this time I had a large crowd following and I headed back to the hotel. This was another noticeable feature as people have not seen Westerners and tend to follow you just to see what you look like. They are very friendly and will help you find your way if you can communicate where you want to go.

Finally after two weeks touring China the party returned to Hong Kong and the West. During those two weeks we had been shown as much of China and what is being done there as was possible in a short time. ■

A CALL TO HELP THE CITIZENS RADIO SERVICE

D. Marshall VK4ZAF
23 Karowa Street, The Gap, Qld.

Amateur radio operators should take part in the Citizens Radio Service. This was the surprise proposal of Posts and Telecommunications Department administrative officer Mr. David Large, to the recent WIA Queensland Convention.

The suggestion came in his keynote address on the CRS, the Amateur Radio Service and the proposed Radio Communication Act.

"Perhaps the greatest benefit of the CRS to the ARS is intangible but it is a real benefit which I hope the WIA will exploit," he said.

"There are many CBers who have an interest in radio technology.

"These people form a large pool of future amateurs.

"Their interest and knowledge at the moment is minimal.

"It must annoy amateurs that so much inaccurate information is broadcast over CRS channels as facts.

"I would hope to see all amateurs taking a part in the CRS.

"This is seen by us as one way of injecting some professionalism into that service, not only technical expertise but operating techniques.

"By doing this, I would hope that many of the CBers would be encouraged to discover what radio is all about, to find out the pleasures through a hobby of amateur radio, which, properly controlled, allows contact with many people with many backgrounds in many countries."

Mr. Large said the decision to introduce the CRS was the most significant policy change in radio frequency management since 1948 when private VHF services were introduced.

Policies in force for 50 years had been challenged and found wanting.

Proposals for changes like that made by the WIA came at an opportune time.

Department philosophies, procedures and staffing were being reviewed.

The Radio Communication Act would be introduced next year replacing the Wireless Telegraphy Act of 1905.

Mr. Large said there was no doubt that UHF was the answer to the CB demand technically, and he believed, in the long term, economically.

Five years' parallel service was necessary for development and production of UHF equipment, particularly by Australian manufacturers.

Mr. Large said: "The interim period was not designed to allow for the massive development of HF services.

"Already the high standards of quality to be demanded from January 1, 1978, have been challenged but the Government's decision is clear.

"I cannot see any possibility of major amendments."

This was endorsed last month by Senator John Knight, who, speaking for the Minister Mr. Robinson, said: "In 1982, operators of HF equipment will only be allowed to continue under the auspices of the amateur radio service.

"Five years is sufficient time for people to obtain qualifications as amateur radio operators."

Mr. Large said: "That speech should be of some significance to everyone here."

Mr. Large said he was concerned existing regulations appeared to relate to controls over the amateur service which were inappropriate to 1977.

"Part of this is restrictions on examinations and qualifications for entry to the amateur service.

"There is a general move in the community towards greater reliance on self regulation in all forms of social activity.

"This will have an application to the Amateur Radio Service."

In commenting on the WIA proposals, he said: "The department is generally sympathetic with the broad thrust of the proposals.

"Generally, though with some modifications, I feel agreement will follow logically.

"If the Government is prepared to allow the ordinary citizen with no technical qualifications to use radio virtually without any restrictions, then the proposals of an organisation composed of technically qualified members who operate under a high standard of ethics should be acceptable.

"The proposals about a simpler examination and licensing system will be considered during a department review.

"You can be assured that any suggestion leading to more efficient management falls on receptive ears.

"Simply, drafting of the new Act gives the opportunity to completely review the regulations affecting the ARS.

"I should make clear the devotion the department has to protect the rights of the amateur operator.

"We well recognise the difficulty for the amateur service by people who deliberately pirated into the 11 m band.

"The department is adamant that this should not occur again.

"Senator Knight in his recent speech said: 'There is concern about advertisements in CB publications about the sale of equipment designed for the amateur service only. The Minister wishes it to be made quite clear to everyone concerned the Government will not stand by and allow pirating activities into other authorised services.'

"It is the Government's view that strong action should be taken to ensure that other authorised services are protected and that licensed operators in the CRS comply with regulations.

"It has been said that the loss of the 11 m band disadvantaged amateurs.

"Superficially, this appears to be so. However, this decision will provide long term benefits.

"One important benefit is that this exercise has brought the WIA and the department closer together.

"It has led to a more sympathetic approach to the WIA's role and position which will be reflected in the new Act and regulations.

"At the same time, the challenge to the Amateur Service by the CBer must force the WIA to look carefully at its own service.

"There is a belief that its present aims and objectives need reviewing.

"If this takes place, then I'm sure it will be beneficial."

Mr. Large said that in the past there had been suggestions that conserving the spectrum was synonymous with ensuring it wasn't fully used.

This view had resulted in an attitude of regulatory enforcement rather than management.

As a result, there had been stress placed on restrictive operator regulations within the services rather than management through technology.

"I believe that more stress has to be given to the control of the radio technology employed.

"This does not detract from the need to have enforcement provisions, but there has to be a better understanding of the department's objectives of management.

"It will be necessary in the new Act to put beyond doubt the Minister's power of control over all types of radio emission.

"This will allow for measures to deal with all forms of harmful interference to radio services.

"From this will flow the ability to set standards for radio equipment.

"It will be necessary to devise legislation procedure to control the use of unlicensed radio transmitting equipment and to increase the penalties."

Mr. Large said this would not be easy as it impinged on other legislation and practices.

It might be possible to determine the licensing of retailers through a tier system according to the types of equipment they sold. This seemed to be the answer. ■

MOBILING AROUND AUSTRALIA — SOME INTERESTING POINTS ON MOBILING OUR CONTINENT

Arthur Brown VK2IK

Well, we must see our own country the next time we go travelling." These were the conclusions of XYL Phyl and myself as we sat in our exchange flat in Surrey, England, pondering on our next tour. It was nearing the end of our 12 months (1975) stay in Britain during which time we had exchanged homes with a young teaching couple who were on "teacher exchange" in Sydney. From our base in Old Couldson we had toured in our campervan around 7,000 miles of Europe, 5,000 miles of Scandinavia and 8,000 miles of Britain. The latter two as G3TMO/M, but thereby hangs another tale.

PREPARATIONS FOR VEHICLE AND RADIOS

Having caravanned for years, and in the light of our 1975 experiences with the campervan, we figured that a well insulated Motor Home would be just the thing for touring Australia. Thus it was that by April 1977 we had obtained a Ford Transit Motorhome, had installed 2 and 6 Mx MR6 FM transceivers and a Sommerkamp TS288A SSB transceiver. Suitable mobile whips were checked out 10 to 160 Mx. English "G" whips 6 ft. long (previously used in Britain), 2 Mx and 6 Mx quarter wave whips and a range of home brew centre loaded 12 ft. whips to cover 10 to 160 Mx. In addition an extra section was carried to extend the 20 Mx whip to a full 16 ft. for stationary mobile operation. This latter whip was frequently used when the going became tough and conversely the 6 ft. helical was good for mobile use when signals were strong. There was at least 3 S points between these two antennas in favour of the 16 ft. whip.

The trip we planned would take 16 weeks with a daily average of 120 miles or 200 km. This subsequently worked out as planned to a distance of 21,000 km. We drafted out a schedule of places, stopover points, mail collection post offices and all the other data that would make the journey interesting from a scenic and historical point of view. In the months before we left the vehicle and spares had been organised and a hand throttle with a quick release mechanism was designed and fitted. This was a great boon as it relieved the leg fatigue normally encountered, and, in conjunction with a vacuum gauge also fitted, considerably reduced fuel consumption. In several preliminary journeys 14 m.p.g. was obtained, however, on the trip it worked out at 16 m.p.g.

Every endeavour was also made to eliminate electrical noises that intruded into the transceivers. Suppressors had been installed at all anticipated noisy spots, including a flywire mesh clipped over the ignition harness area. Still there was an S4 noise on most bands originating from the alternator regulator when mobile. No manner of filtering would clear it. Aubrey VK6XY, whilst we were mobile near Albany, W.A., came up with the answer, which was to install an electronic regulator in lieu of the vibrating reed type. This we did at Fremantle and it worked the trick with noise down to S2. A further reduction to S1 was achieved by the inclusion of a 0.05 MFD across the alternator field rectifiers. A larger value sent the regulator "beserk" into a two minute cycle of "hunting" with panel meters showing high then low as the charging rate changed. Noise levels were not constant and it was found that the addition of an earthing conductive rubber "car-sickness" strap installed at Darwin reduced the tyre static encountered on smooth bitumen surfaces.

TRAVELLERS NET

Prior to commencing the trip I had met up with Doug VK3YK, Keith VK6KC, Vic VK6NL and Harry VK6ZZ on the "Travellers

Net". This was to be a great source of interest and assurance if aid was needed. Throughout the entire trip, almost daily, we were able to QSO on 14.106 MHz at 0300 GMT. Other travellers there were on the net and they shared our pleasure in like manner. Other fixed stations occasionally joined the net, many of whom we were able to meet at their QTH. Not so Keith VK6KC — he is accessible only by boat or helicopter at the pearling fleet base at Kurie Bay, north of Broome.

ROUND AUSTRALIA TRIP

Our journey took us west to Adelaide via Menindee, Wentworth and Renmark, thence north via Pt. Augusta to the Flinders Ranges. Port Lincoln preceded our run to Ceduna, where I was able to see over the Satellite Tracking Station. The trip across the Nullabor on the new road with scenic lookouts on to the Great Australian Bight was more interesting than what we had been led to believe. The growth of small shrubs and salt bushes adjacent to the road gave the impression that landscape gardeners had been busy most of the way. Technically, it was interesting to see the site of the old Telegraph Station at Eucla on the WA side of the border. Unfortunately, the building, once the place of great activity as a relay link in the trans-Australia Telegraph of 1877 is slowly being inundated with sand and destroyed by vandals. Further west was also to be seen the buildings of Balladonia, another relay station now privately occupied and displaying discouraging notices for visitors. Around these buildings are remnants of the old telegraph lines going off across the plains to nowhere. In their place nowadays are the dishes of the microwave broadband bearers to be seen at regular intervals across the land.

It was our pleasure to meet some of the VK6's at Kalgoorlie and to see the historic mining sites of the Golden Mile at Coolgardie. Down south to Esperance and across to Albany and an escorted tour of the Canning Factory by Aubrey VK6XY and a visit to Vic VK6NL at Denmark was most enjoyable. We were impressed to see the giant Karrie trees of the Pemberton area — what wonderful towers they would be for amateur radio!

All around the coastline through Perth, Geraldton, Carnarvon and to Wyndham we visited scenic spots and VK6s'. At Exmouth I saw the relics of the old 200 MHz radar station, of particular interest to me as the equipment had been made in Sydney during the early 1940s. Others similar to it had been shipped around the Pacific for early warning of hostile aircraft. Not far away were the 13 masts of the US Naval Communications Station, the tallest being 1,271 ft.

From the cyclone tower of Onslow we finalised our plans to visit the mining towns of Tom Price and Wittenoom. This was a journey of 390 km on gravel and dust with no garages in between. The scenery was most rewarding, especially the gorges in the Hamersley Ranges and we consider that this area was one of the most colourful and rugged, perhaps more so than Central Australia.

Giant ant hills (termites) in Hammersley Ranges near Joffre Falls, W.A.

In a barge with other sightseers we traversed the Fitzroy River and admired the spectacular Geikie Gorge and saw numerous Johnston freshwater crocodiles. The Ranger assured us that, although the majority of crocodiles to be seen were about 6 ft. in length, there were a number of much larger ones about. In fact, he could look across the river each morning at cuppa time and see one old croc. sunning himself and this, he assured us, would be 200 years old and 16 ft. long. This information he gladly put across the "Travellers Net" for me for the benefit of some members who doubted that freshwater crocs could attain this length. Later at Kununurra we found an interesting sidelight on crocs in a brochure to quote "If by mistake you catch a freshwater crocodile, be careful you don't hurt him as they are protected". This is true and is not a comical suggestion as some have been killed by careless fishermen.

Fitzroy Crossing the "town" near Geikie, was a sight to behold. The surroundings littered by innumerable drink cans and bottles the one and only galvanised iron building served as hotel, store and petrol station. The store and petrol sections shut down at 12.30-1.30 p.m. but we finally obtained fuel at 2.30 p.m. We had no option but to wait as the next fuel was at Halls Creek, 300 km away. One interesting feature of the Northern Australia landscape is the prevalence of the "Upside-down", or Boab trees, varying in size with their enormous pulpy trunks. The biggest we saw was at Broome and measured 13 ft. in diameter.

Wyndham proved a surprise to us. We visualised flat country and mangrove swamps. True, there were mangroves, but there were also handsome mountains and a great lookout bluff, the Bastion of 1,100 ft., rewarded us with extensive views over Cambridge Gulf. At the modern Wyndham Hospital we surprised the nursing daughter of Con Murphy VK6PM, by asking her to come to the van to have a chat with her father in Perth. We had QSO'd him coming into town and had arranged a later sked.

At Kununurra and Lake Argyle we were impressed by the beauty of the river and size of the lakes. In parts the scenery of hills and water reminded us of the Norwegian Fjords. The Ord River irrigation project was also well worth the visit to see the lush crops of sorghum.

Katherine at the junction of the East West and North South roads had its Gorge on the Katherine River where scenes of the film "Jedda" had been filmed years earlier. The "Jedda" Rock was an impressive bluff part way along the gorge. At the camp ground nearby very friendly emus scavenged around the caravan sites and a pair of Bower Birds with apparerd unconcern of the cars on the near approach road, darted in and out of their bower and colourful display of bright objects they had gathered.

A 350 km run to Darwin brought us to the northernmost city which is gradually losing some of the scars of its 1974 Christmas Day battering. The broadcast band is much occupied by Indonesian stations and the ABC competes for air space, which made us realise that Darwin is much nearer to Indonesia than any other Australian city. In fact, it was much this story from Port Hedland across to Darwin. In this whole region broadcast stations were difficult to receive and short wave reception of Radio Australia or BBC had to be used to keep up with current events. In Darwin I had the pleasure of meeting the local VK8's at their club rooms in the emergency centre concrete blockhouse.

Many relics and reminders of war-time Darwin are to be found, including along the Stuart Highway, the landing strips adjacent to the road. A visit along the Arnhem Highway was worthwhile as we

were able to view some of the water buffalo and at Humpty Doo to see the many variety of water birds that caused the ultimate failure of the dream to grow crops of rice.

On the run south it was good to camp at Mataranka Homestead, to swim in the hot spring and later to see the grave sites of the Elsey Station characters of "We of the Never Never". A little further south, after Daly Waters, we stopped at the monument to commemorate the valiant efforts of Sir Charles Todd and his co-workers in building the overland telegraph line a century ago. What privations these teams whent through just to get a single wire from Port Augusta to Darwin. In modern times, here we were in a mobile home with the ability to make radio contact easily all around Australia and with a little more effort to many parts of the world. In fact, the Stuart Highway has many points of interest communication wise as it virtually follows the route of the telegraph line and place names are synonymous with the telegraph relay stations. At these places operators received and transmitted the messages along the line.

The overland telegraph line, completed in 1872, followed the route pioneered 10 years earlier in 1862 by John McDouall Stuart who, under heroic conditions, trekked through the unknown centre from Adelaide to what is now Darwin. A monument to him may be seen in the streets of Darwin.

At Alice Springs the original telegraph station and the Springs in the Todd River are being developed as a museum and recreational area. To be seen also by the observant travellers are many sections still in use of the 6,000 Oppenheimers iron poles installed In 1873 to combat the hungry jaws of termites. These ate away the wooden poles soon after their installation.

In a later era, the 1920-30s, reminders past and present are very much in evidence of the work of another pioneer. I refer to the Rev. John Flynn — "Flynn of the Inland". A monument to his memory is to be seen at Three Ways, north of Tennant Creek. At Alice Springs is the Flynn Memorial Church and a few kilometres to the west of town his grave site surmounted by one of the "Devil's Marbles" is In an appropriate setting. A living memory to him is the network of 13 Royal Flying Doctor radio bases spread around Australia, in many cases staffed by active radio amateurs. We were able to visit 8 of these during the tour.

It was a pleasure to meet the local Alice Springs VK8's at their club and to get a lot of helpful clues on seeing the area and on negotiating the "Track" down south.

The Stuart Highway from Alice to the S.A. border is an excellent road, however, the road west of Ayers Rock, particularly from Curtin Springs Homestead to Ayers Rock, and the Olgas, would be just about the worst and most used road in Australia. Thousands of tourists are inflicted with a corrugated unstabilised red sand road which no manner of grading will improve.

John G8LIF, Peter G3WCJ, Arthur VK2IK, Jack VK6EJ, Geraldton, W.A.

Buses, cars and caravans all suffer alike, and quite a few breakdowns were encountered. The Rock and the Olgas were all that the brochures showed, especially the sunrise and sunset scenes.

On now into South Australia after overnighting at Kulgera. What a road! Corrugations, bulldust and holes. Sure the road is wide enough and clearly defined but the hazards are difficult to avoid. The only way is to drive with extreme caution. We found that by reducing tyre pressure and not exceeding 60 km per hour that we came through unscathed. Not so cautious were others who evidently taking It too fast produced the hexagonal and octagonal wheels which littered the highway. Unlucky also was the semi-trailer driver from Adelaide who piled up near Maria Bore, 300 km north of Coober Pedy. His fuel tank had fatigued off the chassis and fell under the wheels. After a couple of days at the crash site we resumed the journey to Coober Pedy, a most interesting spot and, after Woomera, a more or less normal journey home via Adelaide and Broken Hill. Queensland was not included in our itinerary as we had previously toured up the east coast of Australia as far as Cairns.

WARNING FOR TRAVELLERS

Several comments are worth noting for future travellers. Bob VK6CIJ, of Carnarvon, an owner-driver of a road train, warned us! Give the trains a wide berth and priority on one track roads, as a foot of movement of the prime mover will cause a 4 ft. waggle to the tail of the third trailer! It tests the nerves and skill to pass these going in opposite directions, especially on a curve and you DON'T pass them except uphill going the same way.

Animals on the road are a frequent hazard, especially at night and must be given credit for being unpredictable. The main problems are kangaroos, emus, cattle and sheep in about that order. Fortunately we missed them all, but there were some narrow shaves. Although we didn't fit bullbars, these could be an advantage. We did, however fit a windscreen mesh which saved the screen several times.

In planning a trip such as ours, it is more economical to travel anticlockwise around Australia as this is the direction of prevailing winds. For timing reasons we were committed for clockwise travel which made our fuel costs higher than it would have been. ■

QSP

CASUALTY
In mid-April 1977 Dr. Glen Eschtruth, 9Q5GE/K8MZG was murdered In the Kapanga area of Zaire by the invaders into the southern part of that country. From a report in Worldradio Aug. '77.

MARCONI 75th ANNIVERSARY STATION
From ARRL comes the news of a special event station KM1CC from 14th to 22nd January operative on all bands and modes from the original Marconi station location In South Wellfleet, Mass. Another special station to be operated by RSGB will be located at Poldu, England, during the same period. QSL to KM1CC via W1GAY.

NETHERLANDS CONTROLS
Radio Communication Nov. '77 quotes an extract from a notice Issued by the Radio Central Service of the Netherlands P. and T. Service which basically advises that as a licence is required for all radio transmitting equipment a new registration system now operates from 1.7.1977. A personal registration certificate Is required to be kept with the station and all transmitters, transceivers, transverters and linear amplifiers must have a registration sticker attached to them. This new system forms part of the licence conditions. The police can seize any unregistered equipment.

FAX
The UK permits the use of facsimile signals on 7, 14, 21, 28 and 144 MHz bands. Radio Communications Nov. '77 says the interest in this mode of picture transmission is increasing and BARTG would like to hear from anybody using It.

EME
"The WAC Certificate has been received to confirm that VK2AMW has Worked All Countries on the 70 cm band. Without a doubt the first WAC on UHF (or VHF for that matter) for any station In this part of the world". The Illawarra "Propagator" for Nov. '77.

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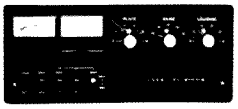
Featuring Yaesu Musen FT–7
Mini Mobile Transceiver as well as ideal Novice Transceiver.
80–10 Metre operation. VFO controlled 20 Watt DC input. Noise blanker and facilities for fixed channel operation.

OUR PRICE: $560

Complete with mic, mobile mount and cables.

FL–2100B
1200 watt Linear Amplifier.
You too can get to the legal limit for only **$548. The FL–2100B operates on 80 thru 10 Meters with dual cooling fan.**

OUR PRICE: $558



QTR–24
24-hour World Clock. Will tell you the time anywhere in the world at just a glance.

OUR PRICE: $33

FT–101E
Complete AC–DC Transceiver with Built-in RF processor. The rig comes complete with mic and cables.
260 PEP SSB, 180 Watt CW, and 80 Watt AM plus lots of other features.

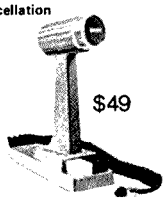
OUR PRICE: $876

YO–100
Matching monitorscope for FT–101E as well as other equipment

OUR PRICE: $279

FRG–7
General Coverage Communications Receiver from 5 MHz to 30 MHz.
Uses Wadley Loop System (drift cancellation circuit).
Guarantees excellent stability.

OUR PRICE: $338



$49

YD-844

YP–150
Dummy Load Watt Meter.

OUR PRICE: **$108**

FT–301D Deluxe digital transceiver.

OUR PRICE $1225

FT–301 Fully solid state transceiver 200 watt PEP input.

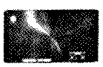
OUR PRICE: $1039

FT–301S
Ideal Novice Transceiver.
20 watt DC input. All solid state. All modes SSB, CW, AM, and FSK.

OUR PRICE: $749

(Includes AM board and VOX Cal. board).

DON'T BE TRAPPED WITHOUT THESE EXTRAS.



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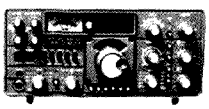
FP–301 – PRICE $179

FT–901DM
This rig has absolutely everything.
Just what you always wanted and more.
Ring or write for brochure.

OUR PRICE: $1499



YO–301
Matching monitorscope for 301 series.

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Country clients especially welcome. Enquire about our free freight plan on certain items.

DEALER ENQUIRIES WELCOME

All prices include Sales Tax. Freight and Insurance extra.
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ALL SETS COME WITH ENGLISH INSTRUCTION MANUALS AND SPARE PARTS BACK-UP SERVICE.
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Q.: CONFUSED BY THE CLAIMS OF MANUFACTURERS?

THEN COME AND TALK TO US!

We have a wide range of radio equipment suitable for your operating requirements. We have the know-how to assist you in setting up a new station or updating your existing equipment whether you QTH is: A CITY FLAT — A SUB-URBAN HOME — ACRES OF COUNTRY SPACE.

Whatever your lifestyle, you can enjoy ham radio.

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138/5	5A	13.8V	Reg. Supply	$55.00
138/10	10A	13.8V	Reg. Supply	P.O.A.
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These power supplies are ruggedly designed for Australian conditions. All ratings are continuous. Filtering is through computer grade capacitors.

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A.H. 047-541.392

Two years ago, after more than a dozen years of retail selling of amateur equipment, I decided it was time to retire from a seven days a week - 52 weeks a year activity and gave, free of charge, my retail business away while continuing, in a more leisurely manner, to import the same merchandise and sell it on a wholesale basis.

Recent developments, affecting profit margins and other aspects of the business, have made me decide to return to retail sales. Business is invited on my same old basis of cash with orders at the best prices obtainable elsewhere. There is plenty of stock available.

Antenna rotators will be sold only for 28V AC operation to defeat a threatening colossal overhead due to action of the Electricity Authority of N.S.W. There are laws that require all devices, producing what they call Extra-Low Voltage from 240V AC, including rotator control/indicator boxes, to be submitted for approval by the Authority. There is nothing wrong with that; users have to be protected against substandard and sometimes lethal equipment. But the outrageous charges for testing fees, which can be repeated if equipment does not meet some exaggerated standards, can easily be $1,000.- or more for a simple rotator control box. The fee for an appliance plug with moulded cord, for instance, is $510.-!!! For sales of a few dozen rotators of one type, this would increase the cost to the consumer to such a degree that it is better to eliminate the 240V AC supply and feed them with 28V AC from sources easily available in most ham stations.

Sorry, no HY-GAIN antennas available anymore. Hy-GAIN went bankrupt early this year and their factory is closed by the banks there, waiting for a 25 million dollar buyer for the lot! I have had a visit from Mike Staal, manager of KLM ELECTRONICS, makers of famous mono-band beams, and they will soon let me know what they can produce to fill the gap created by the disappearance of HY-GAIN beams from the market.

KENWOOD TS-520S 10-160M SSB/CW transceivers	$650.-
KENWOOD TS-820S 10-160M SSB/CW transceivers w/inbuilt digital readout	$1,000.-
KENWOOD DG-5 digital display unit for TS-520S	$175.-
KENWOOD TR-7400A 2M 25W FM 12V DC transceivers	$400.-
KENWOOD TV-506 6M transverter	$175.-
YAESU MUSEN FRG-7 all band Wadley loop receivers	$300.-
Other Yaesu Musen products on order.	
FDK MULTI-800D PLL 800 channels 2M transceivers in 5KHz steps 12V DC 1-25W adjustable output with digital readout	$325.-
FDK DD-800 bright remote digital display for the 800D for mobile use	$40.-
FDK QUARTZ 16 24 channel 10W 12V DC 2M transceivers with crystals for repeaters 1 to 8 incl. and channels 40 & 50	$175.-
ICOM IC-202 2M SSB portable transceivers - a few left only for	$175.-
KEN KR-400 antenna rotators with 28V AC control/indicator box	$100.-
KEN KR-500 same as KR-400 for vertical plane beam rotation	$125.-
Amphenol type coax connectors, many types: PL-259 large or small, for RG-8U or RG-58U, SO-239 all 75¢ each.	
Right angle and T-connectors $1.50 each.	
ATTENTION NOVICE LICENCEES: 24 channels 5KHz apart, 28.480 to 28.595 AM/USB transceivers, 10W PEP with clarifier on receive and transmit, virtually continuous coverage of the 10M DX band portion 12V DC	$150.-

The above prices are on a cash with order basis, subject to change without prior notice; remember our dollar's value is going down almost by the week, now only worth 60% of what it was 3½ years ago against the Japanese Yen on the Tokyo market!!! Airfreight, rail- or road-transport charges are extra, full risk insurance is free.

Arie Bles, VK2AVA, proprietor
Roy Lopez, VK2BRL, manager

THE MAN BEHIND THE MICROPHONE

As the front cover shows, Jim Davis VK7NOW, has one of the best looking amateur stations in Australia. The equipment line-up includes Kenwood TS520S, Yaesu FT101E, FT200, FT75B, Icom IC22A, six antennas, including an 80m inverted V and a triband HF beam. Any of five HF antennas can be selected by coaxial switch.

Jim, 65 and now retired (?), was first interested in radio in the 1920s but only took up the hobby seriously four years ago. He has fitted the shack with acoustic tiles on the ceiling, air-conditioning in the wall and carpet on the floor. Both cassette and open reel tape record/playback facilities are available for any QSO. A 60 watt hi fi amplifier with two five cubic ft enclosures is used for better audio when warranted.

Not only does the equipment look attractive, it is used efficiently by the owner. Jim was the top Novice scorer in the phone section of the 1977 RD contest. This was his first attempt so watch out this year!

Jim is an enthusiastic exponent of the use and virtues of RF clipping, especially for the QRP operator.

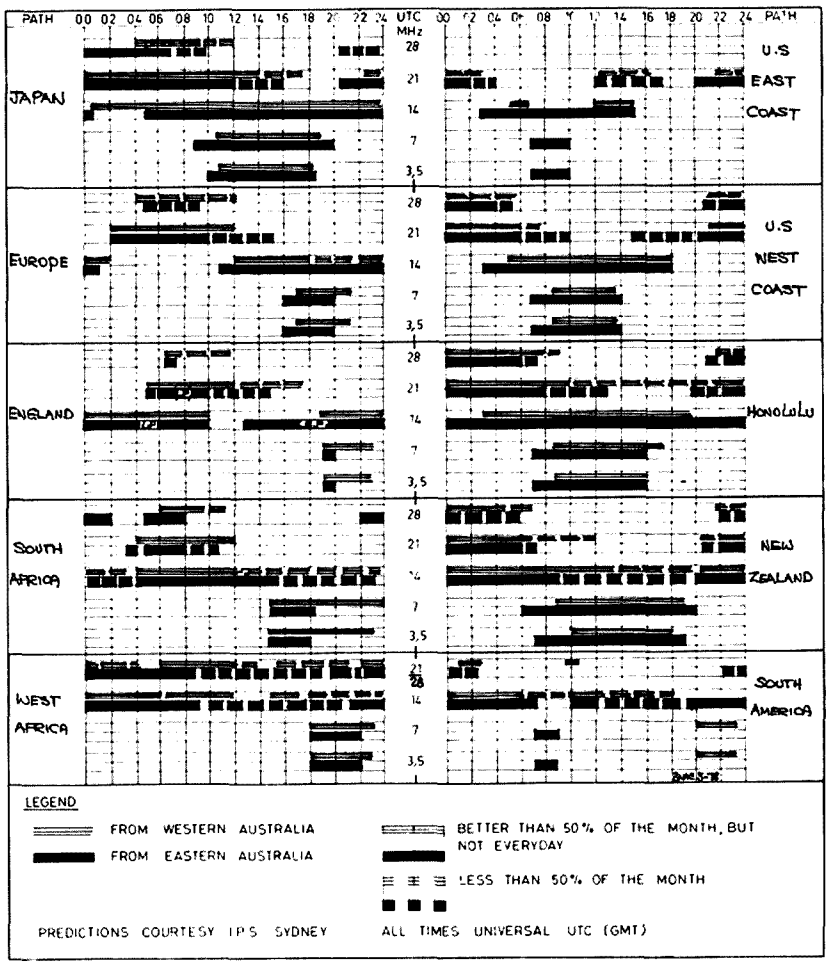
An October issue of "The Advocate" carried an article by Burnie journalist and CB operator Mike Lawson. This described a visit to Jim's shack and gave a fine explanation of amateur radio and where and how to get a licence. A considerable volume of CBers have seen Jim in action at the console and a dozen are reported to be so impressed that they are now studying for their Novice licence.

What next? Weil the console is being enlarged to accommodate a new Robot 400 scan converter and sundry SSTV gear. Give Jim a call and find out what else is in that expanding console.

Short contributions with a photograph are invited for this segment.—Ed. ■

IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



RAOTC DINNER 1978

Bob Cunningham VK3ML

The Radio Amateur Old Timers' Club of Australia has now reached a membership of 200. In addition to VK members the club enjoys membership from USA, Great Britain and Holland, etc.

The Annual Dinner of the club was staged at the Sciences Club, Clunies Ross House, 191 Royal Parade, Parkville, Melbourne, on Thursday, 9th March. A record number of members turned up for this function, amounting to just on 100. In the chair was Dr. Bill Butement VK3AD. It was very pleasing to note those attending, including quite a number of VK2 members, in addition to an amateur from the Netherlands PA0ALO.

The Master of Ceremonies for the evening was Max Hull VK3ZS, who carried out his duties in a truly professional fashion, and was able to keep the function going at a high level of activity.

Letters were read conveying wishes for the success of the dinner from a similar Old Timers' Club in the Netherlands and from the Old Timers' Club of New Zealand. The guest speaker for the evening was Bill Jenvy VK2ZO, a retired officer from the Overseas Telecommunications Commission. It was Bill's father, Walter Jenvy, who was Chief Electrical Engineer to the Victorian Post Office in 1901, and who was at that time operating his own *experimental wireless station* at Red Bluff, near Elwood, under the call sign of BJ. Walter was requested by the Victorian Government to establish the Station at Queenscliff for the purpose of transmitting a welcoming message to the then Duke of York on board the s.s. "Ophir" as it approached and entered Port Phillip Bay. The Melbourne "Argus" newspaper published a report on April 11th, 1901, on the feasibility tests carried out by Walter Jenvy prior to the actual event. As it finally transpired s.s. "Ophir" did not carry a wireless but the escort cruiser H.M.S. "St. George" did and two-way communication with Queenscliff and later Red Bluff was carried out over a distance of up to 30 miles.

To support his remarks, Bill Jenvy arranged with the Sciences Museum in Melbourne to make available the Morse Code transcriptions as they occurred on this occasion, together with a coherer as parts of the equipment used in those days. We are indebted to the Museum for this loan.

Later in the evening PA0ALO was asked to address the members in which he included an invitation to any member visiting the Netherlands to contact their kindred association for hospitality which he felt sure would be warmly provided.

At the conclusion of the dinner, it was moved by Bob Anderson VK3WY that the current President and Committee be re-elected for the coming year. The President, Bill Butement, wished to nominate Bob Cunningham VK3ML as a Patron to the club in recognition of his services in being the founder of the ROATC. Both these motions were carried with acclamation.

It is anticipated that the Sixth Annual Dinner will be held in the same location at about the same time in 1979. All members were requested to make every endeavour to increase the membership of the club, which is open to any amateur in any part of the world who has held an Amateur Operator's Licence for 25 years. The Membership Secretary of ROATC is Harry Cliff VK3HC, whose address is Box 50, Point Lonsdale, Victoria. ■

QSP

Applications are now being received from responsible CBers living within the Maroondah district.

All applicants will be screened through Police Headquarters and a yearly subscription of $15 will be payable on acceptance into PACER. Insurance cover is included in the subscription.

APPLICATION FORMS ARE NOW AVAILABLE AT THE ENQUIRIES DESK AT POLICE DISTRICT HEADQUARTERS IN NUNAWADING (OPEN 24 HOURS).

Applicants should be a minimum age of 21.

VHF-UHF
AN EXPANDING WORLD

Eric Jamieson, VK5LP
Forreston. 5233

AMATEUR BAND BEACONS

VK0	VK0MA, Mawson	53.100
VK1	VK1RTA, Canberra	144.475
VK2	VK2WI, Sydney	52 450
	VK2WI, Sydney	144 010
	VK2RHR, Mittagong	144.120
VK3	VK3RTG, Vermont	144.700
VK4	VK4RTL, Townsville	52.440
	VK3RTT, Mt. Mowbullan	144 400
	VK4RBB, Brisbane	432.400
VK5	VK5VF, Mount Lofty	53.00
	VK5VF Mount Lofty	144.800
VK6	VK6RTV, Perth	52.300
	VK6RTU, Kalgoorlie	52.350
	VK6RTW, Albany	52 950
	VK6RTW, Albany	144.500
	VK6RTV, Perth	145 000
VK7	VK7RNT, Launceston	52 400
	VK7RTX, Ulverstone *	144.900
	VK7RTW, Ulverstone *	432 475
VK8	VK8VF, Darwin	52 200
JA	JA2IGY, Nagoya	52.500
KG6	KG6JDX, Guam	50.110
KH6	KH6EQI, Hawaii †	50.110
ZL1	ZL1VHF, Auckland	145 100
	ZL1VHW, Waikato	145 150
ZL2	ZL2MHF, Upper Hutt	28.170
	ZL2VHP, Palmerston North	52 500
	ZL2VHF, Wellington	145 200
	ZL2VHP, Palmerston North	145.250
ZL3	ZL3VHF, Christchurch	145.300
ZL4	ZL4VHF, Dunedin	145.400

* Re-entered on listing.
† Note frequency change.

Tony VK7AX writes to confirm the installation and operation of the new VK7 beacons on 144.900 and 432.475 MHz from Ulverstone, and these are listed herewith. As reported last month, David VK5KK had already reported hearing these beacons on 28/2 so now we have the final confirmation.

Also noted in the beacon listings this month is a change to the frequency of operation of KH6EQI to 50.110 — the operator of this beacon listens from time to time on 50.104 — if you are hearing this beacon listen carefully and you will find at times the call changes from VVV de KH6EQI to CQ CQ CQ de KH6EQI — that's the e to give a call on 50.104 MHz! Of course you VK readers wouldn't do that, would you?

VHF DX FROM DARWIN

Graham VK8GB has forwarded three letters full of interesting information this month, and the following extracts will be of interest to you.

Graham has sent mo a copy of the QSL received from Tell JH6TEW for the first VK-JA 144 MHz contact on 24-2-78 (reported last month) and Tell runs 20 watts input from a TS700G2 to a pair of 10 element crossed yagis 15m high. He is 15 years old, so what a thrill for such a young operator.

Now let us have a look at what March produced for Graham.

"Saturday, 4-3-78: 0507Z KH6HI 5 x 6 to 5 x 9 +20, 50.103 to 52.103 split frequency working. 1118Z to 1355Z: JA1, 2, 3, 4, 5, 6, 9 and 0 for 19 stations worked. Also 1145 to 1415Z worked KG6JIH, KG6JDX and KG6DX. At 1228Z worked JH6TEW on 144.110 at 4 x 1/5 x 2. The KH6 opening was for about an hour. KH6IIA was also heard and the beacon KH6EQI was 30 dB over 9 at times. I also heard the KH6s working VK4MS, VK4RO, VK4TL and VK8VV. The guys in KG6 worked into VK4 and VK6ZFQ in the evening for the first time. P29 was worked in Japan in the evening as was VK6 and VK4.

"Sunday, 5-3-78: 1200 to 1343Z to JA only on 6 metres, 26 stations worked from JA1 to 6 inclusive plus JA9. No signals on 2 metres.

"Monday, 6-3-78: 1028 to 1415Z six metres worked JA1 to 7 plus JA9 with 43 contacts altogether. 1250 to 1415Z worked KG6JIH, KG6JDX and KG6DX, all 5 x 9. The six metre openings were widespread, JA to VK4, VK6, VK8, P29, KG6 to the same areas. On 144.110 at 1054Z worked JH4OOK 4 x 3/4 x 1; 1115Z JR6BVG 5 x 8/5 x 9; and 1145Z JH6SFL 5 x 5/5 x 5.

"Tuesday, 7-3-78: 1035 to 1337Z on 6 metres worked 21 stations in JA1, JA2, JA4, JA5 and JH8 areas. 1322 to 1342Z worked KG6JIH, KG6DX. On 144.110 at 1142Z worked JH6TEW 5 x 1/5 x 1; 1151 JR6AYU 5 x 3/5 x 3; 1159 worked JH6PWK 5 x 3/5 x 3. Again a very widespread six metre opening, JA to P29, VK4, VK6 and VK8. KG6 to VK4, VK6 and VK8.

"Wednesday, 8-3-78: I was QRT for most of the evening but Brian VK8VV worked the following on 2 metres: JA4HI, JH4SOY, JH4EPN, JH4FBI, JH4XTN, JR6GRP, JH6TGO, JR6BEN. Signals were up to S7. On six metres 1230Z worked JA2BZY, JA1RJU, JH6TEW, KG6JIH, KG6 JDX and KG6DX. At 1233Z HL9WI broke into the group and both Brian VK8VV and myself worked him. He is now listening nightly for us on 2 metres! 1335Z JA3ETI, 1339 JA2FOX and 1342Z JH4XJI on six metres. JAs worked VK2, 3, 4, 6 and 8 and P29 today on 6 metres.

"Thursday, 9-3-78: 1210Z to 1311Z on 6 metres worked JH6TEW, JA3ETI, JG1VCZ and JR1AUW. On 144.110 at 1218 worked JA6CL 5 x 3/4 x 1; at 1225 worked JH6IFF 5 x 4/5 x 1. Brian was QRT this night until 1440Z when ha worked KG6JIH on 6 at 5 x 9+.

"Friday, 10-3-78: Brian VK8VV worked Cliff KH6JSI 0500 to 0530Z with 5 x 9+ signals. I worked Cliff on CW at 0535 but signals were fading and very scratchy. Cliff worked 3D2CM on six on 9-3-78 which confirms activity in Fiji. On six metres 1120 to 1255Z worked JA2, JA3, JA4 and JH6 for 7 contacts. On 144.110 at 1148Z worked JA6QFH 5 x 5/5 x 2; and worked him again at 1220Z 4 x 1/4 x 1. JAs worked VK4s at 0520Z on six metres.

"Saturday, 11-3-78: I was QRT until 1240Z. Brian VK8VV worked 16 JAs on two metres between 1100 and 1216Z. 5 x 9 reports were common, call areas JA4 and JA6 only. At 1240Z I worked KG6JIH, KG6JDX and KG6DX all at 5 x 9. Joe KG6JDX runs about 200 watts on 2 metres and is desperately looking for contacts! Gerry KG6JIH reported solar flux figures as follows: 9-3-78 188; 10-3-78 180. These are very high.

"Sunday, 12-3-78: At 1033Z JAs contacted on six metres. QSY to 2 metres at 1050Z, at 1100Z JAs broke VK8VV and myself with a 5 x 9 dogpile! Brian worked 13 stations on 2 metres and I worked 22 stations in the JA4, JA5 and JA6 call areas between 1100 and 1208Z, signals 5 x 9 both ways! I am not using my linear as it has a bit of insertion loss on receive, is a bit inconvenient to operate and all the JAs run 20 watts PEP anyway. My equipment for all these contacts has simply been FT101E, FTV250 transverter, 10 el. yagi. On six metres after the 2 metres episode worked JA1 to 4, JA6 and JA9 for 15 contacts, 1300Z worked G6JIH, KG6JDX and KG6DX. At 1320Z worked Richie VK4RR at Mackay on backscatter 5 x 3/4 x 1. The JAs were working as far south as Rockhampton in the evening and the KG6s worked many VK4s. There was a brief afternoon opening to VK4AO too.

"Monday, 13-3-78: 1100Z KG6JIH; 1150Z JH6TEW; 1156Z VK4IK/KG6; 1158Z KG6JDX. A quiet day

"Tuesday, 14-3-78: Again on six metres, 1155Z JH6TEW and at 1220Z JA2BEY . . . and now the scenario pauses for a lunch break until . . .

"Friday, 17-3-78: On six metres 1105 to 1300Z 12 contacts to JA1, 2, 3, 4 and 6.

"Saturday, 18-3-78: Six metres 1945 to 1340Z JA1, 2, 3, 4, 6, 7, 9, 0, plus HL9WI and KG6DX, for a total of 24 stations. On 144.110 between 1125 and 1137Z JH6PWK 5 x 4, JA6DZ 5 x 2, JA4BCW 5 x 4, JH3BZK 5 x 6, JR6DQO 5 x 1, JH6TEW 5 x 2 and JR6GHI 5 x 3.

"Sunday, 19-3-78: 0325 to 0354Z KH6EQI 5 x 9, KH5HI 5 x 9, KH6JSI 5 x 8, KH3IJ 5 x 7 and KH6IAA 5 x 7. Between 1127 and 1353 worked 24 JAs and KG6 in the call areas JA1 to 7 plus JA9 and JA0. All these on six metres. Between 1206 and 1232Z worked JH6ETS, JH4DOR, JHNTEW, JH6AWT, JR6ODU and JA6QFH on two metres.

"Monday, 20-3-78: 1252 to 1259Z JH6TEW, JA1RJU and KG6JDX on six metres. On two metres worked a total of 30 stations in the call areas of JA4, JA6, JH6 and JR6. JH6GEU: I gave him 5 x 9 + 15, he gave me 5 x 9 + 20 dB!

"Wednesday, 22-3-78: 1020 to 1245Z four JA stations plus KG6JIH. Quiet day!

"Thursday, 23-3-78: JA1, 2, 4, 5, 6 plus KG6JIH for 12 stations on six metres. On 144.110 between 1149 and 1321Z worked 27 stations in the call areas JA4, JH4, JA5, JA6, JH6 and JR6. JA5UXF was operating /6 so it is not really any change in call areas from 4 and 6 as previously worked.

"Friday, 24-3-78: On six metres between 0400 and 0420Z worked WA8GUB/KH6 and KH6JSI. Between 1021 and 1420Z worked 29 stations in JA1 to 6, JA0, KG6JIH and KG6DX. On 2 metres between 1037 and 1224Z worked a total of 43 stations in the Japanese 4 and 6 call areas (makes your mouth water . . . 5LP).

"Saturday 25-3-78: On six metres between 0945 and 1300Z worked 12 JAs in call areas 1, 3, 4, 5, 8 and 7 plus HL9WI and KG7DX. On 2 metres between 1110 and 1224Z worked a total of 34 stations again the call areas of JA4 and JA6.

"Sunday, 26-3-78: Quiet day, worked KH6JSI at 0313Z!

"Monday, 27-3-78: On six metres 0400 to 0550Z worked WA8GUB/KH6, KH6IAA and KH6IJ. From 0952 to 1050Z worked JA6TEW, JA6DZ, JA1WUD and HL9WI. As you can see, conditions in Darwin have been good but no new countries on six and no new call areas on two metres. Signals on two have peaked to S9+ at times both ways and signals from JA on six metres have been to S9+ 30 dB."

And that's where the "diary" ends for the moment. It reads almost like a book. I have included quite a lot of detail, particularly for the two metre contacts because some people will scrutinize the times and call areas closely to try and obtain some answers to the questions obviously posed — how many times in the past have such contacts been missed for want of someone to be on 144 MHz? Why only two call areas on 2 metres? What form of propagation is making the contacts possible? Why are the signals not being heard in Guam? Are they limited to a strict north-south path with a delinite cut-off distance? Are they dependent on six metres being open as well? etc. etc.

Graham also includes a number of "extracts" from his log book in which readers will be interested.

"On 1-3-78 XE1GE heard New Zealand TV on 50.750 2115 to 2245Z. On 3-3-78 JA worked KH6IIA, KH6HI and KH6IJ 0410 to 0545Z. KH6 worked Chile and Argentina. JA5CMO worked CE3OK 0300Z. JA worked VK4RO 0300Z.

"On 4-3-78 JA heard KH6EQI weakly, JA worked VK4RO 0500 to 0700Z. On 25-2-78 the W6JRA beacon was heard in Japan in JA3 area. KG6DX reports 3D3CM active on six. KG6JDX runs 250 watts SSB on 2 metres now. On 5-3-78 VK8VV and VK8GB both heard the KH6EQI beacon at 10 dB over 9. 13-3-78, JAs working VK4MS and P29HV, KG6 only hearing VK8. 14-3-78, 3D2CM worked JA 0900Z.

"16-3-78: Chatted with Al KH6IAA on 10 metres and he passed on the following information: Opening on six metres KH6 to LU on 15-3-78. He works 3D2CM nightly. KH6IAA is located on Hilo Island and runs a TS520 to a FTV650 using an outboard power supply. No VK8VF beacon heard in JA today, but JA2BZY reported VK4YV at 1159Z, and VK4RO, VK4GS and VK4LX at 0830Z.

"17-3-78: UAONLU and RAOLFI in Vladivostok operate on 2 metres and are looking for VKs on 144.110 at 1130Z. 18-3-78: KG6DX worked VS6BE in Hong Kong on 14-3 on 52.025 on SSB. VS6BE Lyell advised he had his Henry 6N2 going and says from April he will have 52.025 CW only and 52.100 SSB only. KG6DX worked P29ZWW and VK4RO this day — KG6 to VK4 is quite common nowadays.

"19-3-78: KH6JSI worked LU7FA and LU3HFU this day. Opening to VK included VK8GB, VK8VV and VK4RO, the latter being audible in Darwin on backscatter but too weak to copy. KG6JIH is

hearing TVQO and ZL TV regularly. FO8DR will be QRT for six months from 22-3-78. JAs working K9PNT/DU2 on six this evening but I couldn't hear him on 50.175. 20-3-78: KG6JDX reports that P29HV is hearing JAs on two metres but very weakly. KG6JIH heard TVQO at 0000Z today (very early). JAs worked 3D2CM again today. Active stations on six metres in Hawaii are KH6HI, KH6JSI, KH6IAA, KH8IJ, KH8BZF and WA8GUS/KH6.

22-3-78: JAs hearing P29ZWW, VK4GS and VK4RO in the evening. VK4RO to KH6IAA at 0845Z. KG6JIH working JAs at 1000Z. Gerry KG6JIH reported that his latest HR report predicts a sunspot peak of 153 in February 1980 (i.e. smoothed number) and that this cycle looks like being as good as cycle 18. Prediction for February 1978 was 64.4 but turned out to be 90! Joe KG6DX reports that sunsppot counts of 170 relate to an F2 opening to 50 MHz and 180 to an F2 opening on 52 Hz. With a smoothed number of 153 we can expepct MANY days of MUF above 52 MHz. Gerry KG6JIH says the furthest south he has worked is to VK4ZNC near Brisbane.

"23-3-78: JAs contact 3D2CM at 0645Z. KHJIH to P29HV at S9+. Okinawa JR6 to KG6JIH.

"24-3-78: WA8GUB/KH6, Myron, runs an FT620 to a Ringo antenna and sometimes uses a KLM 80 watt linear. Location 25 miles north of Honolulu. KH6JSI works KH7IAA on backscatter. JS1 is on Oahu and 1AA on Hilo about 200 miles away. VK1RK worked six JAs on six metres on 19-3-78. JAs working P29ZWW and VK4DO at 1020Z, also VK4MS. KG6JIH works VK4ALM, also reports hearing TVQO at 0500Z. Beacon WA6JRA is on 50.091 but operation is not 24 hours, also 6Y5 Jamaica beacon is on 50.050 MHz (ex-KG6DX).

"25-3-78: KH6HI works KG6JIH 5 x 7 at 0545Z. KG6 hears TV 'sync' signals on 50.7 from the south-east, maybe Russia/China on backscatter, but might be something elsel JAs heard weakly in P29 on 20-3 and 24-3 on 2 metres. KH6HI working LU (Argentina) on 23-3.

26-3-78: KH6s work PY2CSS and PY5WBR on six 0230 to 0341Z. PY2CSS QTH is Sao Paulo and PY5WBR 400 km away. KH6s work VK4MS and VK4RO.

"27-3-78: KH6s worked LU on six days during March! Beacon TI2NA in Costa Rica is on 50.080. Heard VK4RO calling KH6 on backscatter to 5 x 5 on CW and SSB. WA8GUB/KH6 works VK4TL on 52.110 at 0430Z. HL9WI hearing signals on 2 metres.

It's been quite an interesting week. I think conditions are changing. We will probably have to wait about six weeks for USA contacts because I think an Es hop between KH6 and the mainland is necessary."

Graham reports generally conditions have been very good (I would regard that as an understatement . . . 5LP) and they are looking to W for contacts, but no one seems to have any knowledge of beacons there. Graham also remarked that if *I was in Darwin during* March he could assure me of contacts to JA on six metres AND two metres, plus a long chat to KG6 — currently the paths are more reliable than HF!

On behalf of the VHF faternity I feel we owe a vote of thanks to Graham for taking the trouble to keep us in the south informed of VHF activity in the north. Even if we are not working the exotic stations at least it keeps the more interested and reliable stations in the south on the air and looking to the north — I never ever previously really thought seriously about two metre contacts to Darwin or further north — I do now and so do others! It may take time, but I now firmly believe Darwin at least will be worked from VK5 on 2 metres In due course! Again, many thanks, Graham, for a job well done.

Nev VK4ZNC advises working JAs on six metres almost every afternoon since mid-February to time of writing, 15-3-78, working all areas except JA6, and only one JA5. On 12-3-78 at 1208Z he worked KG6JDX and KG6JIH in Guam on 52.103 alter the band had been open to JA most of the afternoon. Signals were 5 x 5. The two Guam stations run about 1 Kw and Nev 400 watts PEP from a pair of 4CX250Bs driven from his FT650 transverter. North Queensland boys were also working Guam at the same time with stronger signals. Thanks for writing, Nev, you have probably worked KH6 by now!

A letter also comes from Rod VK4ZRQ outlining activities in the Brisbane area, and has worked JAs on six metres on 19-2, 25-2, 28-2, 1-3, 3-3, 4-3, 7-3, 8-3, 10-3, 12-3 and 14-3. Interesting to note the rare JA8s were worked on 7-3 and 8-3, and 12-3. On 12-3 0400 to1200Z all JA areas, being the first Class 2 TEP heard. On 14-3 0330 to 1100Z all areas again but with Class 1 TEP (i.e. no flutter, doppler shift, etc.). Also no KG6s! Some good QSOs have been made using only 200 mW.

Rod reports two metres is not being overlooked and confirms the contact with VK3AUR on 13-11-77 at 1200Z on 144.1 SSB 5 x 2 both ways. On 15-1-78 1000Z heard VK3AWD? 144.1, also the VK3RTG beacon. On 16-1-78 he worked VK8ZGF in Alice Springs (reported previously) and on 22-1-78 0630Z VK4ZSH "partially" worked P29ZWW over a distance of 1300 miles on Ch. 40 FM. Rod is also interested in 6 and 2 metre meteor scatter? Any takers? It appears also that FK8AB is on 6 metres with an IC502 to a pair of 6146s. Thanks, Rod.

Included with Rod's letter was a copy of a letter from Ray K5ZMS of SMIRK, and there are a few interesting bits of information in there.

"WB5VWW worked Geoff XE1GE on backscatter on 28-278. Geoff had previously worked LU, PY and ZP9 on 24-2 so was on the alert. The contact with WB5VWW was around 2145Z, and XE1GE heard the KH6EQI beacon at the same time. At the same time he had to sit there for an hour and a half listening to ZL TV audio on 50.750!

"KH6IAA on 2-3-78 worked six LU stations plus a CE, followed by JAs. On 3-3-78 he copied ZL and VK TV and VK beacons from 0500 to 0700Z but no contacts. The northern hemisphere stations are predicting that with the solar flux rising so well conditions may soon rival those of 20 years ago!"

To change the area somewhat, Ken VK6ZFQ writes from Koolan Island, which is 80 miles due north of Derby and just off the mainland. The letter is dated 19-3-78 and reports on that day Ken had just finished listening to the KH6EQI beacon at S3, but no contacts eventuated. From 26-2 until 19-3 Ken worked more than 170 JAs plus KG6JIH, KG6DX and KG6JDX. On some days many JAs are there but he doesn't bother to work them!

Ken has 2 metres SSB but to date has not heard any JA signals. Ch. 2 TV from Perth is an occasional customer, but last October they were able to watch TV RI from Jakarta every night in colour from station open to close using only a 2 element antenna. No results have come from trying to work YB on 2 metres, however. To keep 144 SSB going Ken works daily to VK6FM 80 miles away over rough country, also to Keith VK6KC 60 miles distant. Ken's gear consists of FT620 into a 3 element yagi for 6 metres. Two metres a home brew solid state transverter with 25W PEP drive via the FT620 into a 5 el. yagi. 2 metres FM: Philips 1680 25 watts 146.000 also repeaters 2, 4, 6 and 8. On 432 MHz he uses the FT101B to drive a Modular Electronics transverter with 10 watts PEP into a 4 element yagi.

Ken advises he is in an ideal location with YB (Indonesia), an all water path. The TV station he runs is CKR7, located on the highest spot on the island, 670 feet a.s.l. The ocean is only three-quarters of a mile away, giving splendid ocean views. They have a 110 foot tower for the TV station, so Ken makes use of that to mount some of his own antennae! Thanks for writing.

Geoff VK3AMK writes confirming much of the information already included from Graham VK8GB. However, he has some interesting news on JH6TEW, the first JA to work VK8GB. Geoff reports that Tell is a 15-year-old high school student, both father and mother are amateurs, his 13-year-old brother works 6 metres and his 11-year-old sister is sitting for the exam in May! Tell's English is excellent and says he is now learning Spanish so he can work South Americans! Tell is now very keen to work a VK5 to clinch the world record 2 metre contact — that's good news . . . 5LP.

Tell also passed on to Geoff information regarding a DXpedition on 29-4 to 3-3 to VS6 and CR9, operation on 15, 10 and 6 metres. VS6 on 50.110 and CR9AJ on 50.200, but will QSY to 52 for VKs! So we will wait news of what contacts were made.

Steve VK3OT sent a copy of a letter received from Dave W9CGI, who indicates many operators in USA are completely unaware that VK allocation is 2 MHz higher on six metres than they operate. W9CGI uses a TR-6 giving 180 watts of SSB and 240 watts CW, giving him 47 US States and has heard the KH5EQI beacon strongly. He has ordered extra crystals to give him 52.000 to 52.500 capability and will pass the word around via "73" of our 2 MHz disability.

Of course it is the old story — we do have a 2 MHz disability offset from the rest of the active 6 metre world, and it extends beyond purely the band offset. For those in the north to work us they need to tune higher in frequency which means their otherwise good antennae drop off seriously in performance to a fraction of what is usual, with a high SWR. We are not quite so badly situated for antenna performance as we operate lower in frequency to listen and, as you all know, the yagi antenna drops off in performance at a slower rate on the low frequency side of resonance than the high side. But my own normally very efficient 5 element wide spaced yagi on 52 MHz loses some 6 to 8 dB of gain by tuning down 2 MHz so signals need to be that much stronger before contacts are possible. We can only hope the work Graham VK8GB in Darwin is doing will continue to alert more stations overseas of our problems and give a chance for those overseas to get extra crystals installed.

Just to change the subject a bit I was appalled to read in the Moonbounce Report for March 1978 in "The Propagator" of the serious damage done to the Dapto EME Installations. Damage was first discovered on 8-2-78, buildings had been entered, windows smashed and items in all rooms either smashed or stolen. Fire extinguishers had been discharged over equipment, paint thrown around and cupboards emptied. Holes smashed in the floor and a fire had been lit in one room, but fortunately had not caught the building alight. The padlock had been hammied off the steel security locker which houses the EME equipment, and items of gear either stolen or damaged. Quantities of wiring and cabling had been ripped out.

Temporary repairs were attempted to try and get on the air to meet their obligations to stations overseas on 11-2 but to no avail. A week later the buildings were again entered and even more serious damage resulted from the intrusion. Under the circumstances no further repairs were attempted.

On 2-3-78 an inspection was made with representatives from the University and it was decided security could no longer be offered at the present site, so after eight years the Dapto Moonbounce Project, as such, had been destroyed. So now a practicability study is being undertaken to see if the 30 foot dish can be moved to a safer site.

I feel sure those who care will join me in expressing disgust as well as disappointment that there are individuals who will stoop to such depths of destruction, and the consequent heartbreak it causes to those who have been so dedicated to the project. May we wish you, Lyle VK2AFU and Charlie VK2ZEN, the mainstays of the project, the hope that the project can be undertaken elsewhere in the future, under safer conditions. In the meantime, we all say thank you for a task well done, and the opportunities you have provided for overseas stations to work VK on 432 MHz EME — without your efforts this would not have been possible — may be some small reward for your efforts. We salute you and your helping group.

Before finishing up for this month, 144 MHz across the southern climes still provides interesting contacts. VK6 at Albany to VK5 pops up every now and again, as also does 432 MHz. On 5-3-78 Col VK5RO and myself VK5LP observed at 1430Z whilst beaming to Albany in the west, backscatter signals from VK3YII. To check, I turned the beam to the direct path but no sign of the VK3. Going back to the west and he was there again. Col remarked he had always been of the opinion that

backscatter was possible on 2 metres but very few if any people believed him. However, this time he was very pleased to have my confirmation of the phenomenon. After a period VK3YII did become audible very weakly on the direct path.

A brief opening between JA and VK5 on 27-3 at 0315Z. VK5ZZZ worked JE1, JH7 and JA8 for about 10 minutes with signals to 5 x 9. That's a fairly opening to JA from this area.

The notes have contained a lot of interesting information during the past few months, thanks to my very good correspondents. I wonder how much longer it will go on. Is this just a taste of things to come with the solar count increasing significantly? I would like to think so. The March/April period could bring some surprises, perhaps I can report them to you next month.

In the meantime, let us close with the thought for the month: "If we really want to stop organized crime, all we have to do is form a government department to run it, then stand back while it is choked to death by red tape!"

The Voice in the Hills. ■

AMATEUR SATELLITES

Bob Arnold

VK3ZBB

Another milestone in satellite history has been passed with the successful launching of AMSAT OSCAR D which became known as AO8 once it became operational. Launch was precisely at the predicted time of 1754Z on the 5th March and ejection from the launch vehicle took place one hour twenty-five minutes after lift-off. Several enthusiasts in Australia listened to the launch which was broadcast on the 20 metre band and although reception was poor, sufficient intelligence was received to indicate that things were going well, and we had the great thrill of hearing the Mode J beacon as the satellite passed over Melbourne on its second orbit.

Since that time many orbits have been logged, sufficient to give reasonably accurate parameters for local times of acquisition. The satellite became stable much more quickly than was anticipated and before the end of the first day the ten metre antenna was deployed making it possible to re-receive the Mode A beacon on subsequent passes. The satellite was taken over by ARRL on the 20th March and we understand the Mode of operation will now be scheduled for Mode A on Mondays to Fridays inclusive and Mode J on Saturdays and Sundays.

The orbital parameters of AO8 are quite close to those predicted, the most recent being orbit time 103.299 minutes, incremental shift per orbit 25.8075° West.

The calendar of first equatorial crossings given at the end of these notes is as accurate as can be expected at this early stage, and a tolerance of a minute or so may be necessary. It has been ascertained that the times of acquisition in Melbourne are similar to the times for OSCAR 7, *i.e.* to the equatorial crossing time add the time of the appropriate number of orbits (four, five or six) multiplied by 103 minutes and again add approximately 92 minutes for S-N pases and 60 minutes for N-S passes.

To acknowledge the indebtedness of Australian amateurs to the small band of AMSAT volunteers connected with the launch of AO8, I have sent the following letter to Joe Kasser, Editor of AMSAT Newsletter:—

On behalf of Australian amateurs, congratulations to the team who so ably constructed AO8 and arranged for its launch.

We were all most impressed with the timing of the operation and were thrilled to hear the 435.095 beacon as AO8 came over Australia on its second orbit at 0601 local time. Subsequently, at least one of our enthusiastic group has heard the Mode A or Mode J. beacon on most passes in sight of Australia and in the last few days communications have commenced through the satellite.

Communications on Mode A are better than through OSCAR 7 and we are looking forward to the Easter period when we shall have the first opportunity to work on Mode J.

Again, congratulations to all concerned for a job well done; they deserve every encouragement from amateurs in the Southern Hemisphere.

Joe Kasser G3ZCZ, together with Perry Klein W3PK, published a considerable amount of information on AO8 in the AMSAT Newsletter. This has been edited and is reproduced for the information of local enthusiasts. You will appreciate that with the launch having been effected, reference to OSCAR **O** should now read AO8.

INTRODUCTION

AO8 was built over the last two years by radio amateurs in the United States, Canada, West Germany and Japan, and is also the first spacecraft in which AMSAT, Project OSCAR and the ARRL have joined together in building flight hardware.

AMSAT-OSCAR D carries transponders for two modes of operation. There is a conventional 145.9 MHz/29.4 MHz Mode A transponder, and a new 145.9 MHz/435.1 MHz Mode J transponder, a similar frequency combination that was pioneered by the OSCAR IV spacecraft in 1986. Six channels of telemetry are provided to monitor the onboard status of the spacecraft. The spacecraft makes extensive use of parts left over from the AMSAT-OSCAR 7 and Phase III programme.

MISSION OBJECTIVES

The principal objective of the AMSAT-OSCAR D spacecraft is the educational uses of a low orbiting satellite. It is to provide a means for the use of such a satellite as an educational tool in schools or other educational institutions. Other objectives include the continuation of communications demonstrations by means of stations in the amateur-satellite service, of the feasibility of using satellites with small amateur terminals of "bush" communication, emergency communications, communication between medical centres and isolated areas, aeronautical, maritime and land mobile communications, direct satellite-to-home voice "broadcasting" to simple amateur receivers, and other similar applications. Further objectives are to demonstrate special operating techniques that enhance the usefulness of low orbits for these satellite applications, and to test the suitability of a new communications transponder frequency combination (Mode J) for small terminal users.

AMSAT-OSCAR D will permit the continuation of the education programme, which began with AMSAT-OSCAR 5, 6 and 7, over the next several years, the AMSAT-OSCAR D anticipated lifetime. OSCAR satellites have begun to play an important role in a new approach to science education. Used as remote laboratory tools, these satellites represent a pioneering utilization of an active space system in the classroom. Since the launch of the first satellites twenty years ago, satellites have had a very dramatic impact on education. Using inexpensive ground terminals for OSCAR satellites in schools, students can gain first-hand experience in space science. This type of direct, active involvement has relevance to the study of communications, astronomy, engineering, physics, mathematics and meteorology. The OSCAR ground terminal puts at the disposal of the instructor and student an active satellite system as a resource for demonstration and experimentation.

SPACECRAFT DESCRIPTION

AMSAT-OSCAR D is a communications satellite in the AMSAT Phase II (low-orbit) series, designed to operate with small stations in the amateur-satellite service on a non-commercial basis. The spacecraft contains two communications transponders and command and telemetry systems. The spacecraft is solar powered, weighs 60 pounds, and is a 15-inch rectangular solid 13 inches high. Its anticipated useful operating lifetime is three years.

Two types of communications transponders are aboard the spacecraft. Normally, only one transponder will be operated at a time because of spacecraft battery constraints.

TWO-TO-TEN TRANSPONDER — "MODE A"

Note: Bold letters are inferior letters.

The Mode A transponder is a two-to-ten metre unit similar to the one on AMSAT-OSCAR 7 and with the same frequency passband (input frequency passband of the 145.85-145.9 MHz, and output frequency passband between 29.40 and 29.50 MHz). A 250 mW telemetry beacon provides telemetry data in Morse code at a frequency of 29.402 MHz. Approximately —95 dBm is required at the transponder input terminals for an output of one watt. This corresponds to an effective radiated power from the ground of 80 watts for a distance to the satellite of 1,200 miles and a polarization mismatch of 3 dB. The transponder translation frequency (input frequency minus output frequency) is 116.458 MHz. Thus, the relationship between the upling (fu) and downlink (fd) is as follows:

$$fd = fu - 116.458 \pm \text{Doppler}$$

where both fd and fu are in MHz.

(For example, an uplink signal at 145.900 MHz will produce a downlink signal from the transponder on 29.442 MHz ± Doppler.) As in the two-to-ten metre transponders in AMSAT-OSCARS 6 and 7, the passband is not inverted, and upper-sideband uplink signals become upper-sideband downlink signals. Output power is 1 to 2 watts.

Note that the downlink frequency will be slightly different (8 kHz) to that of the equivalent AMSAT-OSCAR 7 Mode A transponder that has an equivalent frequency relationship of

$$fd = fu - 116.450 \pm \text{Doppler}.$$

TWO-METRE TO 70CM TRANSPONDER — "MODE J"

The second transponder, constructed by members of the Japan AMSAT Association in Tokyo, uses a two-metre input, 70 centimetre output combination which has not yet been flown in the AMSAT Phase II series. Note that a similar combination was used in the short-lived OSCAR IV spacecraft in 1966.

This transponder, designated Mode J, operates with an input frequency passband of 145.90-146.00 MHz, and an output frequency passband of 435.10-435.20 MHz. Power output is about 1-2 watts PEP, and the output passband is inverted, i.e., upper-sideband uplink signals become lower-sideband downlink signals. The transponder translation frequency (input frequency plus output frequency) is 581.1 MHz ± Doppler. Uplink sensitivity for one watt output is —105 dBm, corresponding to an eirp from the ground of 8* watts for a distance to the satellite of 1200 miles. Note the greatly improved sensitivity of this mode, and keep your power down. A 100 milliwatt beacon carries telemetry at a frequency of 435.095 MHz.

The relationship between the uplink (lu) and downlink (fd) is as follows:

$$fd = 581.1\ MHz - fu \pm Doppler$$

where both fd and fu are in MHz.

ANTENNA SYSTEM

Both the Mode A and Mode J transponders use the same receiving antenna, a canted turnstile comprised of four 19-inch lengths of ½-inch carpenter's rule fed by a hybrid and matching network so as to develop circular polarization. One port of the hybrid feeds the Mode A receiver such that left-hand circular polarization is required by users in the Northern hemisphere, and right-hand circular polarization in the Southern hemisphere. A second port of the hybrid is connected to the Mode J receiver such that right-hand circular polarization is required in the Northern hemisphere, and left-hand circular polarization in the Southern hemisphere. The antenna gain should approach 5 dB in the —Z direction (i.e., toward the bottom of the satellite).

The Mode A ten-metre downlink entenna is a linearly-polarized dipole, oriented perpendicular to the stabilization magnets in the spacecraft as in AMSAT-OSCAR 6 (but unlike AMSAT-OSCAR 7, which has the ten-metre antenna paprallel to the axis of the magnets).

The Mode J 435 MHz downlink antenna is a simple monopole, linearly polarized, and located on the top of the spacecraft. Note that its location may result in some radiation shielding at high Southern hemisphere latitudes.

* Sensitivity may decrease by a factor of 10 (10 dB) under different conditions of battery that at certain times as much as 80 watts may be required.

TELECOMMAND SYSTEM

A five-function telecommand system of a new design is carried out on AMSAT-OSCAR D. The system is based on the best features of the AMSAT-OSCAR 6 and 7 telecommand systems, and is designed to be virtually immune from noise and interference. The command functions are:

Mode "A" Select (two-to-ten metre transponder ON).
Mode "J" Select 2m-to-70cm transponder ON).
Mode "D" Select (Recharge mode; both transponders OFF).
Ten-metre Antenna Deployment.
Ten-metre Antenna Reset.

TELEMETRY SYSTEM

Note: Bold letters are inferior letters.

Ch. 1 — Total Solar Array Current
IT = 7.15(101-N) ma.
IT = 7.15(101 — N) ma.

Ch. 2 — Battery Charge-Discharge Current
IBat = 57(N-50) ma.
IBat = 57(N — 50) ma.

Ch. 3 — Battery Voltage
VB = 0.1N + 8.25 volt

Ch. 4 — Baseplate Temperature
Tbp = 95.8 —1.48N(°C)

Ch. 5 — Battery Temperature
TBat = 95.8 —1.48N(°C.

Ch. 6 — RF Power Out. — Mode J
PJT = 23N milliwatts

A sample telmetry frame would be:

120 255 380 451 620 HI 120

Note that, unlike AMSAT-OSCAR 6 and 7, AMSAT-OSCAR D has only one parameter per line (AMSAT-OSCAR 6 and AMSAT-OSCAR 7 had 4). As a result, a complete telemetry frame is sent in approximately 20 seconds.

POWER SYSTEM

The spacecraft contains solar panels on its four sides (along the +X, —X, +Y and —Y axes), and on the top (the +Z axis). No panels are contained on the bottom (—Z axis), since this is where the spacecraft attaches to the launch vehicle. The solar cells, combined with a 12-cell, six-ampere-hour rechargeable nickel-cadmium battery should be adequate to power the spacecraft with a positive power budget in Mode A for several years even considering solar cell degradation in the radiation environment. The power drain in Mode J, however, is somewhat larger, and so the Mode J transponder probably cannot be operated continuously.

A battery charge regulator is also contained which converts from the 28-30 volt solar array voltage to the 14-16 volts required by the battery. It also tapers the charge rata so that the battery trickle-charges as the battery approaches full charge (as indicated by the battery voltage).

STABILIZATION SYSTEM

Four permanent magnets located inside the spacecraft and aligned along the Z axis provide stabilization, as in AMSAT-OSCARs 6 and 7. The polarity of the magnets is such that the top (+Z axis) of the spacecraft always points toward the magnetic North Pole of the earth. Hysteresis permalloy damping rods mounted behind the +X, —X, +Y and —Y solar panels are designed to reduce the spin of the spacecraft about the Z axis, functioning in a manner similar to a shorted transformer turn as it cuts the lines of flux of the earth's magnetic field. The permalloy rods are left over from AMSAT-OSCAR 7, which successfully used the same type of stabilization system.

TELECOMMAND VERIFICATION PROCEDURES

AMSAT-OSCAR D's telecommand and telemetry systems have been designed to provide two means to easily verify whether the spacecraft is accepting commands. First, when the telecommand system has been enabled and is ready to accept a command, the Morse code telemetry will be interrupted and an unmodulated carrier wil be heard cn the beacon frequency. The beacon will revert back to Morse code when the telecommand system is no longer enabled.

The second method of telecommand verification is to use the "Ten-metre Antenna Deployment" command. This will cause a series of keying pulses to be heard on the telemetry beacon in place of the Morse code telemetry if the command has been accepted. The "Ten-metre Antenna Reset" command should be sent soon afterward in order to restore the beacon to the Morse code telemetry mode.

TELEMETRY INTERPRETATION

The most important telemetry channel that will affect operations decisions is channel 3 (battery voltage). In Mode A the spacecraft should maintain a positive power budget so that there should not be a nat discharge of the battery over an orbit average. Mode J operation, however, requires somewhat more power, which may result in a net discharge of the battery, especially under conditions of high transponder loading, and therefore it wilt be necessary for telemetry and telecommand stations to keep a close watch on the battery voltage so that action can be taken as necessary to command the spacecraft into Mode D (the recharge mode) before the battery discharges too far. Three cut-off levels are specified below:

Red Level "A": 1.2 volts/cell) Ch. 3 = 61 counts.
Red Level "B": (1.1 volts/cell) Ch. 3 = 50 counts.
Red Level "C": (1.0 volts/cell) Ch. 3 = 38 counts.

Red Level "A' should be used during the first year or so of the spacecraft's lite as the cut-off point below which telecommand stations should command the satellite into Mode D for recharging. Later in the spacecraft's life as the battery discharge characteristic curve changes, Red Level "B" should be used, and Red Level "C" should be used if there is evidence of deterioration of the battery, or if it is desired to recondition the battery.

Channel 1 (solar array current) provide an indication of whether the spacecraft is in the sun or eclipse (it should read in the nineties in counts when in eclipse). Fluctuation in ch. 1 telemetry is the best indicator of the rate of spin of the spacecraft, along with observations of fading, particularly of the 435 MHz Mode J downlink signal from the quater-wave 435 MHz monopole antenna.

Channel 2 (battery charge-discharge current) gives information on whether the battery is charging or discharging. A reading larger than 50 counts indicates that the battery is charging, while a reading of less than 50 counts means the battery is discharging. There is e two-second integration time associated with the current telemetered on this channel. The total power drain of the spacecraft can be determined by observing channel 2 while the spacecraft is in darkness (as indicated by channel 1, which should read in the nineties in darkness).

Telemetry channels 4 and 5 (baseplate temperature and battery temperature) should generally track within a few degrees (except perhaps in the first day or so after launch when the spacecraft has not yet stsbilized a thermal equilibrium). Experience from AMSAT-OSCARs 6 and 7 indicate that the battery can overcharge and overheat during periods of the year when the spacecraft sees the most sunlight. If this is the case, channel 5 may exceed channel 4 in temperature by 10 degrees or more (Centigrade), and action should be taken to reduce this overheating. This can be accomplished by keeping the spacecraft in Mode J to consume any extra charge current from the battery.

Channel 6 is a measure of the Mode J transponder 435 MHz RF power output. Associated with the telemetered readings is an integration time of 2.5 seconds, so that it is average power rather than transponder. The Mode A transponder power consumption (largely determined by the PA current) can be measured by observing channel 2 telemetry as noted above.

OPERATING SCHEDULE

Since the prime mission of the AMSAT-OSCAR D spacecraft is to use the Mode A transponder for the ARRL OSCAR educational programme in schools, the spacecraft may be left in Mode A during weekdays (Mondays through Fridays, USA time) and put in Mode J on week-ends. Additionally, if not an excessive burden on the telecommand stations, evening orbits in the Western Hemisphere (morning orbits in the Eastern Hemisphere) can be switched to Mode J, battery permitting. In any case, all operation in Mode J will require careful monitoring of the battery charge level (as indicated from channel 3 telemetry, battery voltage). The power budget may not support the Mode J transponder for full-time, continuous operation in this mode over an entire week-end.

AMSAT-OSCAR D will operate in a 560 statute mile orbit, i.e., at just over half the altitude of the 910 statute mile orbit of AMSAT-OSCAR 7. Thus communication ranges will be different. The usable time on an overhead pass will be about 18 minutes instead of the 22 minutes provided by AMSAT-OSCAR 7 and the horizon range will be 2000 miles instead of the 2450 miles of AMSAT-OSCAR 7. This means, for example, that trans-Atlantic communications will still be possible but not as often as with AMSAT-OSCAR 7.

Keeping track of this satellite is going to be much simpler than for AMSAT-OSCAR 7. It will come into range at the same time each day (more or less); the overheard descending node pass is planned for 9.30 a.m. local time.

OSCAR PREDICTIONS — JUNE 1978 — AO7

Orbit	Mode	Date	Time Z	Long.
16203	B	01	0115	76
16215	A	02	0014	6.
16228	B	03	0108	74.7
16240	B	04	0008	59.6
16253	A	05	0102	73.2
162°5	B	06	0001	58.0
16278	B	07	0056	71.6
16291	A	08	0150	85.2
16303	B	09	0049	70.1
16316	B	10	0144	73.6
16328	A	11	0043	68.5
16341	B	12	0137	82.1
16353	B	13	0037	66.9
16366	A	14	0131	80.5
16378	B	15	0030	65.4
16391	B	16	0124	78.9
16403	A	17	0024	63.8
16416	B	18	0118	77.4
16428	B	19	0017	62.2
16441	A	20	0112	75.8
16453	B	21	0011	60.7
16466	B	22	0105	74.3
16478	A	23	0005	59.1
16491	B	24	0059	72.7
16504	B	25	0153	86.3
16516	A	26	0053	71.1
16529	B	27	0147	84.7
16541	B	26	0046	69.6
16554	A	29	0141	83.2
16566	B	30	0040	68.0

ORBITAL PREDICTIONS — MAY 1978 — AO8

Orbit	Date	Time Z	Long.
786	01	0127	62.9
800	02	0132	64.2
814	03	0137	65.5
828	04	0142	66.9
841	05	0004	42.45
855	06	0009	43.8
869	07	0015	45.1
883	08	0020	46.5
879	09	0025	47.8
011	10	0030	49.1
925	11	0035	50.5
939	12	0040	51.8
953	13	0045	53.1
967	14	0050	54.5
931	15	0055	55.8
995	16	0101	57.2
1009	17	0106	58.5
1023	18	0111	59.9
1037	19	0116	61.2
1051	20	0121	62.5
1065	21	0126	63.9
1079	22	0131	65.2
1093	23	0136	66.6
1107	24	0141	67.9
1120	25	0003	43.4
1134	26	0008	44.8
1148	27	0013	46.1
1162	28	0019	47.4
1176	29	0024	48.8
1190	30	0029	50.1
1204	31	0034	51.5

Period 103.232 minutes.
Longitude Increments 25.81°. ■

$(P)^n = k(RT)$. ICOM IC701 PUTS NEW DIMENSIONS INTO THE PERFORMANCE FORMULA!!

where R = Reliability, T = Technical innovativeness, K = World-wide acceptance figure.

IC701 state of the art

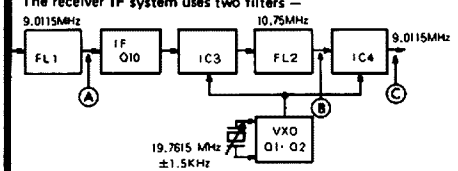
HF TRANSCEIVER

'Let's look at the "T" factor!! Remember the days when separate linears and converters for each band was the ultimate HF transmitter and receiver performance? You get it with the IC701 1978 style.

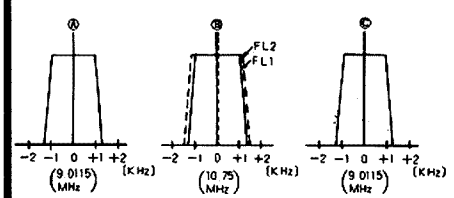
Transmitter: Broadband final, no tuning required, uses separate final low pass filters on each band, fed from a pair of husky transistors in class B. Optimised separate driver circuits with temperature compensation in the driver stages enable a power output of around 100 watts pep on all bands and modes (Japanese domestic version has reduced power on some bands and also different frequency ranges!.

Receiver: The same final low pass tank circuits are used for the input circuits on receive. Separate RF amplifiers using dual gate MOSFET amplifiers pass the signals to a Schottky diode double balanced mixer giving a first IF of 9.0115 MHz. Thus gain of the receiver is optimised on all bands giving a sensitivity figure of 0.25uV for a SN/10dB on any band. As it is to be expected, the cross modulation performance using this type of mixer is exceptional and superior to competitive transceivers.

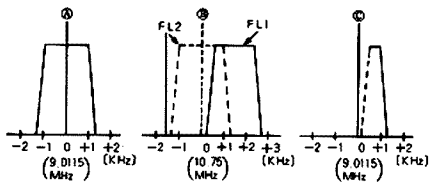
The system used for bandpass tuning is unique to the **IC701**: The receiver IF system uses two filters —



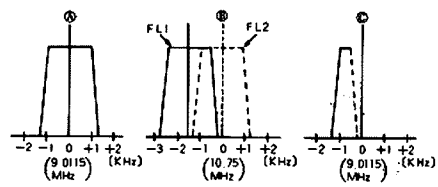
FL1 centre freq. is 9.0115 with a bandwidth of ± 1.15KHz. FL2 centre frequency is 10.75MHz with a bandwidth of ± 1.2KHz. The VXO has a centre frequency of 19.76MHz which can be varied by the front panel control ± 1.5KHz. The following diagrams show how signals pass through the system when Band Pass control (VXO) is at centre position —



When VXO (Band Pass tune) is clockwise the signals from FL1 are mixed to the new frequencies of 10.7503 to 10.7527 MHz by the VXO on a freq. of 19.7630MHz. The resultant frequencies if plotted on the FL2 filter bandwidth would look like this —



Remember, dotted shape is the filter shape of FL2 and solid line is mixed output signals from FL1. Then, since the upper frequency passband limit of the 10.75MHz filter, FL2 is 10.7512, not all the signals will be passed by the filter. Conversely, when the passband control is in the fully counter clockwise position the VXO is on a frequency of 19.76MHz. The diagram now looks like this —



The 10.75MHz signals from the mixer IC3 will be from 10.7497 to 10.7473MHz. As the passband of the filter is 10.7512 to 10.7488MHz not all the signals will be passed. Again the passband has been narrowed to 900Hz and offset to the opposite side of the centre frequency of the crystal filter. Try an example: Suppose you are receiving a signal whose input to the mixer IC3 is 9.0115 and QRM is on 9.0125 i.e. 1KHz away. With the BP control at centre both signals will be heard as the resultant signals will be 10.750 and 10.749MHz and both are within the passband of the filter.

By turning the BP control a resultant frequency of 10.748 MHz is reached which puts the 9.0125MHz signal outside the passband of the filter.

The signal you want on 9.0115 when mixed with the VXO at IC4 becomes the original 9.015MHz signal. Sit down with the figures and you can see why this type of BP tuning is so unique.

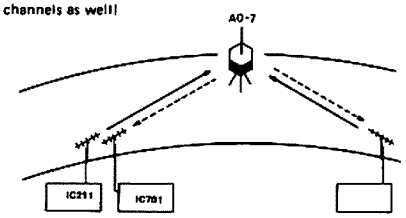
The big "T" is endless.
A VFO with optical tuning, no variable capacitors are used by ICOM under agreement with Collins Radio USA.

Separate VCO for each band is used to reduce spurious and birdies. A fan for the finals that only works if you run for extended periods on RTTY or key down conditions. If a danger point temperature is reached the fan doubles its speed and the digital display fleshes to tell you to quit transmitting!

Twin VFOs are built-in for split band working. No need for an external VFO.

Narrow CW filter and **desk mic** (condenser electret type) are all part of the package.

The built-in **speech processor** uses the 9.0115MHz filter in the passband tuning circuit. Compression control on the front panel controls the drive level and hence the amount of compression.
The same control also acts as power output control on CW and RTTY. Since we all photograph these beauties from the front you would not notice the 24 pin accessory socket on the rear panel. Voltages and functions available at this point enable remote control facilities to be added, but before you get out the design tools, ICOM have thoughtfully provided a remote control head as an optional accessory. Size is about that of a calculator and has its own CPU, digital readout and control buttons. You can select frequencies, change bands, scan and when connected to the 2m IC211, set up duplex channels as well!



The IC701 can be interconnected with the IC211 for Oscar work with due allowance being made for doppler shift.

The day of microprocessor interface with an HF transceiver has arrived. While the others are still fooling around with valves ICOM have produced a state of the art HF transceiver.

And the IC701 is supported by VICOM who have been factory briefed on the service and alignment procedures.

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MMT432/144'S' Transverter, featuring 2 switchable ranges. 432 – 434 434 – 436 MHz, input frequency 144 to 146 MHz.

Get away from the maddening crowd below. The MMT432/144'S' 434 Linear Transverter will get you there. This solid state linear made transverter allows you to operate your 144 MHz SSB, AM, FM or CW units at 432 MHz .... up where there still aren't a lot of people. Amateur Electronic Imports is the exclusive Australian distributor for this precision British made unit from Microwave Modules, Ltd.

NEW RELEASE for OSCAR 8 down link – 70CM converter model MMC434/28, coverage 434 to 436 MHz. PRICE $51

TRANSVERTERS Model MMT432/28 S, coverage 432 to 436 Price $245
TRANSVERTER Model MMT144/28 coverage 144 to146 MHz Price $185

Our extensive range includes: Converters MMC432/28–432/144 Price $51 144/28 Price $45, 144/28LO and 52/28LO Price $49, MMC1296 and 1296/144 Price $65, Varactor Tripler MMV1296 Price $74, 500 MHz counter MMD050/500 Price $175, MMT Power supply $94.

SPECIFICATIONS:
Frequency coverage: 432–436 MHz.
Input frequency range: 144–146 MHz.
DC power requirements: 11-13 volts (12 volts nominal).
Current consumption: 250 mA quiescent 2.1 Amps peak.
RF connectors: 50 ohm BNC sockets
Power connector: 5 pin DIN socket
Size: 187 x 120 x 53 mm
Weight: 900 grams. PRICE $ 295

All prices subject to change without notice.
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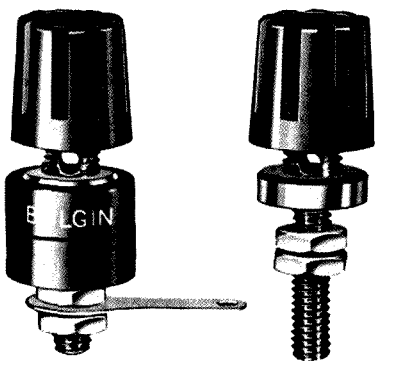
AROUND THE TRADE

NEW BULGIN TERMINALS

Two new 4 mm terminals have been added to the already extensive Bulgin range. Designated TL10 and TL11, they are matched in appearance and design. The TL10 is insulated from the panel by moulded bushes, and the TL11 is live to the panel. Nominal current rating for both terminals is 15 amps. They feature a 2.3 mm cross hole and a deeply ridged screw-down knob, moulded in red or black Polypropylene. The top of each terminal also accepts a standard 4 mm test plug. All metal is nickel plated brass.

The Bulgin company operates a direct mailing list for all their new developments in plugs, sockets, lamp holders, fuse holders, connectors, and similar accessories, many of which are ideal for original equipment manufacturers. Details from R. H. Cunningham Pty. Ltd., PO Box 4533, Melbourne 3001.



CHANGE OF ADDRESS

Vicom International Pty. Limited have moved to new premises in South Melbourne as part of an expansion program into specialist communications electronics. The new address is 68 Eastern Road, Phone 699 6700. ■

MAGAZINE INDEX

Syd Clark, VK3ASC

CQ November 1977

XJ3ZZ/1 St. Paul Island DXpedition; Machine Arithmetique de Pascal; World Administrative Radio Conference (WARC 79); CQ WW DX Contest All-time CW and USA; The "Multi-V", A Multi-Band Antenna; MFJ-8043 Electronic Keyer; The Li'l Zapper Versatile LV Supply; MFJ-16010ST Super Antenna Tuner; QRP: A Solid State VFO for 7-14 MHz; Quads and Multi-Element Quads; An RTTY Primer, Pt. 2; Amateur Radio Station installation Tips.

CQ December 1977

Dxpedition to Nepal, 9N1MM/7; A Bulk Nicad Recharger; Results of the 1977 CQ WW WPX SSB Contest; Vacuum Relay QSK in a Commercially Equipped Station, Part 1; Put a Tape Recorder to Work in Your Shack; SSTV in Romania; Using Your Tower as an Antenna; Solid State VFO Transmitter for 7-14 MHz; Interesting Antennas from Overseas; Getting the Most Out of Test Equipment; Amateur Radio Station Tips, Part 2; Geographical Limits for DX Award Certificates; Story of the Month, Frank M. Koval W8RSW.

CQ January 1978

Navigating to 80 metre DX; The 22nd Annual CQ WW WPX/SSB Contest; Pictures from Last Year's WPX/SSB Contest; A Contact Printer for Printed Circuit Boards and Photographic Film; The RFE-100 Digital Frequency Display; A Single Wire Antenna for 160, 80 and 40 Metres; A Message from the Publisher; The Kenwood TR-2200A, 2 Metre Portable Transceiver; A Marathon Heard, Not Run; Improved Selectivity for the Regency HR-2 Transceiver; An Audio Circuit Breadboarders Delight; More HW-8 Mods; Gaucho Hat Antennas and Much More; Slow Scan Station of the Month, W6WDL, Receiver Considerations for the Novice; Okino Torishima; Short Skip Charts for Jan. and Feb. 1978

HAM RADIO October 1977

Two Metre Stripline Kilowatt; Improving the Accuracy of Your Frequency Meter; S-Line Syllabic VOX System; 10-GHz Hybrid-Tee Mixer; Calculator Aided Circuit Analysis; High Performance 20 Metre Receiver; Repeater Kerchunk Eliminator; Low-Cost Power Supply; Microprocessors: Data Converters.

HAM RADIO November 1977

High Performance General-Coverage Communications Receiver; Noise Blanker Design; Calculating Preamplifier gain from Noise Figure Measurements; Effects of Noise in Receiving Systems; Direct-Conversion Receiver; 20 Metre Receiver with Digital Readout; Crystal Controlled Harmonic Generator; Improved Receiver Selectivity and Gain Control; Receiver Spurious Response and its Cures; High Dynamic Range Active Mixer.

HAM RADIO December 1977

Problems and Cures for *Present Day* Receivers; IF Filter Converter; How to Choose TTL Sub-series; 500 watt Power Supply; Voice Operated Gate; Low Power RF Wattmeter; Drift Correction Circuit for Free-Running Oscillators; Active Bandpass Filters; Phase Locked Receiving Converter.

BREAK-IN December 1977

VHF Antenna Measuring; Base Loaded Verticals; The HF Polished Gem; Wellington Branch 50 Aerial Tuner Mark 1 for Balanced Aerials; A Kiwi on Safari; How a Grade 3 Amateur Received "Break-In" Treatment; The Beginning.

SHORTWAVE October 1977

A Four-Band Versatile Vertical; The Poldhu Story; Trees as Radiators; Unusual DX; A Simple HF/VHF/UHF Gate Dip Oscillator and Wavemeter.

SHORTWAVE November 1977

VHF Bands (Band-planning); The Datong UC/1 Up-Converter; The GM3RFR Broomstick Antenna; Time Out Warning Circuits; QRP Scene 1077; Testing a Museum Piece.

RADIO COMMUNICATION January 1978

An Experimental Self-Tutor for Morse Code Using the SN74S387 PROM; A Simple Admittance Bridge; 12V to 18V Converter for the Pye Bantam; Yaesu FT301; Starting on OSCAR — Some Common Problems.

73 June 1977

Two Metre Scanner; Try the Mini-Timer; High Frequency Utility Converter; RTTY Scratchpad Memory; Build The CW Filter; The London Bus Tuner; The W1BB Story; Ten Watts on 2; UHF SWR Indicator; At Last a 10m Band Plan; Event Timer with a Memory; Sheet Metal Brake; The Easy Ammeter; Try a Corduit Vertical; The IC-PC Connection; An 82S23 PROM Programmer; Practical PS Design; FRG-7 Impressions; SSTV Meets the SWTP 6800; Aim Your Antenna with a Micro; Regulated Nicad Charger; Complete Repeater Control System; Transmission Line Primer; Things Remembered; Digital Bargain Hunting; More Channels for the IC-22S; Try A Scardle-Talkie; Current Saver Counter; Instant OSO Recall System; New PC Techniques Unveiled; How to Use IC's; Uncle Sam's Surplus List.

73 August 1977

Dual Rhombic for VHF-UHF; Microwaveguide Details; Centrefed Specials; Recycle Your Receiver; Build a Double Bazooka; Dirt Cheap Directional Array; Instant PS Regulation; Take Cover; Introducing the Intenna; The Zappy Vertical; A Cure for Antenna Self-Destruct; Quick Antenna insulators; Raising a Tower; Remote Rain Gauge; Super Loop Antenna; Rock Bottom 2m Antenna; Antenna Gain Facts; The 8JK Array Revisited; Tower Installation Techniques; An Ultimate Invisible Antenna; Mountain Top Special Antenna; Fiery End-fed; Build a Vacation Special; Apartment Antenna Specials; Build a Unique Timer; Cooling Your Relays; A Look at Soviet Test Gear; Surplus Goodies are Still Around; The Touchtone Connection; Build a Phone Exchange; Build a Brute Power Supply; Drake Touchtone Review; Marine Radiotelephone Conversion; Solder Soldier; When the Lights Go Out; Ten-Tec Mods; 100 Computer Logger; Troubleshooting a Micro; Super DVM; Build a kW Linear; Build a $2 Drill; Unique Power Supply Tester; Instant Spares; Light up Your Bench; Hang Ten; Using the Atlas Transceiver; PC Layout Tips; Radio Equipment Insurance; Information Management System; CW Keycoder Improvements; Heath HW-2021 Review; The First Step; All about SCTS; Rotary Autopatch Dialler. ■

CONTESTS

Kevin Phillips, VK3AUQ
Box 87, East Melbourne, 3002

CONTEST CALENDAR

May

6/8	Vermont QSO Party
13/14	USSR "CQ-M" Contest
19/20	YL SSBers QSO Party
20/22	Kansas QSO Party
27/28	Francophones Countries Contest

June

4	Townsville Pacific Festival Contest
2/5	CHC/FHC/HTH QSO Party
17/18	West Virginia QSO Party

July

15/16	Sunshine State—Jack Files Memorial Contest (VK4 only)

TOWNSVILLE PACIFIC FESTIVAL CONTEST 1978

This contest is promoted in conjunction with the Townsville Pacific Festival, and aims to increase activity on all Amateur Bands by stations in Australia, New Zealand, Pacific Islands and all countries bounding the Pacific Ocean.

Rules:

1. Time of Contest: The contest is run for 8 days, from 0001 GMT Saturday, 27th May, to 2359 GMT Sunday, 4th June, 1978.
2. Sections: A. Transmitting all bands — Phone only. B. Transmitting all bands — CW only. C. Transmitting all bands — Open. D. Transmitting VHF and UHF — VK only. E. Receiving all band — Open.
3. Logs: These are to show the section entered and points claimed for each contact. This is most important, as if points claim is not completed only 1 point per contact will be allowed. VHF logs must show distance in kilometres between stations.
4. Contacts: A. CW to CW contacts count as double score. B. One (1) contact per band per mode a day only. C. No cross band contacts. D. Repeater contacts do not score.
5. Awards: Perpetual Trophy is held by TARC, and it will be inscribed with the name of the winner, who will receive a smaller trophy. Overseas stations (excluding VK, P29, ZL) with the highest score will receive a "Pacific Festival" medallion. Section winners will be awarded a certificate. Commemorative QSL cards will be issued.
6. Scoring — HF stations.

Scoring table — VK, ZL, P29 stations.

VK —	1	2	3	4	5	6	7	8	P29/VK9	ZL	0
VK0	7	7	7	7	7	7	7	7	7	7	—
VK1	—	1	1	2	3	4	2	4	5	3	7
VK2	1	—	2	1	2	4	3	4	5	3	7
VK3	1	2	—	3	2	4	1	6	4	3	7
VK4	2	1	3	—	4	6	5	2	1	4	7
VK5	3	2	2	4	—	1	3	4	5	4	7
VK6	4	4	4	6	1	—	4	1	5	6	7
VK7	2	3	1	5	3	4	—	6	5	3	7
VK8	4	4	6	2	4	1	6	—	2	4	7
P29/VK9	5	5	4	1	5	5	5	2	—	6	7
ZL	3	3	3	4	4	6	3	5	6	—	7

VK, ZL, P29 to other Pacific seaboard countries and islands — 1 point.

BONUS POINTS — Except VK4 stations:
15 points for contact with VK4WIT.
9 points for contacts with other Townsville stations.

BONUS POINTS — VK4 stations:
1 point per contact for working VK4WIT or other Townsville stations. (Intrastate contacts not otherwise permitted for scoring.

BONUS POINTS — Overseas stations, excluding ZL, P29:
3 points for contact with any VK station.
5 points for contact with any VK Club station.
9 points for contact with any Townsville station.
15 points for contact with any VK4WIT.

ALL STATIONS
160 metres — 5 bonus points per contact.
RTTY and TV — 10 bonus points per contact.
CW/CW — double points.
Scoring — VHF/UHF stations:
0- 50 km — 1 point.
50-100 km — 2 points.
100-200 km — 3 points.
200-400 km — 4 points.
400 km and over — 5 points.

BONUS POINTS
VHF/UHF stations only — other than Townsville stations— Contacts with your local club station add 15 points only if your club station has contacted VK4WIT in preceding 24 hours (contact number must be recorded).

Townsville stations receive one point par contact only.

7. Identification: All station identify for the ease of scoring, e.g. (Phone) VK4WIT Townsville; (CW) VK4WIT/TVL.

Send logs to:—
Townsville Pacific Festival Contest,
VK4WIT — CHC No. 6568,
PO Box 964,
TOWNSVILLE 4810,
Australia.

Closing date of entries: 23rd July, 1978. ■

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 publishers.

The Editor,
Dear Sir,
I do not readily rush into print but I do support the letters of Steve Gregory VK3OT, although I do say this, I think in South Australia we are better off in this regard. Most of our suppliers are old hams and genuine. It's the new ones that are out to make a quick buck, especially on CB gear, which doesn't interest me anyway. It is astonishing the way prices have escalated in the last two years.

I can understand the reason for your comments. I have been in the retail game and I readily appreciate both sides of the game, but believe it pays to shop around these days unless you don't mind being "taken" or have a large roll which esses the problem.

73s.

Cam Patterson VK5XR. ■

The Editor,

30/3/78

Dear Sir,
I was sorry to see that the letter from Jim Davis VK7NOW had been published without a footnote correcting the error he has made; which may have caused others who may be erecting a G5RV aerial unnecessary trouble.

In paragraphs 5 and 6 he claims that the textbooks and AR are wrong in giving 29 ft. 6 in. as the length of the ribbon stub. He then asserts that the correct length of 300 ohm ribbon is 32 ft. 6 in., on the strength of "hearsay evidence".

The footnote should have referred him to the article in AR in which the author G5RV states, "If 300 ohm ribbon is used allowance must be made for the velocity factor of this type of twin lead". Depending on the dielectric used for the ribbon, the velocity factor can vary from 0.95 down to 0.56 for PVC. For the stub to be exactly 29 ft. 6 in. the velocity factor is 0.6878. For the stub to be 32 ft. 6 in. a velocity factor of 0.956 is needed, so no doubt ZL2AGU is using the TV ribbon made of two separate insulated wires held apart with spacers every six inches along the line, a very efficient stub.

Using ribbon made of solid PVC the stub length would only be 20 ft. 5 in. long.

I very much doubt that my friend Louis said that the textbooks and AR are wrong, as he is a professional engineer with, to my knowledge, more than forty years experience dealing with aerials and installations.

Yours faithfully,
Newton Wade VK4QW. ■

Max Stark VK3APZ
6 Bardia Ave., Seaford.
10/3/78

The Editor,
Dear Sir,

PIRACY v. CB

In answer to the letter from Leonard J. Shaw, page 25 AR Jan. '78, I beg apace to answer his questions and implicit criticisms. My shack, such as it is, has always been open to anyone with a problem, CB or not. As an ex-Scoutmaster I have fostered interest through Jamboree on the Air with many youths only to see them rush away, subject to peer group pressure, and become "good buddies". I have repeatedly advised about regulations and licensing and where there has been apparent a genuine interest in radio from a "good buddy" I have recommended novice licensing as a relatively simple way to enjoy a fairly deep involvement in amateur radio. Generally Mr. Shaw, I have wasted my time and my breath because we live in an age when nobody will listen and everybody knows better.

I take exception to the fact that I "tar all CBers with the same tired old brush". I acknowledged the fact that there are numbers, after a first blooding in CB, working towards novice and full call signs. I also acknowledge the fact that there are undoubtedly some thousands of responsible CBers interested in using the CB band for its prime purpose, i.e. short range reliable communication for chit chat, general interest groups, clubs, mobileers, minor civil emergencies, maritime small craft communications and four-wheel drivers to name a few. But, Mr. Shaw, all these genuine CB communicators and communications are being frustrated by the sheer overwhelming number of illegal undisciplined uncaring unlicensed unskilled knob flickers who continue to rout people from 27 MHz despite licensing.

I made the mistake in my previous letter (AR Nov. '76) of quoting dates of pirate invasion of 2 metre FM repeaters. There is no need. The violation of 2 metre FM repeaters in Melbourne on week nights and all weekends is monotonous in its content, repetition and continuity. "CQ repeater channel 2. Come back good buddy", is now commonplace. The use of the repeater to rebroadcast AM radio or tapes and records with resultant copyright infringement, notwithstanding illegal transmission, is also becoming as common as it is on 27 MHz. Amateur satellites could be next. Clearly radio inspection regulatory action is past being a requirement — it is a desperate need.

Observation of Post and Telecommunications recruitment as advertised in the Commonwealth Government Gazette is indicative (as with so many other Depts.) that the emphasis is on clerical and administrative recruitment, not technical staff with the ability to police regulations i.e. track down and secure illegal transmissions. Further, if this illegal activity is not suppressed by the authority responsible the inevitable will probably happen. Vigilante groups of either frustrated amateurs or frustrated CBers will do their own leg work and confrontations could and most likely will occur, with resultant unpleasantness.

If there is a subscribing member of the WIA in regular receipt of AR who could not be bothered signing and returning the Ministerial Petition enclosed in December and January AR, then I suggest that he has no real interest in the future of amateur radio.

Thanks to the editorial staff and contributors who make AR such a readable publication. I thought the December issue was colossal. ■

N. W. Lavelle VK3AHB
4 Wembley Court,
Forest Hill, Vic. 3131

The Editor,
Dear Sir,

For reasons possibly known only to themselves, Alf Chandler VK3LC, and Ivor Stafford VK3XB, seem to have taken the letter I wrote last September (which appeared in AR for November '77) as an affront to the Intruder Watch.

To clarify the situation I shall restate the reason for the original letter.

I found (and find) it strange that the greatest interference ever experienced by amateur radio (the Russian "Woodpecker") had been almost totally ignored by all journals devoted to amateur radio. I find it hard to enthuse over future international frequency allocation conventions when a signatory to the current international agreements breaks those agreements and renders whole amateur bands unusable whenever it so desires.

In the case of AR, I do not believe that a single letter from an Intruder Watch Co-ordinator, in the correspondence columns some eighteen months after the interference started constitutes adequate coverage of a subject of vital importance to members — just as I would consider myself inadequately served by the national news media if man's landing on the moon had been covered by a single letter in the correspondence column some eighteen months after the event.

To paraphrase a legal maxim, not only must associations endeavour to protect the interests of members, they must be seen to be endeavouring to protect those interests.

Mobile News (the journal of the Amateur Radio Mobile Society) of August '77 and Pat Hawker G3VA, in his column in Wireless World of October '77 have, in fact, brought the Russian interference to the attention of their readers.

I should like to thank and congratulate Ivor for his fine letter in February AR. Maybe you're right, Ivor. Maybe we can't force the authorities to act on our reports. Maybe we can't force the European Common Market to change the entry terms for our goods either, but I hope we do a little more than fill out the odd prescribed form. I'd prefer continued friendly persuasion to force anyway. Who knows? — we don't appear to have a lot to lose by trying. ■

The Editor,
Dear Sir,

With reference to the letter from Steve Gregory (VK3OT) in the March copy of Amateur Radio, it is felt that his accusations regarding the amateur radio retailers should not be allowed to go unchallenged.

He indicates that an increase in price of the FL-2100B is "nearly 50 per cent" (actually 44.5 per cent) since 1976, and yet in only the past one year:

(a) The Australian inflation rate was approximately 9 per cent.

(b) The effective increase in value of the Japanese yen against the Australian dollar was approximately 24 per cent.

(c) The cost of units supplied to Australian dealers from Japanese sources has risen almost 20 per cent.

The cumulative net effect of this is a 62 per cent rise in only one year!

Despite these enormous cost increases, Dick Smith Electronics has seen fit in many cases to actually reduce the price of certain Yaesu lines below the price they were selling for last year and those of you who read American magazines will notice that our prices are now comparable to the prices the American amateur has been enjoying for years (not forgetting US prices are all plus applicable sales tax).

This company is, and will continue, to supply the Australian amateur operator with the best quality equipment at the lowest possible prices, including full warranty protection.

Yours faithfully,
Dick Smith Electronics Pty. Ltd.
J. Dennis, Amateur Radio Manager. ■

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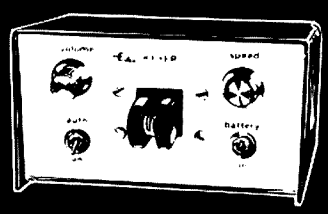

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ROCK BOTTOM ROCK PRICES . . .

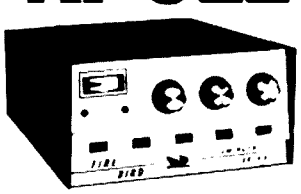
I must have rocks in my head to sell them at these ridiculous prices. Crazy!

D-6321	Rptr 1	Suit Multi 7; should suit TR2200A & 2200G (some xtals may need re-trimming) Tx xtals fit KP-202 Rx xtals fit Daiwa SR-9 WERE: $9.00 NOW: $4.75 SAVE $4.25	$4.75 Pair
D-6322	Rptr 2		
D-6323	Rptr 3		
D-6324	Rptr 4		
D-6325	Rptr 5		
D-6326	Rptr 6		
D-6327	Rptr 7		
D-6328	Rptr 8		
D-6329	Rptr 9		
D-6330	Simp 40		
D-6335	Simp 50		
D-6336	Simp 51		
D-6421	Rptr 1	Suit Multi 16 & Multi 11, receive xtal MAY fit KP202. Rx xtals fit all ICOM units with trimmer adjustment WERE: $9.00 NOW $4.75 SAVE $4.25	$4.75 Pair
D-6422	Rptr 2		
D-6423	Rptr 3		
D-6424	Rptr 4		
D-6425	Rptr 5		
D-6426	Rptr 6		
D-6427	Rptr 7		
D-6428	Rptr 8		
D-6430	Rptr 10		
D-6436	Simp 51		
D-6438	Rptr 9		
D-6340	Chan 2	Fit IC-22; Rx xtals may fit Multi 11 & Multi 16 with trimming	$4.75 Pair or each as applies
D-6340	Chan 8		
D-6340	147.0 Rx		
D-6340	145.9 Tx		
D-6340	146.5 Rx		
D-6278	8.7515	Fit FT-101 series – novice xtals	$8.00 each
D-6283	8.8830		
D-6288	8.8800		
D-6273	8.7300		
D-6182	28.2MHz	Experimental xtals, some can be used for converting 'CB' to novice frequency.	$7.00 each
D-6290	35.895MHz	Originally for TS520 (S), use as experimental xtals.	~~$14.50~~ $3.00 each

NOTE! Where it is suggested that crystals from one unit may fit another, this information is supplied on an advisory basis only, and cannot be guaranteed.

XXXX SPECIAL

APOLLO LINEAR



was $299.50

now $199.50

Cat D-2544.

The Firebird: 200 watts of muscle on 40 to 10 metres from just 3 watts of drive. Features receive pre-amp & rugged construction. 240V.

SAVE $100.00

ONLY A FEW LEFT – BE QUICK FOR THIS ONE!

DICK SMITH ELECTRONICS

SHOP HOURS
Mon-Fri 9AM – 5.30PM
Sat 9AM – 12 noon
Bankcard welcome here

Order value P&P charge
Up to $9.99 $1.00
$10 to $24.99 $2.00
$25 to $49.99 $3.00
$50 to $99.99 $4.00
$100 or more $5.00

SYDNEY
125 York St
City Ph 29 1126

147 Hume Hwy,
Chullora. Ph: 642 8922.
We've moved!

SYDNEY
162 Pacific Hwy
Gore Hill Ph 439 5311
Ample parking at door

SYDNEY
30 Grose St
Parramatta Ph 683 1133
1st floor – friendly store!

MELBOURNE
399 Lonsdale St
City Ph 67 9834
New – right in town!

MELBOURNE
656 Bridge Rd
Richmond Ph 42 1614
Easy access, huge stock

BRISBANE
166 Logan Rd
Buranda Ph 391 6233
Opens 8.30AM

ADELAIDE
203 Wright St
City Ph 212 1962
Now Open. See us!

MAIL ORDER DEPARTMENT PO Box 747 Crows Nest, NSW 2065 Phone 439 5311 Post & Pack extra

WE HAVE DEALERS RIGHT ACROSS AUSTRALIA – THERE'S ONE NEAR YOU!

JOHN MOYLE MEMORIAL NATIONAL FIELD DAY CONTEST RESULTS — 1978

24 HOUR DIVISION

SECTION (a) — TX PHONE

VK4XZ	2282	
VKLX	1927	
VK4AYL	937	
VK3YQ	522	
VK4AHO	190	
VK4ABQ	140	

SECTION (b) — TX CW

VK3XU	570	

SECTION (c) — TX OPEN

VK5OR	1820	
VK6TJ	1436	
VK4AAR	1371	
VK3AYL	683	

SECTION (d) — TX MULTI-OPERATOR PHONE

VK3ATL	12852	16 ops.
VK4AAQ	4404	6 ops.
VK1ACA	4373	4 ops.
VK3BML	3888	10 ops.
VK5KT	3559	9 ops.
VK3ANR	3079	4 ops.
VK5LZ	2995	3 ops.
VK3XK	2911	5 ops.
VK2BXD	2605	4 ops.
VK3BGG	2459	4 ops.
VK7AX	752	2 ops.

SECTION (e) — TX MULTI-OPERATOR OPEN

VK3APC	7706	14 ops.
VK3ATM	7174	16 ops.
VK4WIT	5639	12 ops.
VK2WG	4825	8 ops.
VK1WI	3737	
VK2ADZ	3294	6 ops.
VK5WC	3254	6 ops.
VK2AWF	3201	
VK3DC	1858	6 ops.

SECTION (f) — TX VHF MOBILE/PORTABLE

VK1ACA	1844
VK3AVJ	1732
VK3BER	544
VK7ZLB	363
VK4ADW	362
VK4ZJP	344
VK3ZAO	292
VK4PV	282
VK4HS	120

SECTION (g) — HOME TX STATIONS

VK5QX	1465
VK3XB	1060
VK3BME	280
VK1NAO	275
VK3ZCB	220
VK7NFR	180

SECTION (h) — RECEIVING OPEN

S. W. Russell (VK3)	1715
E. W. Trebilcock L300042	120

6 HOUR DIVISION

SECTION (a) — TX PHONE

VK3BIR	1015
VK2AHV	801
VK4QH	776
VK*GM	679
VK4ADC	614
VK2JM	517
VK2ARZ	389
VK7HK	302
VK3EF	175

SECTION (b) — TX CW

NIL

SECTION (c) — TX OPEN

VK2EL	1054
VK3BIR	1045
VK1RC	802
VK3RV	679
VK3VF	638

SECTION (d) — TX MULTI-OPERATOR PHONE

VK4PJ	784	2 ops.
VK3ATO	591	3 ops.
VK4AMA/MM	577	2 ops.

SECTION (a) — TX MULTI-OPERATOR OPEN

VK3UV	1552	3 ops.
VK5KR	1276	6 ops.

SECTION (f) — TX VHF MOBILE/PORTABLE

VK3ZJS	779
VK4ZMG	564
VK4ZCB/2	515
VK4DT	316
VK3YGB	310
VK2EL	92
VK6ZHM	44

SECTION (g) — HOME TX STATIONS

VK2BVJ	600
VK3YLD	330
VK3KS	310
VK7RY	120
VK6TU	105

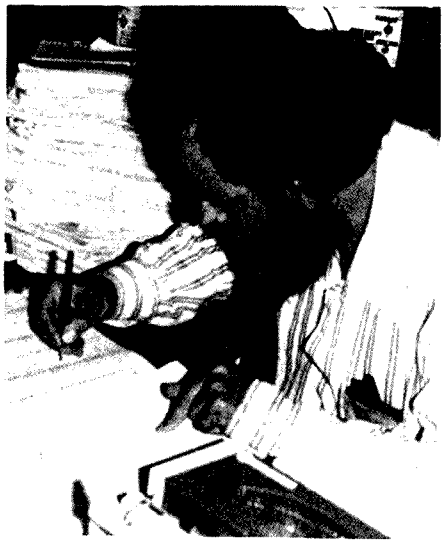
SECTION (h) — RECEIVING OPEN

R. W. Middleditch (VK3)	410

CHECK LOGS

VK3AEU, VK3YAY, VK5QX, D. J. Forbes L30728.

These results are provisional, as leading scores are subject to further checks. ■



VK3AUI checking logs.

GEELONG AMATEUR RADIO CLUB VK3ATL OPERATED FROM MOUNT COWLEY IN THE OTWAY RANGES

Geelong ARC 15 Mx operator Daryl VK3AQR hopping in for his 'chop'.

Mike VK3ASQ was GARC's 6 and 2 Mx operator using an FT620B and FT221.

QSP

GOLD COAST HAMFEST

The Gold Coast Radio Club will hold a Hamfest on Saturday, 29th July. The venue will be a country property and in addition to the usual trade displays there will be a wide range of side shows and old-time dancing. The Hamfest will be used as a means of publicising amateur radio to the public and local organisations. The organiser is Ken Ayers VK4KD, 121 Nerang Street, Southport 4215.

ZL 10 METRE BEACON

The 10 metre beacon ZL2MHF situated on Mount Climie is now operating on a frequency of 28.23 MHz. In order that the propagation on the 10 metre band can be investigated it would be appreciated if signal reports of the beacon could be forwarded either by the Bureau or direct to the Secretary, NZART Branch 63, PO Box 40212, Upper Hutt, New Zealand.

LINEARS IN CANADA

According to Ham Radio Jan '78 point of sale control for linear amplifiers has been instituted by the Canadian Department of Communications. All buyers of linears must sign a special form which is forwarded to DOC for checking purposes.

PREFIXES

If you hear a prefix in the series H5A-H5Z this may be from an operator in newly independent Bophuthatswana. No ITU confirmation was available.

ARE YOU REPORTING INTRUDERS TO THE INTRUDER WATCH CO-ORDINATOR? IF NOT — WHY NOT?

IARU NEWS

The next IRAU Region 3 Conference will be held in Bangkok from Friday, 6th October, to Tuesday, 10th October, 1978. The host society will be the Radio Amateur Society of Thailand, under the capable leadership of President Kamchai Chotikul HS1WR and Secretary Edward Rose HS1ALF.

The WIA will be represented by the Federal President, David Wardlaw VK3ADW. David Rankin 9H1RH/VK3QV is Secretary of the R3 Association, and the Directors are Masami Saito JH3PJE, Michael Owen VK3KI, Tom Clarkson ZL2AZ, and Ton Lian Huat 9V1OD.

The latest member of the ITU is the Republic of San Marino. The membership now totals 153.

Two new members of the IARU Region 3 Association are the Papua New Guinea ARS and the Korean ARS Inc. The President of PNGARS is Smith P29JS and of KARL is Mrs. Young-Hee HM1YL.

A new member to IARU is the Royal Omani ARS, making the total 98. The Organisasi Amatir Radio Indonesia has applied for membership.

IARU Region 1 has three new members, Botswana ARS, The AR Association of Bahrain and the Sierra Leone ARS, making that Region's total 46 altogether. Three additional societies are expected to join Region 1 in the near future — The Turkiye Radyo Amatorleri Cemiyeti, the Royal Jordanian Radio Amateur Society and the Royal Omani ARS.

IARU Region 2 next conference is due to be held from 3rd to 8th September 1978 in Panama City and the Region 1 conference in Hungary will have been concluded when you read this. All these Regional conferences are triennial.

Acknowledgements for most of this to IARU Region 3 Newsletter No. 6. ■

INTRUDER WATCH

Alf Chandler, VK3LC

METRE BAND CLEARED OF FOREIGN BROADCASTS

Wouldn't it be wonderful to read the above one day? It could well come true if enough of us were to lodge formal complaints through the WIA Intruder Watch network, so that our P. and T. Department could initiate action at the international level in conjunction with the other administrations who are already working on it.

This month would you please co-operate by letting me or your Divisional Co-ordinator have specific reports on the following broadcast stations:

7010—Radio Peking — best identified in English at 2000Z following the Peking bells after the "Internationale" has been played.

7065—Radio Tirana — identifies in English at 0630Z, 2055Z, 2208Z, but has been heard at 1630Z.

7070—Radio Republic Indonesia — identifies in English at 1200Z and 1300Z.

Alf Chandler VK3LC
Intruder Watch Co-ordinator.

In case you do not know your Divisional Co-ordinator, here is the list —

VK1AOP—Ted Pearce, 45 Carnegie Cres., Narrabundah, 2604.

VK2AFG—Les Weldon, 11 Raymond Ave., Northmead, 2152.

VK3XB—Ivor Stalford, 16 Byron St., Box Hill, 3128.

VK4KX—Murray McGregor, 6 Murray St., Red Hill, 4059.

VK5LG—Leith Cotton, 64 Weroona Ave., Parkholme, 5043.

VK6WT—David Couch, 9 The Grove, Wembley, 6014.

VK7MX—Max Ives, PO Box 12, Devonport, 7310.

VK8HA—Henry Andersson, Box 1418, Darwin, 5794.

AWARDS COLUMN

Brian Austin, VK5CA
P.O. Box 7A, Craters SA, 5152

GENERAL RULES FOR THE ARI HF AWARDS (as received)

The following general rules apply to all HF awards issued by the Associazione Radiotecnica Italiana (ARI) and should be read together with the conditions which govern each individual certificate.

1. All enquiries should be addressed to the ARI HF Awards Manager, G. Nucciotti I8KDB, via Fracanzano, 31-80127 Napoli, Italy, together with one IRC (2 IRC for airmail reply outside of Europe).
2. ARI HF Awards will be issued to any amateur who will submit to the manager —
   A letter, dated and signed, with applicant's name, address and call. He must certify to have complied with all rules governing amateur radio service in his own country and to have kept fair play and good sportsmanship in operating toward the Award for which the application is claimed.
   The complete list of QSLs, with call sign, date, frequency, reports, time and type of emission (CW, AM, SSB, RTTY).
   QSL cards for checking.
   10 IRC or $1 for foreign applicants. The "Guglielmo Marconi Award" is free (only mail fee).
   QSL cards must be submitted without corrections, erasures or additions and must be clearly readable. If the type of transmission is not shown, two figures (RS) count as Phone (AM, not SSB) and three (RST) as CW.
3. To get an award in a specific class, the cards must show the corresponding data in clear manner.
4. Following decisions of IARU Region 1, all foreign applicants can avoid to send QSL cards by submitting a check list of the cards duly Amateur Radio Society. ARI HF Manager reserves the right to check, on request, one or more QSLs.
5. ARI HQ decisions are final.
6. Any falsification of cards will result in disqualification.
7. Application shall be sent to the address of ARI HF Award Manager as per point 1. It is suggested in order to safeguard your QSLs, etc., to send applications by registered mail.
   These rules apply from 1st January 1977.

CERTIFICATO DEL MEDITERRANEO (CDM)

1. The CDM is issued to those amateurs who can show confirmation of a two-way contact on the HF bands since 1-6-1952 with
   (a) A fixed amateur station in at least 22 countries of the list (pay attention, in the list there is no peninsular Italy).
   (b) At least 50 amateur stations of peninsular Italy (total 72 QSL).
2. The same station may be worked once only.
3. The CDM is issued in 2 classes:
   (a) Mixed (AM, SSB, CW, RTTY).
   (b) Phone only (AM, SSB).
4. The minimum reports considered are: RST 338 and RS 33.
   List of countries:

Spain	Crete
Balearic Islands	Mount Athos
Ceuta and Melilla	Turkey
Morocco	Syria
France	Yugoslavia
Algeria	Albania
Corsica	Malta
Sardinia	Gibraltar
Sicily	Cyprus
Lebanon	Monaco
Egypt	Tunisia
Greece	Israel
Dodecanase Islands	Libya

CERTIFICATO DEL MEDITERRANEO/SWL (CDM/SWL)

1. The CDM/SWL is issued to those SWL who can show confirmation of a HRD since 1-1-1960 of 14 countries of the CDM list.
2. The award is not divided into classes.

"BACK TO DARWIN AWARD"

100 awards will be issued by the Darwin Amateur Radio Club for working Club Members in the greater Darwin area during the month of May 1978, which is the official "Back to Darwin" month of festivities which marks the completion of the rebuilding of Darwin after cyclone 'Tracy' which devastated the city on Christmas Day 1974.

Requirements for the issue of the award:

VISITING AMATEURS:
Free to visiting amateurs after working five club members in the greater Darwin area on VHF, HF, or eye-ball QSO with five club members.

All VK8 stations outside one kilometre radius of Darwin, and all other VK, P29, and ZL stations contact five club members in the greater Darwin area on any band, two CW and three phone contacts. Cost fifty cents or 5 IRCs.

DX STATIONS:
Work three CW and two phone club members in the greater Darwin area. Cost 15 IRCs.

LOGS:
Send a list of stations worked stating call sign, date, band, and time in Zulu. Do not send QSL cards.

SEND LIST TO:
Awards Manager, c/- Box 1418, Darwin, N.T. 5794. ■

20 YEARS AGO

Ron Fisher, VK3OM

APRIL 1958

"Is the Australian Amateur Abreast with Communication Progress", so asks the Editorial page of April 1958 Amateur Radio. Communication Progress is defined as general developments in the world of commercial and amateur communications. Perhaps the most interesting statement is contained in the last paragraph of the Editorial. "Your Executive has assiduously pressed for issue of 'Novice' licence. Our reasons are not altogether selfish, a fact that is borne out by the support we have received from the defence services who realise that in an emergency the Amateur is a trained specialist capable of immediate assimilation into the communication branch".

Propagation Study on 3.5 and 7 MC. Hans Albrecht put forward some thoughts on long distance low frequency QX working. The Chordal-Hop theory suggested that the wave could be reflected along the ionospheric layer without touching the ground.

VK6EC's Amateur Television, part two, discussed the Vidicon Camera with complete details of its construction including details of the deflection coils and viewfinder.

Results of the 1957 VK-ZL DX Contest were announced. The call area winners on CW were VK's 2GW, 3DQ, 4NL, 5KU, 6RU and 7UW. Australian top score was VK9XK. In the phone section, VK's 2AOU, 3HL, 4TN, 5WP, 6RU, 7LZ and 9BW.

Frank O'Dwyer VK3OF reported in his VHF notes that six metres had been open to JA with signals peaking over S9. Also VK4's had worked into KH6, in one instance using only 5 watts and a dipole. SWL, George Palmer of Williamstown, Victoria, had heard mobile police cars from Kansas on 45 MHz.

Two reports of alert amateur operators aiding emergency situations were published in April 1958 AR. VK7AJ picked up a distress signal from a motor cruiser off the New South Wales coast. The message was relayed to a freighter which located the vessel and towed it to port. In Queensland, amateur operator Dr. J. Kelly, no call sign mentioned, cleared a radio link being jammed by ZL amateurs operating on the frequency. ■

WARC 79 WARC 79 WARC 79 WARC 79

USE THEM OR LOSE THEM

WARC 79 WARC 79 WARC 79 WARC 79

QSP

SWL's

AR is your magazine. It is good or bad depending entirely upon what material is given to it by members. The Publications Committee help to put it together and do contribute towards some of the columns. However, there is nobody available to write material suitable for SWL's. Since the author of "Newcomers Notebook" was transferred away from Melbourne no-one can be found to take his place, especially as his articles required very little, if any, editing and he knew exactly what was needed for AR and how to write it. Do you know anyone interested and capable of helping in this area? (Yes, we could fill AR with reprints from overseas magazines, but are feel members do not want this. — Ed)

HAMADS

- Eight lines free to all WIA members. $9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Commercial advertising is excluded. Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

FOR SALE

FT401 Tcvr, $450. Heathkit DX6$ AM/CW 60 watt Tx, with xtals, 80m to 10m, $70. VK2AAB, QTHR. Ph. (02) 487 1428.

Antennas: 13 el. 144 MHz yagi on 22 ft. boom, $25; 10m Zel. beam cut for OSCAR, $20; 1296 MHz 3 ft. 6 in. dish, $10; 3 el. 144 MHz yagis for 'sniffing", $1 ea.; 432 MHz VK3 solid state converter, 50 MHz or 10.5 MHzi.f., $15 or $22; 144 MHz fox hunt converter, inc. attenuators, 3.5 MHz i.f., $15; Comb generator, 1 MHz-UHF, $10; standard racks, enclosed type, $15 and $20; 3 CX100 A5 (e.g. 2C39), new, $5 ea.; Modulator for 150W, inc. UM3 transformer, $10. Many other bits. Bob VK3AOT. Ph. (03) 697 6011 (bus.), 787 6426 home).

ICOM IC22-A VHF Transceiver, complete with mobile monting bracket, microphone, power lead and *operator's* manual. Fitted with xtls *for* repeaters 2, 3, 4, 5, 6, 7, 8 and Simplex 40 and 50. Excellent value at $175. Contact Brian VK2BCI, Wollongong. Ph. (042) 28 4935.

Yaesu FT101B Transceiver, complete with all crystals and morse key. Mint condition. Price $585. Ph. (05) 52 3402.

Collins KWM-2 SSB/CW Transceiver, serial number 15294, Collins PM-2 power supply, Collins 312B-3, Collins CC-1 carrying case. Absolutely mint condition, $2,150. VK2JO. Ph. (02) 36 7756.

Toroids, similar to p. 581 of 1977 ARRL Handbook. Take legal power 1.8 to 30 MHz, $7.55 ea., plus p. and p. 40c for one, 60c for two. Geoff Forest VK3AGF, QTHR. Ph. (03) 379 6524.

FT75B with mobile power supply and two extra xtals on 10m. VXO range extended to cover 20 kHz on 80m, 25 kHz on 10m. 3 months old, but only used on two ocasions. Price $400. P. Drady VK2NIE, Gillard's Road, Nana Glen, 2493. Ph. (066) 54 3206.

Kenwood TS520S, brand new, must sell. $670. B. R. Kendall VK3ZDM. Ph. (03) 741 2382.

Yaesu FT75B HF Transceiver, with AC and DC power supplies, small SWR bridge, 3 xtals on 20, 40, and 80m, one each on 15 and 10m. Little use, $400. VK2AOE, QTHR. Ph. (02) 449 6364.

Yaesa FT2FB 2m Xcvr, channels 2, 8, 40, $135. VK3NJ. Ph. (03) 546 4924.

QM70 high power 28-144 MHz Transceiver, plugs straight into most Yaesu transceivers, $150; Ken KP202 2m hand-held charger, manual, 6 channels, $135. Swan WM 1500 in line RF power meter, 5, 50, 500, 1500 watt ranges, $50. VK30M, QTHR. Ph. (03) 560 9215.

Swan 700CX plus 230VC and speaker, little used, $600; HAM-M plus cable, $150; HP524B, $120, including video amp., 100 MHz and period modules. VK2ZBB, Box 330, Hurstville, 2220.

Astor Video Camera with monitor, sol'd state, $130, ONO; Philips 1676 txcvr AM 53.032 with xtals, $35; 4m 20 hiband FM txcvr, $15 each, ONO; AWA MT20 with 52.525 Rx xtal, $12; 6m AM base station in rack, best offer; general coverage Rx Geloso, front end, $30, ONO; C42 txcvr, 35-70 MHz, with aerial tuning unit and mains PS, $55, ONO; Marconi Rx type AD94 150Kc-18.5 MHz, $20; 19 in. rack, 5 ft. high, best offer. Jan Esselstrom VK3ZUE. Ph. (03) 82 1261, ext. 222 (Bus.) (03) 233 5471 (A.H.).

Kenwood TS600 6m all mode Tcvr, 7 months old, immac. cond., inc. VOX 3 and 5 el. beam, manual, leads, carton, $550. Very poor VHF, QTH. N. E. Mattick, VK2ZLL, QTHR. Hargraves, NSW, 2850.

AWA RX Test Oscillator, 390-470 MHz, 240V operation, $30; pair of Sanyo 5W 6 chanel, 27 MHz walkie-talkies, near new, $75 each; pair of Contact 1W walkie-talkies, new, $40 each; National radio cassette, dual power, excellent condition, $70; DC power supply, less power transformer, 13.5V 20A home brew (see AR July 1974), works well, $80. VK4XT, QTHR, or PO Box 496 Dalby, 4405. Ph. (074) 62 2389.

SSTV Monitor, robot model 70A, $300; Drake TC2 transverter and CCI VHF console, 300W PEP on 144-148 MHz, $300. VK5AS, QTHR. Ph. (086) 82 2899.

Dish — 2m diam. dish with feed and mounts. Slightly damaged, $25, ONO. Ph. (03) 598 8112 (A H.).

Rx: Kenwood QR666, $150; Barlow Wadley, XCR30, $180. Both as new. K. Brooks, 74 Sunshine Avenue, Brighton, S.A. 5048. Ph. (08) 296 2803.

Eddystone Rx 640, continuous coverage 160m-10m AM CW; also 2 Geloso VFOs, 80 to 10m bands, sundry valves and components, now surplus. Inspect at QTH. VK3LV, QTHR.

Kenwood TS520S, only 2 weeks old and in absolutely as new condition, inc. Yaesu base mic., new pair of 6146B finals and 6 month guarantee, $720. Ph. Bert (03) 42 5312 or 758 4086 (A.H.).

Depth Sounder/Recorder, Marlin DIR60, as new, in carton, or exchange for 2m rig. VK3NFR, 118 Geelong Road, Torquay. Ph. (052) 61 2446.

FT200 with power supply and handbook, good condition, recently re-aligned, $330; BC348 Rx complete with spare valves and manual, $30. VK2AJF, QTHR. Ph. (02) 525 8203 (A.H.).

Self Study Novice Kits, containing Westlake's theory text plus elementary YRS theory notes; txet of 1000 Novice questions, all multiple choice; Morse text and two C60 cassettes and kit, handbook. Price $15 posted. W. Wilson, VK2ZCA/NMW, YRS Service Officer, PO Box 109, Toongabbie 2146.

IC502 6m SSB Txcvr, 12 months old, $170. VK2YDY, QTHR or Ph. (067) 52 1185.

Colour TV 9" NTSC, $150. B&W TV 12" HMV (needs new tube), $25. B&W TV 5" (used as mon.), $25. B&W TV monitor, $40. Rx EA 240, part completed, $45. Pat'ern Gen. ETI, $15. TV Sync. Gen. (homebrew), $60. 10 A&R PC1 Cases, $25. MISC. 3cm Microwave Gear, $50. Vinten RCU4 Remote Control Unit, $50. VK3ZXF, QTHR. Ph. (03) 560 3527.

SILENT KEYS

It is with deep regret that we record the passing of —

Mr. D. H. FISHER	VK7AB
Mr. R. C. ELLIS	VK2AHR
Mr. F. G. CLISSOLD	VK2AJI
Mr. V. FITTON	VK2SF
Mr. A. C. (Eddy) EDWARDS The "Eddy" in Eddystone.	G6XJ
Mr. V. FITTON	VK2BF

loom IC22A 10W 2m Mobile, fitted for repeaters 1-8, reverse repeaters 2-6 and Simplex 37, 40, 43, 49, 50, 51, with manual, mike etc., $200. Ray VK1ZJR, QTHR.

Atlas 210X with PS and dig. readout, $800. Microwave modules MMT432/28S, $190. VK3BIY, Ph. (03) 370 2161.

Janel Laboratories Model 30PB 28-30 MHz low noise Oscar *pre-amplifier, new* and complete with unused BNC connectors, 12V DC operation, $35. Ross Treloar VK2BPZ. Ph. (02) 239 5267 (bus.).

Teletype Machines, ASR33 and ASR38, both fully serviced and overhauled, $500 and $630. VK3ZUI. Ph. (03) 51 1156 AH.

FTV650, compatible Yaesu FT100 series, only had 8 hours work, $165, connecting cord, plugs, circuit. VK4DU/P2. Ph. (02) 326 1178.

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Mosley TA33 Junior Beam or information re Australian source of supply. Ray VK3RF, QTHR. Ph. (03) 876 5305.

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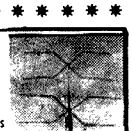

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Rotation torque – 600 Kg/cm
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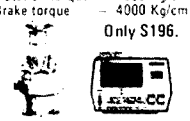

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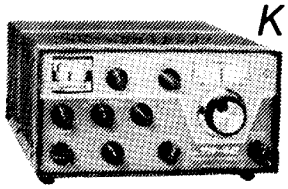

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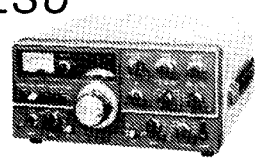
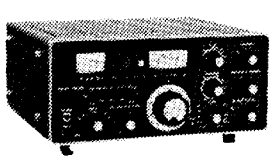


KENWOOD TS 520S
SSB Transceiver



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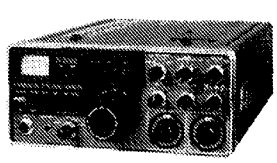

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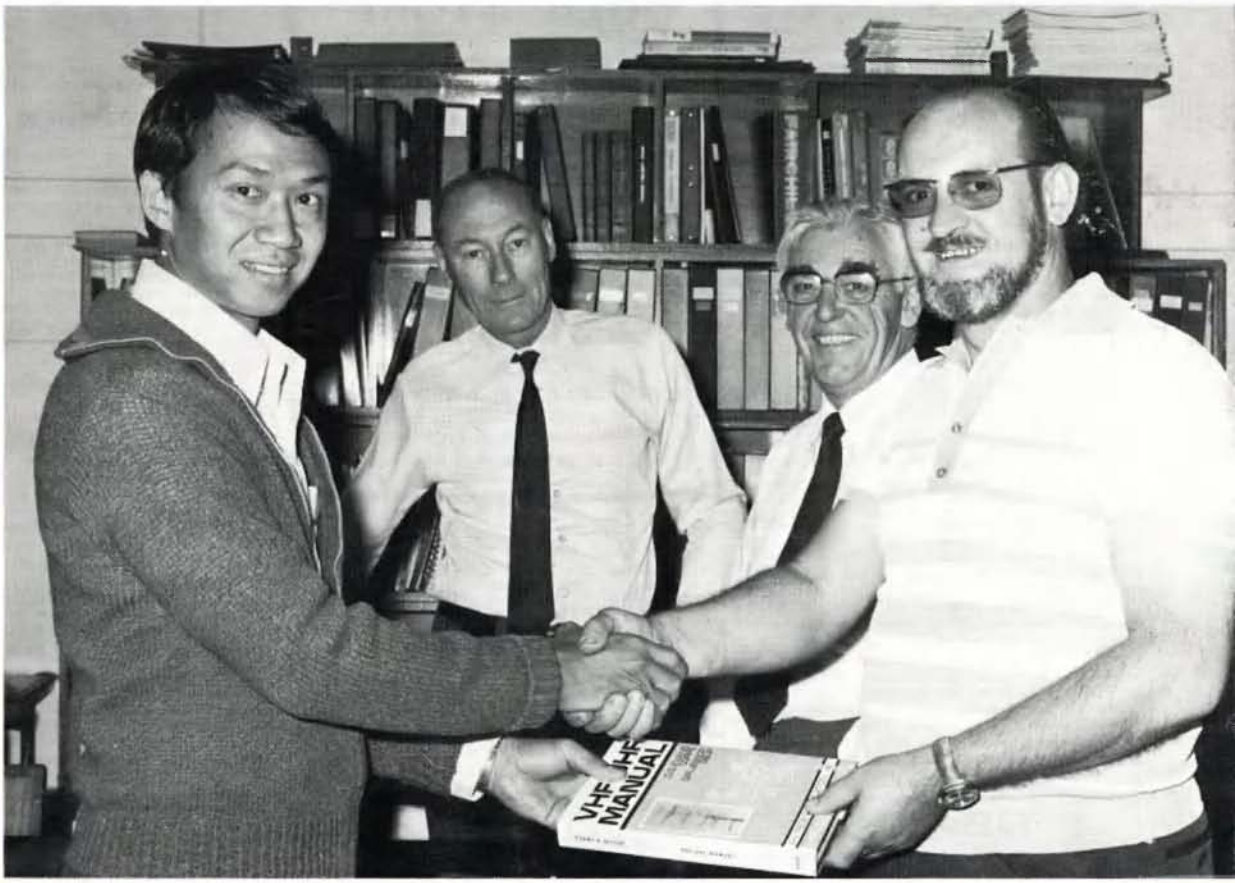

VOL. 46, No. 6 JUNE 1978

CONTENTS

COVER PHOTO

Captain Tanongsuk Tuvinun of the Royal Thai Army (left) is presented technical literature by Ian Hunt VK5QX (right) on behalf of the VK5 Division. Supervising the event is Bob Edgar VK5RS (left rear) and Ron Catmur VK5FY (right rear). See story "Goodwill Through International Amateur Radio", page 25.

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SPECIFICATIONS:

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RECEIVER: Receiving System: Crystal controlled superheterodyne system. Sensitivity: S/N 10 dB or better at 10 uV 5 mW output. Selectivity: Thermistor: D-32S. Power Supply: 006p 9V. Dimensions: H — 17.6 cm, W — 6.5 cm, D — 4.4 cm. Weight: 500g.

PMG approved.

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"T" Connection	$3.50
PL-259 to R C.A. Adaptor	$2.75
Coax Joiner, female to female, male to male	$2.75
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BNC Sockets	$1 75
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Channel No.	Freq. MHz	Channel No.	Freq. MHz
1	27.015	11	27.135
2	27.025	12	27.155
3	27.035	13	27.165
4	27.055	14	27.175
5	27.065	15	27.185
6	27.085	16	27.195
7	27.095	17	27.205
8	27.105	18	27.225
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27 MHz CITIZENS RADIO SERVICE

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9" x 6" SPEAKERS — brand new in cartons — 4 ohm impedance — ideal for car cassettes, radios, etc.

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amateur radio

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QSP — NEW ERA

The Federal Council meeting at the 1978 Federal Convention, realising that this is an era of intense technical and community changes, decided that more thought must now be given to the years following WARC 79.

Much needs to be done to fit the WIA to the requirements of the membership which is now much more diverse in technical interests.

Many views about the future have been expressed by individual members and it is these which are most important in forward planning. Have you made your views known?

It must be recognised that WARC 79 is not an ending, but is in fact the beginning of a new era.

D. A. WARDLAW VK3ADW
Federal President ■

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President — Mr. C. J. Hurst VK5HI
Secretary — Mr. C. M. Pearson VK5PE
Broadcasts— 1820, 3550, 7095, 14175 kHz; 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.

WA:
President — Mr. R. Greenaway VK6DA
Secretary — Mr. N. R. Penfold VK6NE
Broadcasts— 3600, 7080, 14100, 14175 kHz, 52.656 and 2m (Ch. 2): 01.30Z.

TAS.:
President — Mr. R. K. Emmett VK7KK
Secretary — Mr. H. E. Hewens VK7HE
Broadcasts— 3570, 7130 kHz: 09.30 EST.

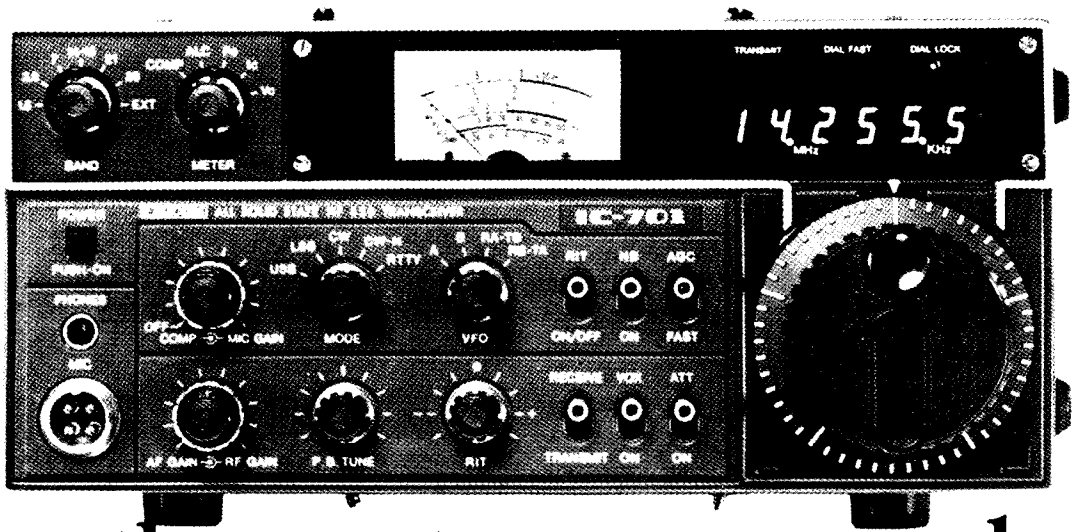
NT:
Secretary — Mr. Henry Andersson VK8HA
Broadcasts— Relay of VK5WI on 3.55 MHz and on 146.5 MHz at 2330Z. Slow morse transmission by VK8HA on 3.555 MHz at 1000Z almost every day.

Postal Information:
VK1 — P.O. Box 46, Canberra, 2600.
VK2 — 14 Atchison St., Crows Nest, 2065 (Ph. (02) 43 5795 Tues & Thurs (10.00-14.00h).
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 3535 Sat 10.00-12.00h).
VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton (Ph. (08) 254 7442).
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (Incl. with VK5), Darwin AR Club, P.O. Box 1418, Darwin, 5794.

Slow morse transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

VK QSL BUREAUX
The following is the official list of VK QSL Bureaux, all are inwards and outwards unless otherwise stated.

VK1 — QSL Officer, G.P.O. Box 1173, Canberra, A.C.T. 2601.
VK2 — QSL Bureau, C/- Hunter Branch, P.O. Teralba, N.S.W. 2284.
VK3 — Inwards QSL Bureau, Mr. E. Trebilcock, 340 Gillies Street, Thornbury, Vic. 3071.
VK3 — Outwards QSL Bureau, Mr. R. R. Prowse, 83 Brewer Road, Bentleigh, Vic. 3204.
VK4 — QSL Officer, G.P.O. Box 636, Brisbane, Qld., 4001.
VK5 — QSL Bureau, Mr. Geo. Luxon VK5RX, 27 Belair Road, Torrens Park, S.A. 5062.
VK6 — QSL Bureau, Mr. J. Rumble VK6RU, G.P.O. Box F319, Perth, W.A. 6001.
VK7 — QSL Bureau, G.P.O. Box 371D, Hobart, Tas. 7001.
VK6 — QSL Bureau, C/- VK8HA, P.O. Box 1418, Darwin, N.T. 5794.
VK9, 0 — Federal QSL Bureau, 23 Landale Street, Box Hill, Vic. 3128.



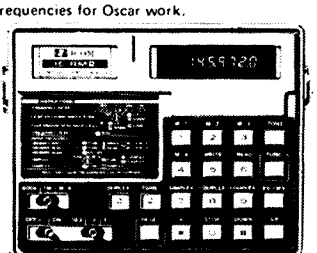
the systems approach !

Designed for the connoisseur, the ICOM IC701 HF transceiver brings the latest digital technology to Amateur Radio. Study a few more of the vast list of features offered with the IC701 . . .

TWO VFO'S BUILT-IN
The second VFO, which is an optional tack-on with most other transceivers, is an integral feature in every **IC701**. Now you can work those Yanks on 40 and 80 metres!

OPTICALLY COUPLED VFO
A VFO with **no** variable capacitors! Made under arrangement with Collins Radio, the **IC701** maximises digital readout with positively no time lag or backlash in display stability, even when using **100Hz** steps. The **IC701's** free wheeling dial is instantly co-ordinated with the high speed, computer controlled six digit readout using an optical chopper. There is absolutely **NO** mechanical connection between the smooth bearing mounted flywheel knob and the two dual-tracking VFOs.

COMPUTER COMPATIBLE INTERFACE
External microprocessor control from a PIA interface is possible via the 24 pin accessory socket on the rear panel of the **IC701**. The **IC701** can even be interconnected with the companion 2 metre **IC211** to track frequencies for Oscar work.



REMOTE CONTROL FACILITY
The **IC701** can be remotely controlled via the new optional **RM-2** computerised remote controller. This unit includes scan, duplex, memory and tone functions plus a touch-tone pad with digital readout. You can select frequencies and automatically change bands with this CPU controlled accessory.

CONTINUOUS OPERATION
The **IC701** features continuous operation with a full 200w pep or 200w CW input on **all bands** and **all modes**. No need to worry about timing key-down operations as the **IC701** is designed to handle the maximum power continuously! If the heat sink starts to warm up a built-in fan automatically switches on. If a temperature danger point should ever be reached the fan doubles its speed and the digital display flashes to tell you to quit transmitting!

NO TUNING NECESSARY
Just select the required band and frequency and start transmitting!

ALL SOLID STATE
While the others are still fooling around with valves, **ICOM** have produced a solid state HF transceiver including protected transistors in the final.

CROSS MODULATION MINIMISED
Cross modulation – a fact of life with some rigs – is minimised with the double balanced Schottky diode mixer used for both transmit and receive.

SMALL ENOUGH FOR MOBILE
The **IC701** is extremely compact with dimensions 111mm x 241mm x 311mm (HWL) and weighs only 7.3kg. No more need to struggle with heavy rigs impossible to mount under-dash!

FULL METERING
The front panel meter includes swr, power, ALC, compression and collector voltage/current measurement.

DESKTOP MICROPHONE AS STANDARD
A high quality condenser electret desk microphone is included as standard equipment with your new **ICOM IC701**.

VARIABLE POWER OUTPUT
In CW and RTTY modes power output can be continuously varied from zero to maximum 200 watts input. SSB output can easily be adjusted for novice use.

IDEAL FOR THE CW AND RTTY BUFF
The **IC701** includes narrow CW filter as standard plus semi-break-in and sidetone facilities. The **IC701** has switching to select either narrow or wide RTTY shift rates.

VICOM TECHNICAL BACK-UP
Your new **IC701** comes complete with the **VICOM** 90 day warranty plus technical and spares support. **VICOM** staff have been factory briefed on the service and alignment procedures.

PLUS
- **Separate front-end RF stages using dual gate MOSFETs for each band, providing optimum performance.**
- **Diode matrix to define band edge parameters.**
- **Operation on all bands 1.8 thru 30MHz including WWV.**
- **Modes include USB, LSB, CW, CW-N (narrow), RTTY.**
- **Unique ICOM bandpass tuning.**
- **VOX, Semibreak in CW, RIT, AGC, effective noise blanker.**
- **Built-in speech processor using advanced circuitry.**
- **All filters built-in.**
- **Automatic front panel light dimming to suit ambient light conditions.**
- **Separate VCOs for each band to reduce spurious and birdies.**
- **Receive triple conversion.**
- **Built-in DC power supply, optional OC power supply/speaker.**
- **Full line of matching accessories to come.**

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IC701 state of the art

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WIANEWS

At this time of the year the Federal Convention occupies the thoughts of Australian amateur administrators. The usual report will be published in AR next month, but it would be useful to refer to some of the more important items here and now.

The guest of honour this year was Mr. E. J. Wilkinson, the First Assistant Secretary of the Radio Frequency Management Branch of the Postal and Telecommunications Department. Mr. Green, the Secretary of the Department, regretted inability to attend due to other commitments. A letter RB4/11/31 of 21st April from him arrived during the Convention. The text of this letter is as follows:

> *"Thank you for your letter of 31 March 1978 concerning matters associated with the examination of candidates for the Novice Amateur Radio Operator's Certificate of Proficiency.*
>
> *The study guide prepared by the Institute has now been examined in relation to the official Department Syllabus: as a consequence it is considered that the study guide is suitable for use by intending candidates for the Novice qualification.*
>
> *A copy of the Department's Syllabus in its final format is attached for your retention. I expect that quantities of this document will be available for distribution in the near future."*

Mr. Wilkinson answered a range of questions put to him by the Convention delegates on numerous amateur radio matters. In his short introduction he spoke about preparations for WARC 79 dominating the frequency management scene at this point in time and complimented the Institute upon the case presented to the APG on behalf of the amateur service. The Citizens' Radio Service had presented the Department with a serious problem of sheer numbers overloading the system. Legalisation of the service had changed the overall picture but lawlessness through piracy still continued and highlighted the inadequacies of the legislation. It was hoped that the introduction of a new Act might now be expedited, but the best estimates placed the date around autumn of 1979.

After dealing with various aspects of the amateur examinations area, Mr. Wilkinson expressed the concern of Government about the ease of acquiring transmitting equipment and the studies currently being made into this question.

No easy solution appeared available.

In answer to numerous questions he spoke about interference to the operation of consumer equipment brought about by the proliferation of "CB" gear, the morse speed problems in Novice exams being appreciated and now at the point of being resolved, the various problems relating to TV channels O and 5A being unlikely to be resolved for a considerable time, the fact that the CRS must be more self regulatory within its own frequency allocations.

The Department recognises that interference with repeater channels is essentially one for the Department, but help from amateurs is required to detect the offenders, collaboration was the real answer to the nuisance, UHF broadcasting allocations being related to WARC 79 and the fact that the Department did not recommend continuance of the use of the 11 metre band by the CRS beyond June 1982.

The Convention heard reports from Mr. Michael Owen VK3KI, and Dr. Wardlaw on the subjects of WARC 79 and IARU. Provision was made in the budget for the latter's attendance at important conferences. He and Mr. Peter Wolfenden would be attending the IARU Region 3 Conference in Bangkok later this year in which numerous questions would be down for consideration including the IARU position post WARC 79. The importance was stressed of the Special Planning Meeting of the CCIR in October, which related to technical matters affecting WARC 79.

Mr. Alt Chandler VK3LC attended the Convention and spoke with some feeling about the paucity of support in Australia for Intruder Watch operations. He paid tribute to the work done in this sphere by the USA and the UK administrations, whereas in Australia it seemed the case that reports of an intruder from a few observers passed unnoticed.

During the Convention the RD Contest trophy, refurbished ond gold-plated by the VK5 Division after being rescued from the wreckage of Darwin's Cyclone Tracy, was formally handed over to VK1 Division, the winners last year. A motion was passed that this become an annual convention event. In discussions on the RD Contest the tact emerged that an in-depth statistical evaluation of the scoring table was desired. Peter Brown's Contest Champion Trophy was also on display and evoked discussion. The VK2 delegate advised that as it was that Division's turn to manage the Federal Contests, an offer by the Orange and District ARC to undertake this important work was accepted. Neil Penfold VK6NE was congratulated upon his management of the VK/ZL/O Contest biennially with NZART and was thanked for his continuing interest in managing this contest.

A number of working groups were appointed for speeding up the work of the Convention in the specialised areas relating to repeaters, educational matters in general, ATV, IARU/WARC 79 and the Financial Sub-Committee previously appointed last year. It proved possible for experts or alternate Councillors in every Division except VK6 to be represented on the more important working groups. Only VK6 was represented by one delegate, all the other Divisions had at least two.

In discussing the work of the Federal Historian, mention was made of the very recent publication of "A History of Radio in South Australia, 1897-1977", by John F. Ross, which included a lengthy section devoted to the Wireless Institute and another book recently launched by Gp. Capt. E. R. (Bon) Hall on the RAAF radio story. In the debate on Max Hull's report stress was laid on the necessity for members to keep the Institute in mind whenever an Old Timer passes on lest any historical records and possessions are unknowingly thrown away into the local tip by the deceased's family.

A motion arising from the VHF/UHF Advisory Committee's report was the expression of thanks to John Hackworth VK5QZ for continuing with his faithful work in calculating distances and invigilating activities relating to DX records.

Discussions on the report by the Chairman of the Federal RTTY Committee brought out the necessity of avoiding unilateral action by individual Divisions or Groups on RTTY matters in advance of general acceptance at the Federal level.

Apathy by members in general in relation to WICEN affairs was one question debated at some length on the report by the Federal WICEN Co-ordinator. Regret was expressed that Rex Roseblade VK1QJ would be standing down from this post after achieving so much with NDO liaison in particular.

The report by the Chairman of the Publications Committee and matters arising from this brought out several points relating to AR, the Call Book and the Log Book. The Managing Editor, Bruce Bathols VK3UV, expressed disappointment at the interest of members in their own magazine; as for example the dearth of photographs (especially front cover photographs) and that there was a limit to the amount of work which can be done by the volunteers on the Committee. Some time was taken up in a working group on the question of any competition from the Amateur Radio Action publication to be published shortly. The 1977 Call Book came in for considerable criticism, but all the points were already known.

Another working group dealt with the Agenda Items relating in general to organisational matters, recruiting and publicity. One motion arising from this area was the need to solicit funds for WARC 79 from all available outside sources. Another was the current payment of separate licence fees where different modes are operated on the same site — for example, beacons, repeaters, etc.; further details are needed from users.

The Federal Council agreed upon the necessity for the Federal President and IARU Liaison Officer to attend the NZART Conference 1978 during June to seek solidarity between the two sister organisations relating to WARC 79 and IARU affairs in general. Mention was also made of a CCIR Regional Conference to be held in Australia early next year. The Federal President advised he had been invited to attend the CCIR SPM in October as a member of the Australian delegation.

In a discussion on the 1979 budget it was decided that no final decision relating to Federal dues should be made before the end of August, although on available information no increase appeared necessary for the third year in succession because of Increased membership and continuing economies. The vital needs to increase the impact of recruiting, to provide services to members and to promote amateur radio generally throughout the community were examined in depth, targets identified and concerted action promoted. The production of promotional and display material is to be followed through without delay. Small identity stickers for cars were considered necessary but promotional bumper/window stickers were not favoured. It was agreed that for future conventions the central organisation should pay for the attendance of one alternate Councillor from each Division to the same extent that the expenses of the Federal Councillor are now paid.

The Federal Council elected the same Executive members for 1978-79 as in 1977-78, with the exception that John Bennett VK3ZA replaces Jim Lloyd, now transferred away from Melbourne. The 1979 Convention will be held in Melbourne at the same venue from 28th to 30th April.

Unfortunately, time is not available to go into further detail at this stage but many members will want to know the fate of the numerous Agenda Items relating to Novice operations. The motion to approach the Department to have the Novice segment on 80 metres extended up to 3625 kHz was passed by a majority vote, but all the other items relating to a common band for all licensees in particular, higher power, etc., were rejected after considerable debate. One of the strongest arguments in the rejections was the incentive for Novices to upgrade.

During the Convention videotapes in colour were viewed of the material listed in WIANEWS last month (May AR, page 6). The dates of showing for the HSV7 amateur programme became available at the Convention and will no doubt be referred to in Divisional broadcasts.

A reply has been sent to the Department in relation to the conditions to be imposed on the operation of 10 metre band beacons.

During April a letter arrived from the Minister for Post and Telecommunications and is reproduced hereunder for the information of members —

> *"I refer to your letter to my predecessor, the Hon. E. L. Robinson, M.P., regarding matters of concern to the WIA which you believe have flowed from the introduction of the Citizens' Radio Service (CRS) in Australia. I note that you are more particularly concerned at the apparent extent of illegal radio operations and the alleged inability of any Department to control such operations. I am aware of those representations made direct to my Department by the Institute some time ago in the matter and note also that you were of the opinion that these had not seemed to have received appropriate consideration, perhaps because of the pressure generated as a result of the introduction of the CRS. In point of tact, however, I am informed that in the meantime some of the issues raised by the Institute have been answered in letter form or have been the subject of ongoing discussions between representatives of the WIA and my Department. I am also advised that arrangements have been made for the outstanding issues to be further discussed in a joint WIA/P. and T. Department consultative Committee which is now to be set up.*
>
> *Needless to say I appreciate the anxiety expressed by the Institute at the apparent extent of illegal radio opera-*

tions and the difficulties being faced in controlling such operations. Regrettably, the Wireless Telegraphy Act and Regulations, the legislation under which radio communication stations are authorised in Australia, presently contain no provision to enable restrictions to be imposed on the importation or sale of radio communications equipment in this country. I should mention however that the question of the measures it is necessary to introduce to provide for an effective measure of control to be exercised in this matter is currently being examined.

I can appreciate your concern at what you believe to be an intolerable degree of radio frequency lawlessness evident in Australia, especially in the 27 MHz region of the spectrum. It is true that this situation has been due to some extent to the current staffing situation in my Department. The situation has also been aggravated by problems which have stemmed from industrial grievances and disputes. I am confident, however, that as a result of action which has recently been initiated, resources will become available which will enable an adequate measure of control to be exercised over such services.

Yours sincerely,
Sgd. A. A. Staley." ■

THIS AFFECTS YOU!!

The following letters are reproduced in prominence due to the urgent messages they contain.

The Channel 5A problem is only one of the multitude of items which the WIA is trying to cope with — to date without much success.

We need the support of ALL amateurs in becoming members of the WIA, to provide a UNITED FORCE in protecting our frequencies.

Forget any previous backbiting, silly squabbles, etc. — your frequencies are continually under threat, from many sources. Look at the CB fiasco.

Show this page to a non-member, and if it doesn't make him/her want to act and join the WIA, then he/she might just as well forget amateur radio as a hobby — it just won't exist if we cannot use our frequencies.

5/4/78.

The Editor,
Dear Sir,
Please find enclosed a letter received here from the Prime Minister in relation to the proposed Channel 5A at Mt. Dundas. Please print it in its entirety to allow the local population of Western Victoria Amateurs to absorb the information.

I have heard comments from "technically competent" persons that an offset in the video and sound carriers will minimise the interference problem. The reasons for offsetting these is to avoid co-channel beat with Loxton, S.A., and Wollongong, N.S.W., just like the Channel O system. Beware the "Ides of March 1980" when all translators in the west will take the parent Channel 5A and the proposed Mt. Arapiles site is included in this proposal. No matter where you are in the west somewhere, sometime you will interfere with the TV system. This includes FM operators, both mobile and base. In fact it is more likely that FM will suffer than SSB. For those who still don't believe, ask anyone in Wollongong or Newcastle, or ask Hughie VK5BC next time you hear him on, and I assure you that won't be 2 metres.

So much for WARC 79. Here is a slice of an international band ripped out from under Amateurs for the fourth time in Australia.

With three non-standard channels in the six metre and four in the two metre band, we head the world in technical prowess.
Steve Gregory VK3OT. ■

Prime Minister,
Canberra.
21 March 1978.

Dear Mr. Gregory,
Thank you for your letter of 16 December 1977 concerning the proposed national television transmitter on Mount Dundas.

I have been advised by the Minister for Post and Telecommunications that the transmitter will operate on channel 5A. The decision to use this channel was reached after considerable engineering studies. The Minister advised that, bearing in mind the number of services that will be provided in the area and the lack of available frequencies, it is considered that there is no suitable alternative available.

While it is very unlikely that interference will be caused to amateur radio, I am informed there is a likelihood of occasional interference to the television reception of residents living in close proximity to an amateur radio installation. The Minister has advised me that if this occurs, it may be necessary to limit the hours of operation of amateur radio as has been the case in other areas where channels O and 5A are being utilised.

Yours sincerely,
Malcolm Fraser.

Mr. S. Gregory,
3HA, Hamilton,
P.O. Box 414,
Hamilton, Vic. 3300.

WHAT THE PRESS SAYS:—
"THE 5A CHANNEL"

The use of the 5A channel for ethnic telecasting and other special needs is a very practical proposition. All the feasibility tests have been made already, and it can be received without adjustment by most receivers in Melbourne.

The channel is, in fact, the emergency/disaster channel and its everyday use for ethnic, special and educational purposes should be no problem for a Government determined to honor its election promises.

Should a national emergency situation occur it would instantly revert to the original use for which it was intended.

The alternative would be to allocate a channel in the UHF band, more expensive but in line with global TV development. ■

QSP

PIRATES
"Everybody worth their salt that's around today is up on 27.235 you know, or on two metres. You've got 500 channels to choose from, they've goth the use of repeaters and everything, you might as well gel up on Two and enjoy yourself", Robert Carruthers being interviewed in CB Action magazine. Carruthers is a self-confessed pirate. The interview is quite an interesting one but is a bit hard on the blood pressure of the amateur. This Robert Carruthers bod is the "Inventor" of the jamming device, which had quite a bit of publicity in the press recently, to counteract the effect of the next door CBer on your TV. First Issue SWARS "Feedback" from VK2NPI.

DAPTO MOONBOUNCE
The Dapto installation was severely damaged by vandals some time before 8th February and again a week later. Locks were broken, windows smashed, wiring removed, cabling ripped out, the floor holed, items stolen and a fire lit in one of the rooms. On 2nd March the site was inspected with representatives from the University and the decision reluctantly made that adequate security on the site was not possible especially as the dish is too vulnerable. This item may now be removed, if possible, elsewhere. Thus ends the Dapto Moonboune Project after some 8 years of work. One readily identifiable item stolen was a brass morse key mounted on a varnished wooden base, another was a 240V Selsyn about 4 inches in diameter, painted grey. Report by Lyle VK2ALU in "The Propagator", Mar. '78.

NEW PREFIX
Radio Commun. Dec. '77 quotes the ITU as having allocated the callsign series P4A-P4Z provisionally to the Netherlands Antilles.

WARC 79 WARC 79 WARC 79 WARC 79

WARC 79 WARC 79 WARC 79 WARC 79

USE THEM OR LOSE THEM

WARC 79 WARC 79 WARC 79 WARC 79 WARC 79 WARC 79 WARC 79 WARC 79

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AFTERTHOUGHTS

SCANNER FOR THE KYOKUTO SXR11
APRIL AR 1976

The 0.025 uF capacitor between pins 10 and 11 of ICB should be 25 uF. ■

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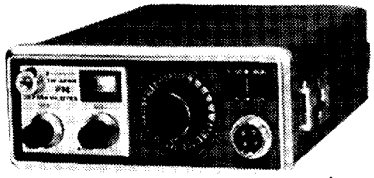
Check these ridiculous prices while stocks last



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TR-3200 UHF FM TRANSCEIVER.
432MHz, 12 channels comes complete with Nicad battery charger.
Hurry – very few left **ONLY $249.00**
SAVE $56, was $305!

MULTI QUARTZ 16 2M FM TRANSCEIVER
Cat No D-3009 144–148 MHz.
23 channel + 2 priority provision for VFO. **NOW REDUCED TO ONLY $199.50 inc. 1 channel was originally $228. Save $28.50**

DIAWA SR–9 VHF FM RECEIVER
146–152MHz fully tuneable. Let your XYL know when you'll be home ... put one in the kitchen! **Only $99.50! Save $25.50.**

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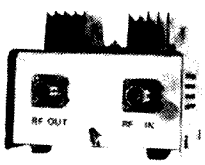
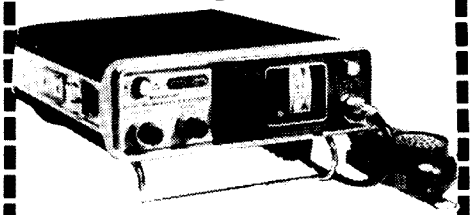
CAN'T WORK A REPEATER YOU CAN HEAR?
Build this 45 watt 2M transistor amp. Very simple, highly reliable. Full RF switching – just add 12V! Ideal for mobile use.
Cat K-3132 . . . . . $27.50



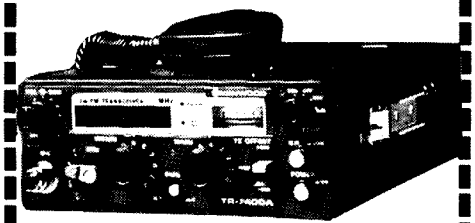
This complete unit was made by a staff member in only 3 hours !
Heatsink Cat H-3460 . . . . . $4.75
Box Cat H-2743 . . . . . $4.20
2 PL-259 connectors P-2340 . $1.45 ea.

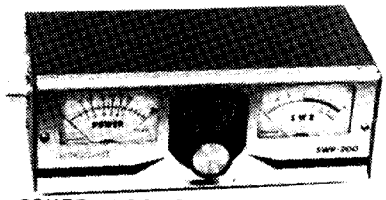
KENWOOD TR-7200
22 channel 2M FM unit. Incredible value – only $199.50.
Cat D-3215 . previously $260 Save $60.50

$60-50 OFF!



KENWOOD TR-7400
800 channel fully synthesized 2M FM unit. 25 watt output. 144–148 MHz coverage.
Cat D-3400 originally $429.
Yours for only $395 . . . . . Save $34.





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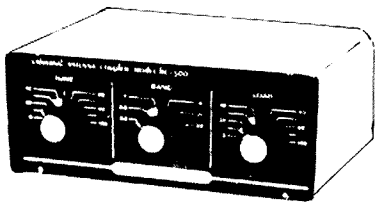
Full 2KW rating. Individually calibrated to show power O/P.
Cat Q-1340 . . . . . $67.50



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SWR PROBLEMS ?
Fix them once and for all with the HC-500 antenna tuner. 500 watt rating – rugged construction.
Cat D-5500
Dick's special price only $115.00
Huge saving – previously $166.50 !

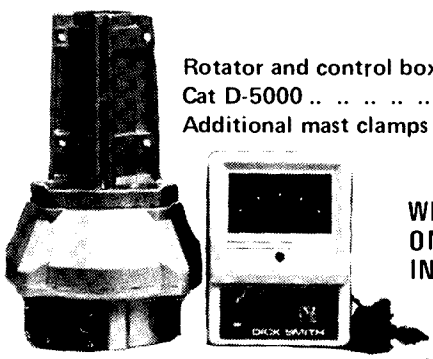
New FULLY LEGAL ANTENNA ROTATOR

- * Massive disc brake
- * Fits up to 2" o.d. mast
- * Rugged construction
- * Completely waterproof

Handles most beams with ease! Supplied complete with fully approved power supply (Cat M-9560) and large, easy-to-read control box.

COMPLETE UNIT: ROTATOR, CONTROL BOX AND APPROVED POWER SUPPLY . . . $148.00

* AVAILABLE LATE JUNE



Rotator and control box without power supply –
Cat D-5000 . . . . . $122.00
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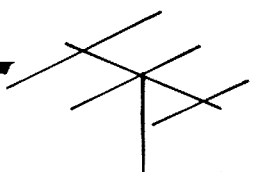

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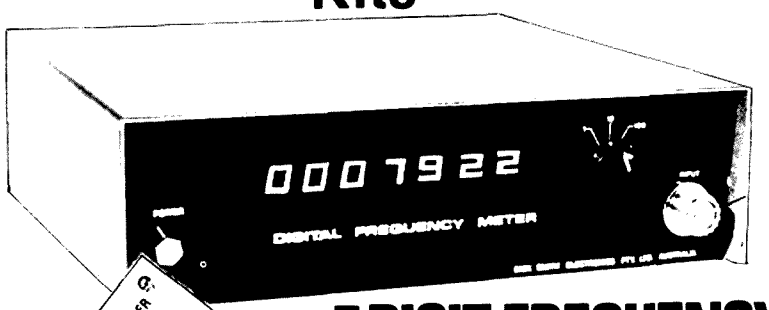

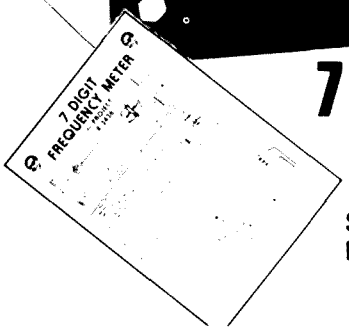

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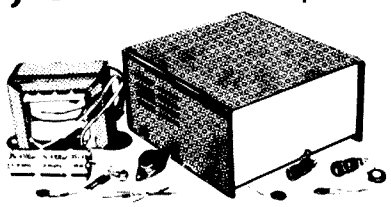

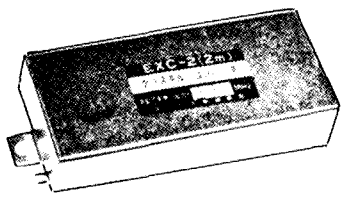

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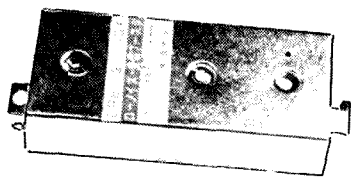

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See the review in MAY 1978 E.A.

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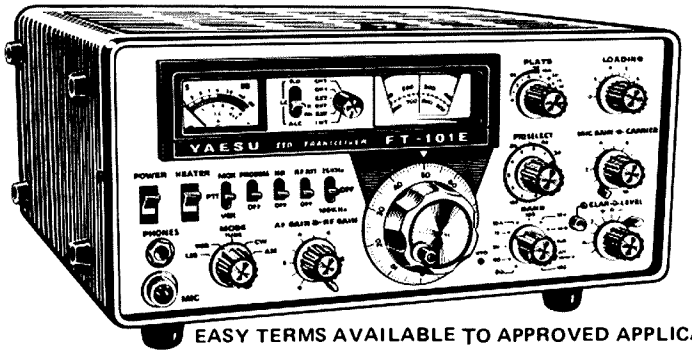

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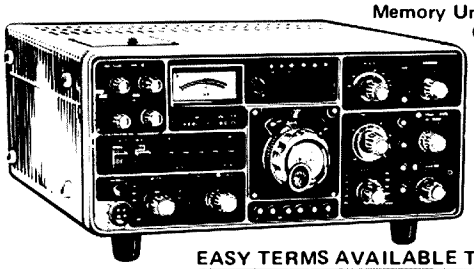

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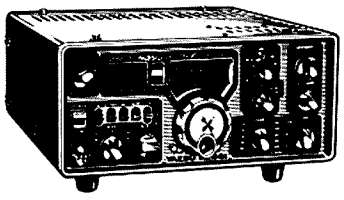

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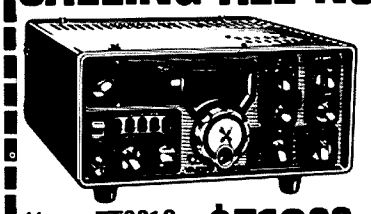

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TWO DUMMY LOADS

M. N. O'Burtill VK3WW
3 Maxwell Street, Lalor 3075

Dummy loads are essential in any shack where transmitter experiments are made. The two loads described here are easy to build and present a resistive load to the transmitter throughout the HF bands. Even at VHF the reactive component is small and insignificant in most cases.

The first load was made of ten 750 ohm resistors in parallel. As the picture shows they are soldered in a "ladder" style to two copper strips. One copper strip connects to the co-ax input and one to frame — in this case the lid of a coffee tin.

You can use any type of co-ax socket that suits — I have added a banana socket for RF pickup should I need it, for power measurements etc.

The resistors measure 3 cm by 1 cm and should be good for at least two watts each, thus making the load good for 20 watts. Of course, this is not enough for the average HF transceiver used today so the trick is to fill your coffee tin with transformer oil, put the lid on and your resistors dissipate their heat into the oil. Most commonly used rigs won't even make the tin warm.

I picked up the resistors in a disposals shop, but there is no reason why ordinary carbon resistors can't be used. The higher their "dry dissipation" rating the better.

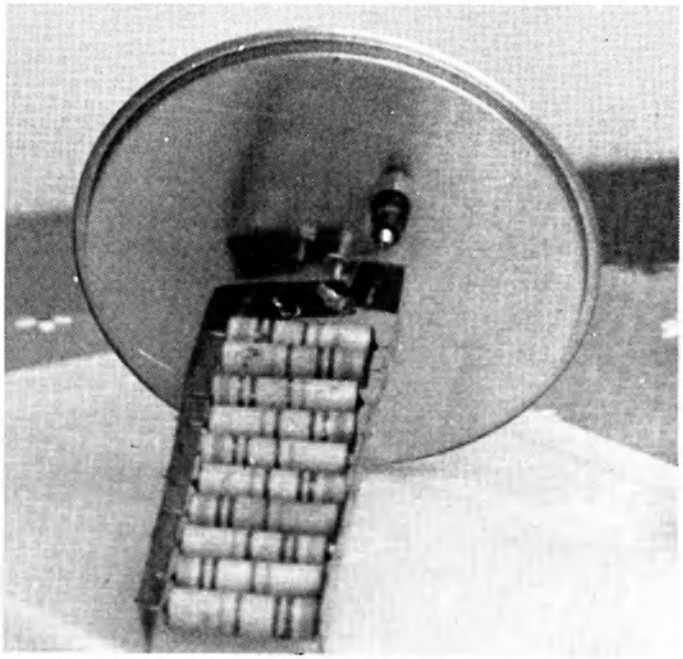
Transformer oil is not widely advertised but is used industrially by engineering firms, oil refineries etc. The oil used must have no metallic content so most motor oils are unsuitable. I think some of the vegetable oils sold in supermarkets would be OK but I haven't tried them.

A word of warning: Before putting oil in the tin carefully solder all seams or the oil will seep out.

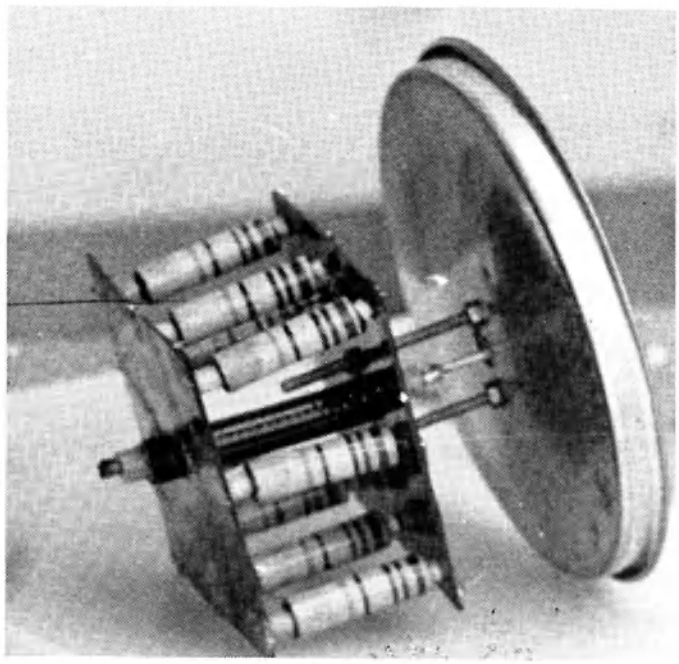
The second load consists of nine 470 ohm resistors in parallel giving a load of 52 ohms. In this case the resistors are soldered to two copper plates about 2½ in. square. The lower plate connects to the co-ax input and the upper plate is mounted to the lid of the can. The plates were made from an offcut of 2½" pipe which I split and flattened out.

I have not drawn any diagrams as these are very simple projects and the photographs show the layout well enough.

It would be hard to build any other piece of test equipment as cheaply as these two loads and they are very useful in the shack. ■



52 ohm load



75 ohm load

MORE POWER FOR THE KEN KP202

Fred Stirk VK2ABC
164 Park Parade, Beacon Hill, N.S.W. 2100

Let's face it, the batteries don't last all that long with the Ken KP202 unit and they always expire when you want them most! The adapter unit described here goes a long way to overcoming some of the problems. The batteries can then be used for purely pedestrian activities.

The idea is to run the Ken from the car battery and generator combination. Not me, you say; well' that's how I figured it at first, but then thought there must be a safe way of doing it. This is the result.

To begin with, the most important point is the output of your car generator. If you can't do it yourself have a qualified auto electrician adjust the regulator so that the voltage across the battery will not rise beyond 14.2-14.3 volts at a reasonable r.p.m. of the motor. The battery and all connections must be first class so that there is no possibility of sudden voltage variations. Having arranged the voltage regulator so that around 14.2 is read at the cigarette lighter, plug in the adaptor and check the output with an accurate meter using a 200 ohm load. The voltage should vary from approximately 12.0 to 12.8 with speed variations when the adaptor is switched to LO. This will be satisfactory for the battery supply as fully charged Nicad batteries rise above 13.5V before being used. The 200 ohm load represents the Ken when receiving. The consumption rises to over 100 mA on receive with higher output levels.

Connection to the Ken is made via a DC power plug/socket combination using a socket added to the side of the Ken case adjacent to the press to talk switch. Care is needed in locating this socket as space is very limited on the inside of the case. Wire the socket so that the internal battery supply is broken when the DC plug is inserted. (See picture.)

The circuit is very simple but appears satisfactory in use providing the input voltage is controlled within the limits mentioned.

OPERATION

The operation is as follows. The on/off switch is used for obvious reasons and in the ON position lights a red LED via a 1000 ohm resistor. Battery voltage is then available for the HI/LO switch which in the LO position supplies power via two EM401 diodes in series, or similar LV diodes of about 1A rating. The voltage drop across each diode will be about 0.7-0.8V so the supply will now be in the 12.0-12.8V area. To hold this with some assurance to approximately 13V maximum, a Zener diode is fitted across the output. Actually 6.8 and 6.2V units in series were used in the original and have proved satisfactory.

In the LO position, power is supplied to a green LED indicator via a 330 ohm resistor. The resistors to the LEDs were chosen to provide about the same brilliance from both. When the motor is not running the supply voltage will of course fall to the car battery voltage. Under these conditions the second switch is placed in the HI position, shorting the diodes, providing full supply to the Ken unit and extinguishing the green LED.

FUSE

The cigarette lighter connection was originally acquired from a National cassette player. The rear section of the plug was removed and the front section secured to a suitable small box with Araldite. With this particular plug a fuse is incorporated, and is a worthwhile safeguard. By unscrewing the front section the fuse can be easily replaced. A 2A unit will be fine. The output lead for connection to the Ken is taken through the base of the box via a Neoprene shroud so the wire will be out of the way of the dashboard controls.

The diodes incorporated as droppers are also a polarity safeguard. This installation uses a negative ground system. Should the opposite apply it will be necessary to reverse the polarity of all the semi-conductors, and also to insulate the antenna from the car. With a small gutter grip quarter wave antenna connected, it's amazing what can be done with a couple of watts from a comfortable position in the car, either in motion or at rest. Happy mobileering on two, fellas. ■

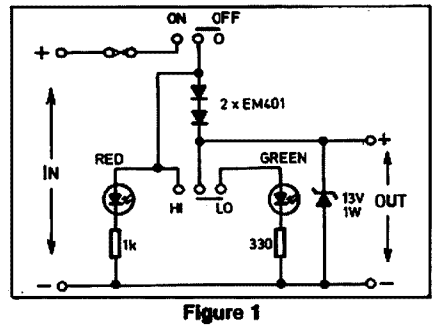


Figure 1

KP202 with adaptor

QSP

LANGUAGES

Bro. Cyril Quinlan of the Marist Brothers High School at Eastwood, N.S.W. under call sign VK2ACQ has been the centre of a media snowball resulting from on air French, German and English language practice contacts with KK8KAA. From Zero Beat, Mar. '78.

A PHASE MODULATOR FOR 2 METRES FM

I. Berwick VK3ALZ
107 Looyang Avenue, Glenroy 3046

There must be quite a few 2 Mx AM transmitters still about. These can be quite cheaply converted for 2 Mx FM. Many would run 50 watts or more and so provide quite a bit more power for base station use than the usual black box.

My unit has a QQE06/40 in the final and uses 6 MHz FT243 crystals. These can be easily shifted up in frequency for a new channel by grinding with the appropriate grade of emery.

I use the following circuits (Figs. 1 and 2) for phone modulation of the oscillator as it is impossible to get sufficient deviation using frequency modulation with these crystals.

THEORY OF OPERATION

The collector-base function of Q. (Fig. 2) is reversed biased. The capacity of this function varies with the reverse bias.

The quiescent reverse bias is set by VR2. An audio signal superimposed on the quiescent bias causes the C-B capacitance to vary about its quiescent value. This varying capacitance swings the oscillator collector tank about resonance, therefore causing the collector current to alternatively lag and lead the collector voltage, i.e. the carrier wave at 18 MHz is phase modulated.

It can be shown that the deviation produced by phase modulation increases linearly with the modulating frequency — therefore to avoid excessive deviation at high audio frequencies, it is necessary to roll off the audio response above about 2.5 kHz — this is the function of IC-2 which is a single pole low pass active filter.

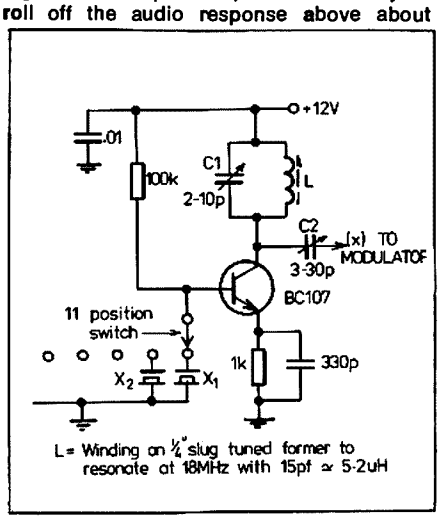


Fig. 1: Oscillator Circuit

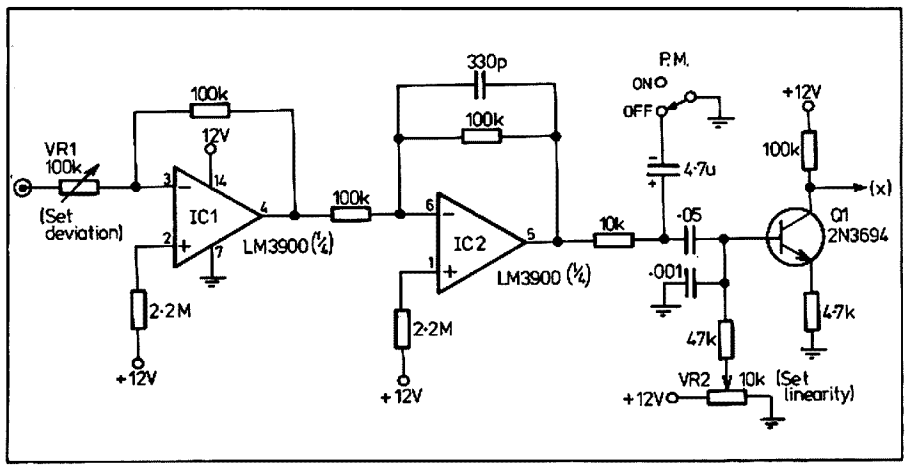


Fig. 2: Phase Modulator Circuit

IC-1 is the audio gain stage.

If your transmitter uses type D crystals, frequency modulation can be used. The circuit I used for these crystals is shown in Figs. 3 and 4.

The quiescent value of Cj is fixed by the linearity requirement but we do not know what it is. Therefore we have to juggle C1 and C2 so that we have 18 MHz resonance for Cj∝.

Also we don't want to make C2 too small, otherwise we won't be able to get enough swing of the tank. If C2 is too large, we may tend to overdeviate at low audio gain settings.

These notes should be sufficient guide for the alignment procedure.

Initial resonance is done with PM in off position.

Linearity can be checked by monitoring in an FM receiver.

POSTSCRIPT

A very good text for deeper understanding of angle modulation systems is: K. R. Sturley, "Frequency Modulation".

In general, it can be shown that:

1. Above a given threshold FM gives a significant (up to 23 dB) improvement in SNR over conventional AM.
2. SNR increases with bandwidth for signals above threshold.
3. Below threshold SNR is inferior to other systems.

Therefore FM does not automatically become the ideal system for mobile use.

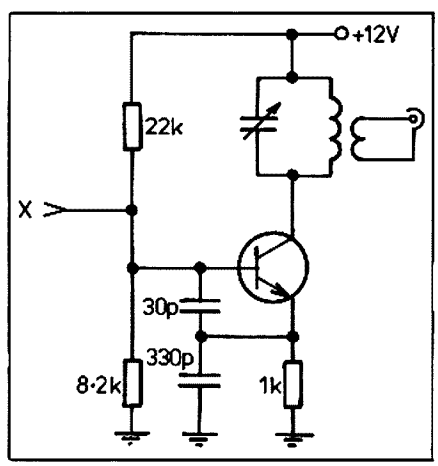


Fig. 3: Oscillator

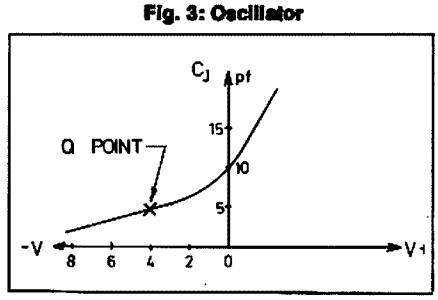


Fig. 5: Typical Junction Capacitance Vs Reverse Bias

For simplex mobile to mobile, or mobile to base, or for extended repeater paths, repeater DX etc., a better system would be SSB which has a 9 dB advantage over AM, but does not have a threshold problem.

I would like to see an SSB repeater for this type of operation. ■

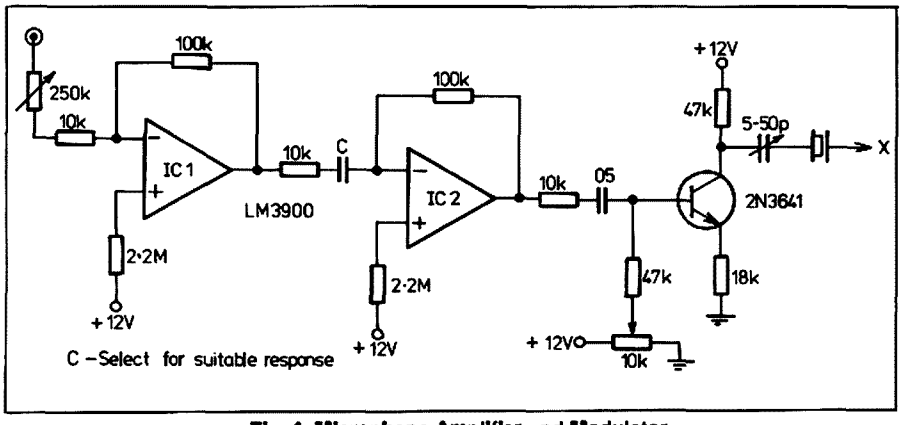


Fig. 4: Microphone Amplifier and Modulator

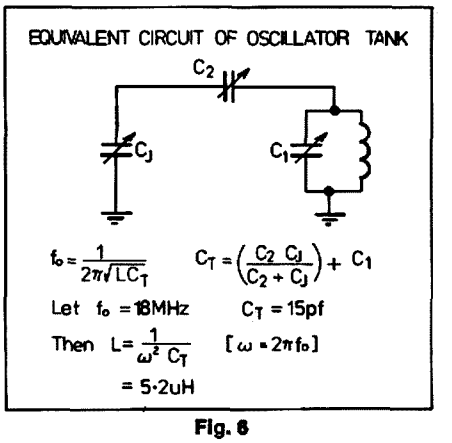


Fig. 6

TRY THIS

WITH THE TECHNICAL EDITORS

TWO-TUBE SSB PHASING RIG
Or Get Your Friends' Feet Wet With 7 Watts!

The following article caused intense interest when published in AR, July 1961. As far as we know no-one has yet produced a solid state rig that is as simple — three active devices for 7 watts of SSB out. If you think that sounds like a challenge, you are correct.

Leo Boisvert W1HIE has come up with the end-all of simplest sideband transmitters, this man, is the least! We have the SSB ARA's journal "The Sidebander" (Feb. 61) to thank for this information.

This little rig is clean cut and wrung out to the very minimum of parts that will put out a clean SSB signal. First off, the RF signal is fixed phased and so is the audio, but due to the fact that we are using a carbon mike with its limited audio band pass, it really works out fine for fixed phasing.

Measurements were made in actual operation and we came up with these figures:

1,200 cycles—30 dB suppression
2,500 cycles—20 dB suppression
500 cycles—15 dB suppression.

This may not be commercial SSB, but it sure beats the pants off DSB!

Construction of this unit requires no special parts and at that, the percentages are real loose. It is only necessary that the tuned circuits resonate at the operating frequency and that the audio coupling transformer have a 600 ohm output to the diode modulator. For this purpose I have used an ARC5 Rx output transformer.

It is important that as little as possible of the xtal oscillator voltage get into the fields of the coils L2-3-4. Keep the oscillator coil L1 as far from the other coils as possible to avoid trouble in nulling out the balanced modulator. The diodes must be matched in pairs as to forward resistance. Don't think that by adding an extra audio tube and xtal mike that you will improve the rig. The secret of the quality is in the carbon mike and its limited band pass; and added band pass in the audio section will cause the fixed phasing to go too far out at both ends. If you want to build this rig for use on any of the other bands you can do so by making the tuned circuits resonant at the desired frequency but keep in mind that the RF phasing unit will have to be changed to present about 100 ohms to the balanced modulator and the link. This means that you will need only one half the capacity of Cx for twice the frequency.

Tuning up the rig is simple; unbalance one pot and tune all coil slugs for maximum output. Tune the out pie network L4, and output capacitor for maximum. Then adjust the balance pots for minimum output. You are now in business and ready to be called a liar for it is not possible to build a phasing rig with only two tubes! Or is it?

PARTS LIST

L1—35 turns No. 30 wire. Link, 12 turns No. 30 on cold end.
L2—16 turns No. 26 wire. Link, 6 turns No. 30 to centre of coil.
L3—35 turns No. 30 wire. Link, 6 turns No. 30 on cold end.
L4—50 turns No. 28 wire on ½ inch coil form, slug tuned.
Coils L1, L2 and L3 are wound on ¼ inch coil forms, slug tuned.
All capacitors marked "/M" are mica; all others can be ceramic.
Cx—350 pF for 75 metres. One half capacity doubles frequency.
T1—Carbon mike to grid transformer.
T2—Plate to 600 ohms.
Ch2 or 3 pi chokes (not critical).
D1—1N38, 1N64 or most any diode; providing they are matched.
R1, R2—1,000 ohms, carbon pots. ■

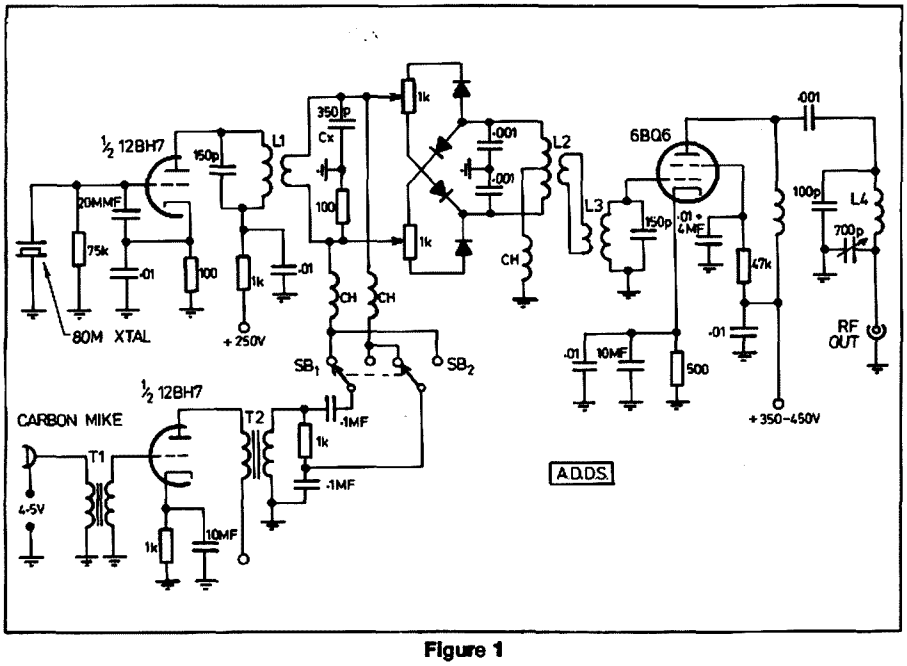


Figure 1

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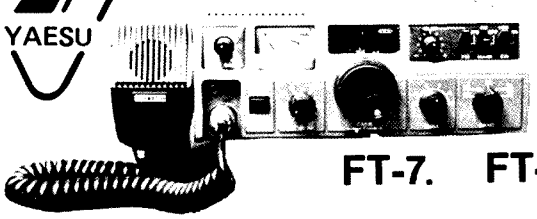
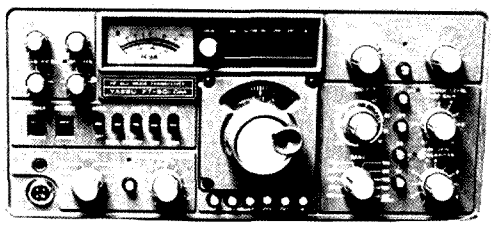


FT-7. FT-901DM



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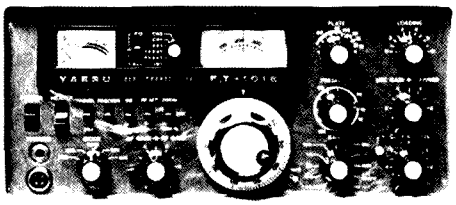

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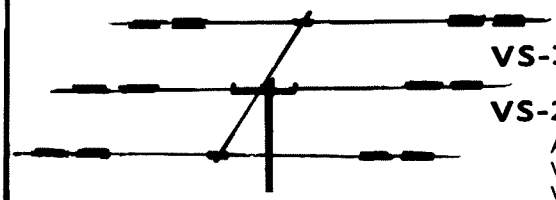

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AN ULTRA LOW-NOISE FET VIDICON AMPLIFIER

Andrew Pierson
1 Bindana Avenue, Salisbury Park, SA 5109

As indicated in the previous article describing a low-cost vidicon amplifier (Amateur Radio, September 1977), a more advanced version has been developed. In addition to ultra low-noise performance, this design offers facilities for line-by-line clamping, signal blanking, sync insertion and a 75 ohm line driver output stage.

The circuitry to be presented here is the complete video signal processing chain, from the target of the camera tube to the composite video output socket. It is shown in figures 1 and 2, where the vidicon amplifier itself extends from Q1 to Q6. Since the majority of general comments made about the first amplifier also apply to this design, I would recommend that the earlier article be read before proceeding with this text.

CIRCUIT DESCRIPTION — AMPLIFIER

The AC target load impedance is 50k ohms, and is made up of the target bias feed resistor and the gate earth return resistor (each 100k ohms) in parallel. In this circuit, a field effect transistor (Q1) in a common drain (i.e. source follower) configuration is used to obtain the necessary impedance transformation between the target load and the amplifier input stage. The input resistance of the FET is extremely high, and has almost no effect on the target load impedance, as determined by the two resistors previously mentioned. The input capacitance of the FET is very low, and this results in the total target shunt capacity being kept to an absolute minimum. The HF gain (i.e. compensation) requirements of the following amplifier stages can therefore be relaxed, with the result that noise at these frequencies is greatly reduced. The FET's own contribution to the noise spectrum is also less than that from a conventional transistor in the same circuit configuration.

Because the signal amplitude from the vidicon target is relatively low, It Is permissible to self-bias Q1 by means of its IDSS current. Since this parameter may be anywhere between 2 and 20 mA, the variation in offset voltage developed across the source load resistor may be quite large. This potential may therefore be above or below the bias voltage at the base of Q2, so a 5 uF reversible polarity electrolytic capacitor has been fabricated from two 10 uF tantalum "TAG" types and a 33k ohm resistor, as shown. Just in passing, it would be a very rare occurrence nowadays to come upon a new 2N3819 with an IDDS figure of 2 mA. Most new 2N3819s that I have tested measured around 8 to 10 mA, which is ideal for this application.

The "active" portion of the amplifier is Q2-Q6 inclusive, and all these stages are DC coupled to improve reliability and also to economise on coupling components. Operating point stability is assured by means of DC feedback, applied across all of the stages.

Q2 and Q3 form an NPN-PNP amplifier pair which produce a wide band voltage gain of 9.5 times. Q4 and Q5 form a further DC coupled amplifier pair, but frequency-sensitive networks are placed across their emitter resistors, so that the voltage gain of the amplifier increases smoothly with increasing frequency. Q4 Is used to provide high frequency compensation, and also a small but variable portion of the low frequency compensation. The following stage (Q5) provides most of the low frequency lift.

Q4 has a minimum voltage gain of 4.7 times, but the high frequency compensation network (the 1 nF capacitor across the emitter resistor) causes the voltage gain to rise with increasing frequency at a rate drawing ever closer to 6 dB per octave (as the 100 ohm emitter resistor and low frequency network assume less importance), until the gain-bandwidth product limitation of Q4 (300 MHz) causes this lift to turn over and finally decrease. A low frequency compensation network also shares the emitter resistor of Q4, thereby causing a small portion of this characteristic to be applied simultaneously with the high frequency lift. The maximum additional low frequency compensation available (i.e. with the LF COMP potentiometer fully clockwise) can never exceed 6 dB, because the 100 ohm resistor in series with the network is equal to the emitter resistor of Q4.

Q5 has a minimum voltage gain of unity, but the low frequency compensation network (the 1 nF capacitor in series with a 100 ohm resistor placed across the emitter resistor) causes this figure to rise with increasing frequency, so that the loss due to the input circuit of the amplifier is almost cancelled out. The cancellation is made complete by adjusting the additional low frequency lift network associated with the emitter circuit of Q4.

It can be seen that the amplifier's gain Vs frequency characteristic is the sum total of the effects of the three networks discussed. The low frequency compensation is variable over a limited range, and this should be adjusted for minimum smearing of objects in the reproduced picture. For more information on how this type of adjustment operates, the reader is referred to the earlier article. Also, please note that the compensation characteristics given are appropriate only, because loading effects on the preceding amplifier stage by the decreasing input impedance of the following stage have not been taken into account.

Q6 is a wide band amplifier with a voltage gain of approximately 3 times, and services to bring the output level up lo the required 700 mV p-p under normal operating conditions. It also serves to invert the phase of the video waveform, so that white areas in the picture are positive-going. As mentioned before, DC feedback Is applied over the stages Q2-Q6, and this loop provides a convenient means to adjust the amplifier's operating bias. The AMP BIAS potentiometer should be adjusted to produce a DC potential of 8V at point "A". Note that the feedback loop operates for DC and very low frequency AC signals only, as it is heavily decoupled. It has no effect on the video waveform, even at the frame frequency.

OPERATING PRINCIPLES — SIGNAL PROCESSING

Since the signal output from the camera tube target is AC coupled to the input of the amplifier (it would be extremely difficult and inconvenient to arrange DC coupling), the DC component of the video waveform is lost. Because sync pulses must be added to the blanking level in the video waveform, we must know exactly what voltage the black level corresponds to, in order to make arrangements for the sync pulses to extend 300 mV in a negative direction from this level. Fortunately, since the scanning beam in the camera tube is cut off during the line and frame blanking periods, the output from the amplifier during these times corresponds to true black in the picture. Because the line blanking periods occur regularly (every 64 uS) during the scanning process, it is possible to re-set the black level to any convenient potential with the aid of a line-by-line clamp, which is driven by line sync or blanking pulses from the camera's sync generator.

One may expect the output from a camera tube amplifier to be completely quiet during the line blanking periods, but this is hardly ever the case. They are often full of nasty transients etc. and most of

these are usually traceable to induced voltage from the collapse of magnetic flux associated with the line scan retrace. They can also be caused by induced signals when line-synchronized (7.8 kHz) invertors change state, or can even come from the sync generator circuitry by means of earth currents. Whatever the source of these signals, the blanking periods must be "cleaned up" before signal processing can continue. In normal practice, clamping and blanking period switching takes place in two distinct steps. In some circuits, two switches are used in addition to the clamp, making three steps in all.

CIRCUIT DESCRIPTION — CLAMP AND BLANKING SWITCH

The circuit arrangement used in this design performs the two required functions simultaneously, by means of a very "hard" clamp which is driven from the composite blanking waveform. Because of the very low "on" impedance of the clamp, it forces the output level to the set-up potential, and this action completely overrides any signal which is present. Thus, the signal is both clamped and composite blanked in one action.

The video signal present at the collector of Q6 is coupled to the clamp circuit Q8-Q9 via a 100 nF capacitor. This sets the clamp time constant to a value which results in only a very small voltage "droop" during one line period (i.e. the time between successive clamp pulses). The clamp transistor is Q8 and its operation is very simple. When a 12V positive-going composite blanking signal is applied to the base of the emitter follower Q7, the voltage therefore present at its emitter forces current through the base-emitter junction of Q8 via the 1k ohm resistor, and also via the bypassed SET-UP potentiometer in the emitter circuit of Q8. The result of this current flow is that Q8 is saturated during the line and frame blanking periods, thereby bringing the clamp potential to the emitter voltage of Q8. This is the blanking level, and can be varied by adjusting the resistance value of the SET-UP potentiometer, which is wired as a rheostat. This action varies the average current flowing in the base-emitter junction of Q8, and hence the average potential developed at the emitter of Q8 by the passage of this current through the SET-UP potentiometer and the 220 ohm resistor. Because the composite blanking waveform contains a component at the frame frequency, a large (1000 uF) bypass capacitor is required at the emitter of Q8 to ensure that the set-up potential does not vary during the frame period.

In order to buffer the high impedance output of the line-by-line clamp from the sync addition and output stages, the super-alpha pair of cascaded emitter followers Q9 and Q10 is used. This combination provides a minimum current gain of 4 x 10⁴ times. In order to make doubly sure that any signal remaining below level is clipped off, the emitter load resistor of Q9 is returned to a potential of 3.85V, established by a resistive divider between the +12V rail and earth. The SET-UP control is adjusted so that at the blanking level Q9 is just starting to conduct.

VIDICON BLANKING

Whilst on the subject of blanking, there is another aspect which should be discussed. This concerns the mechanics of blanking the vidicon camera tube during the line and frame scanning retrace periods. For many years, this function was performed by the application of a large amplitude negative-going pulse to the control grid of the vidicon. However, it is not necessary to completely cut off the scanning beam. Since the scanned face of the photoconductive target is stabilized at cathode potential (i.e. 0V) by means of the electron beam, signal blanking may be effected making the potential on the scanned face more positive during the blanking intervals. This is achieved very simply by applying a positive-going composite blanking signal to the cathode. An NPN switching transistor with a 1k ohm collector load operating from +12V rail will provide a more than adequate voltage swing for this purpose. The composite blanking input to the processing circuitry has also been designed to operate from a 12V positive-going waveform, so only a single source of signal is required for all the camera's blanking requirements. A side-benefit of blanking the vidicon in this manner is that since the beam current to the accelerator anode is not chopped at composite blanking rate, filtering of this supply becomes much easier.

CIRCUIT DESCRIPTION — SYNC ADDER

When the SET-UP control is correctly adjusted, the blanking level at the emitter of Q10 will be 3.2V. In order to add the composite sync signal, it is merely necessary to depress the blanking level 300 mW (i.e. down to 2.9V) during the sync periods. This is performed by means of a switchable resistive attenuator, which is keyed by the composite sync waveform. The blanked video is fed to the base of the output driver transistor (Q11) via a 100 ohm resistor. When the 1k ohm resistor and 1k ohm potentiometer combination from the base of Q11 is grounded by the composite sync pulses, a DC voltage division of the required order is created. The sync amplitude is set to 300 mV by means of the 1k ohm potentiometer. The limits of adjustment are 220 mV — 380 mV, i.e. ±80 mV.

CIRCUIT DESCRIPTION — OUTPUT STAGE

An emitter follower has been employed to buffer the sync addition stage from the low impedance (75 ohm) output line. Because of power dissipation requirements, a BFY50 or BFY51 medium power transistor mounted in a heatsink has been specified. The composite video waveform is AC coupled to the line via a 1000uF electrolytic capacitor, and and this allows the line to be terminated without introducing frame tilt to the waveform. Remember that co-axial cable is a transmission line, and for correct operation should be terminated in its characteristic impedance. However, if the driving impedance is low, it is permissible to drive short lengths of cable unterminated. When operating in this mode, the 10k ohm resistor across the output line prevents the occurrence of a positive DC potential on the line, due to leakage effects within the coupling capacitor. Long lengths of co-axial cable should always be terminated, in order to prevent ringing and high frequency deterioration of the transmitted signal.

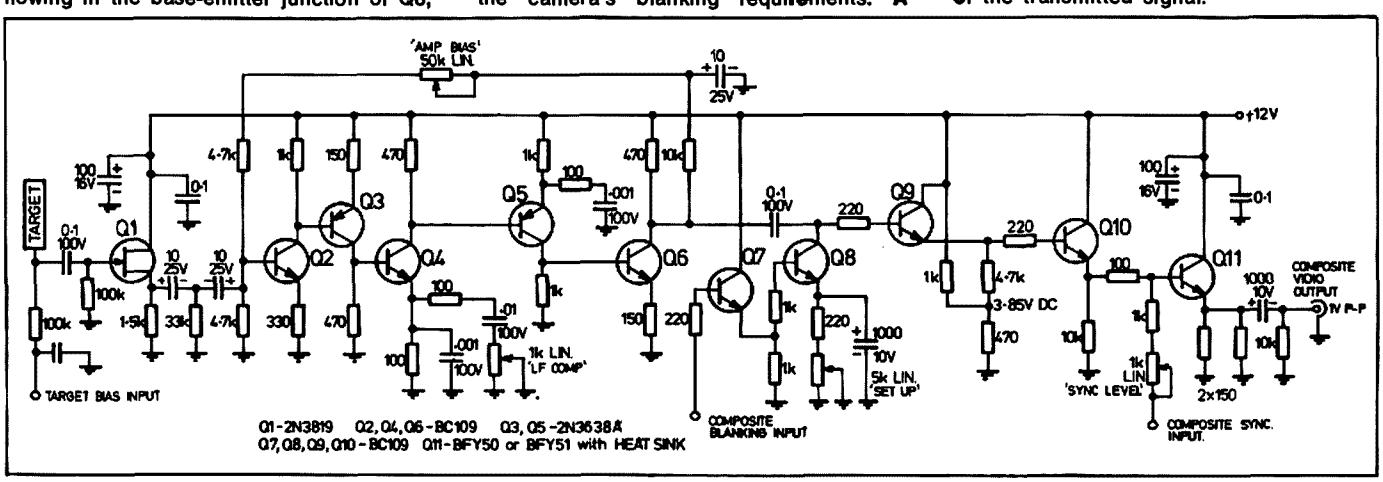


Figure 1: Ultra Low-Noise FET Vidicon Amplifier.

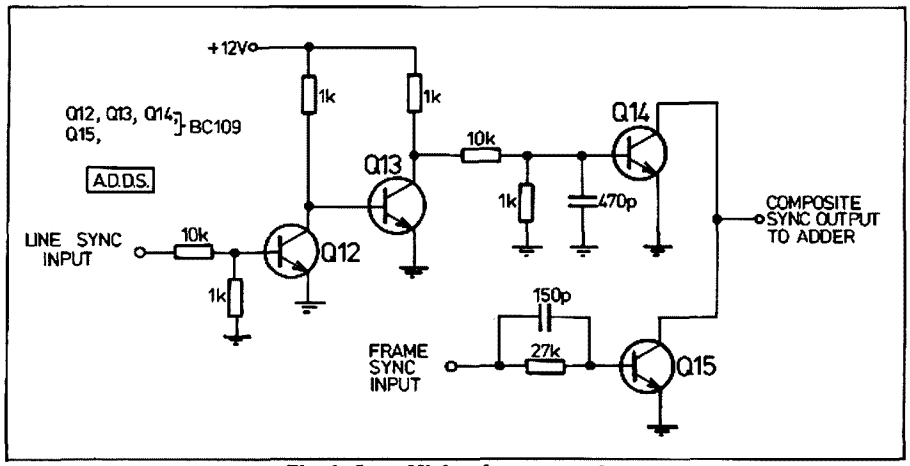


Fig. 2: Sync Mixing Arrangements.

CIRCUIT DESCRIPTION — COMPOSITE SYNC GENERATION

The circuit in figure 2 shows a simple method of generating a composite sync waveform from individual line and frame sync inputs. Since the processing circuitry requires a ground closure during sync periods, an "OR" gate has been formed by Q14 and Q15 with a common collector connection. If either transistor is turned "on", the output waveform is switched to sync level. Positive-going 12V pulses are required for both line and frame inputs.

The line sync pulse is applied to the base of Q12 via the 10k/1k resistive divider. Q13 is directly coupled to Q12, and serves to invert the line sync pulse so that it is again positive-going. This pulse is coupled to the base of Q14 via another 10k/1k resistive divider. Q14 is therefore saturated during the line sync intervals, thus operating the "OR" gate.

Now, Q12 and Q13 may seem superfluous, but this is not so. Their purpose (together with Q14) is to Introduce a propagation delay of 1 uS to the line sync pulse, so producing a line "front porch" In the assembled composite video waveform. This can be seen in figure 3. A portion of this delay is attributable to the normal propagation delays through Q12, Q13 and Q14. The remainder is produced by the two 10k/1k networks, which operate in the following manner. Sharp edged positive-going pulses are applied to the base-emitter junctions of Q12 and Q14 via 10k ohm resistors. These form integrator networks with the base-emitter capacitances, and so some time will elapse before the potentials across the base-emitter j nctions reach their cut-in values, i.e. about 650 mV. In the case of Q14, additional capacitance has been added. This also serves to limit the rise and fall times of the added sync pulse to a realistic value.

When the positive-going pulses cease, the charge stored in the base-emitter junctions of Q12 and Q14 maintains these transistors in conduction until this charge is bled away via the 1k ohm resistors. The value of 1k ohm has been chosen to produce a total pulse "lengthening" of 1 uS. So we see that the line sync pulse has had 1 uS chopped off the beginning and 1 uS added on to the end, i.e. it is still 5 uS long, but delayed by 1 uS. Incidentally, if you are supplying mixed syncs they may be passed through this network, since the 1 uS delay is of little consequence to the frame sync pulse.

If it is to be added separately, the frame sync pulse Is applied via the 27k ohm resistor and 150 pF "speed-up" capacitor to the base of Q15, which saturates during the frame sync intervals, thus operating the "OR" gate.

Figure 3 shows the output waveform at line rate produced by the clamping and sync insertion circuitry. Figure 4 shows the assembled line sync pulse in greater detail. The total current drawn from the +12V supply rail by the circuitry in figures 1 and 2 will vary considerably with set-up adjustments and picture content, but it should be between 100 mA and 150 mA.

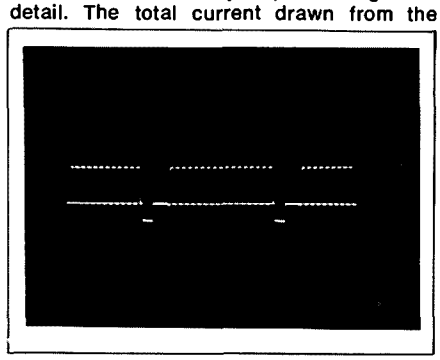


Fig. 3: Output Video Waveform (Line Rate)

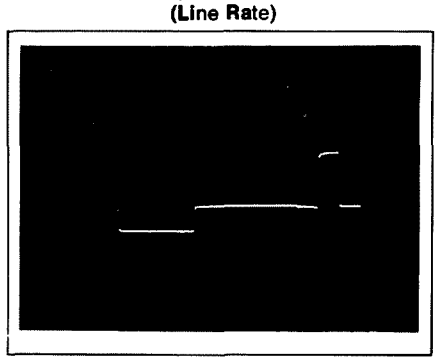


Fig. 4: Output Video Waveform (Line Rate — Expanded X Scale)

CONSTRUCTIONAL DETAILS

If you are laying out a PCB, remember to keep the input stage well away from the output stages, and also make the earth tracks as wide as possible. Common impedance earth paths are usually inevitable, and it is always advisable to keep their resistance and inductance to an absolute minimum. All resistors have dissipations of less than ¼W, and the values specified are from the E12 series. They should be good quality 5 per cent tolerance cracked carbon or metal film types. The LF COMP, AMP BIAS and SYNC LEVEL potentiometers must have non-inductive (e.g. carbon) elements. The SET-UP potentiometer is not critical, but a carbon type will be the most economical. All capacitor values up to and including 100 nF should be polyester film "Greencaps", except the 100 nF rail bypasses, which are Hi-K ceramic types. The 10 uF electrolytic capacitors are tantalum "TAG" types, and the 100 uF and 1000 uF values are conventional aluminium foil electrolytics. The transistors and FET specified may be by any manufacturer, provided that they meet the original specifications for these devices. This is very important, and substitute types should NOT be used. For general comments about the installation procedure, see the paragraph headed INSTALLATION in the previous article.

ADJUSTMENT PROCEDURE

1. Ground the gate of Q1, and measure the DC potential at the collector of Q6 (point "A") with a VTVM or multimeter. Adjust the AMP BIAS potentiometer to give 8.0V. Remove the ground from the gate of Q1.
2. Terminate the composite video output line with a 75 ohm load, and observe the output waveform with a CRO. Turn the SET-UP potentiometer fully clockwise. Now, back off the control VERY SLOWLY (its time constant is very long) until the lowest excursions of the video components are just beginning to be clipped off. Advance the control DEAD SLOW until the black areas in the picture are not crushed.
3. Adjust the SYNC LEVEL control to produce a sync pulse amplitude of 300 mV in the composite video waveform.
4. On a displayed picture, adjust the LF COMP potentiometer for minimum smearing. For more information, see the paragraph headed ADJUSTMENT PROCEDURE in the previous article.

SENSITIVITY

With the prototype amplifier, when using a one inch vidicon operating with a target voltage of +30V, an f1.4 25mm lens, and an inside scene under fluorescent illumination, the video component of the composite output waveform was 500 mV p-p.

NOISE

With a short-circuited input, the wide band noise as measured at point "A" was 3 mV

p-p. The total input capacity of the measuring instrument was 87 pF, which would have produced a —3 dB point of 4.07 MHz for the purposes of this measurement. This figure is very low, and fully justifies the amplifier's "ultra low-noise" title.

APERTURE CORRECTION
RESOLUTION
GAMMA

For comments on these parameters, see the relevant paragraphs in the earlier article. Because of the more sophisticated compensation arrangements, this circuit can be expected to produce a higher resolution figure — about 550 to 600 TV lines. However, as explained in the first article, the ultimate resolution figure achieved depends upon a large number of variables, and in particular the quality of the display monitor.

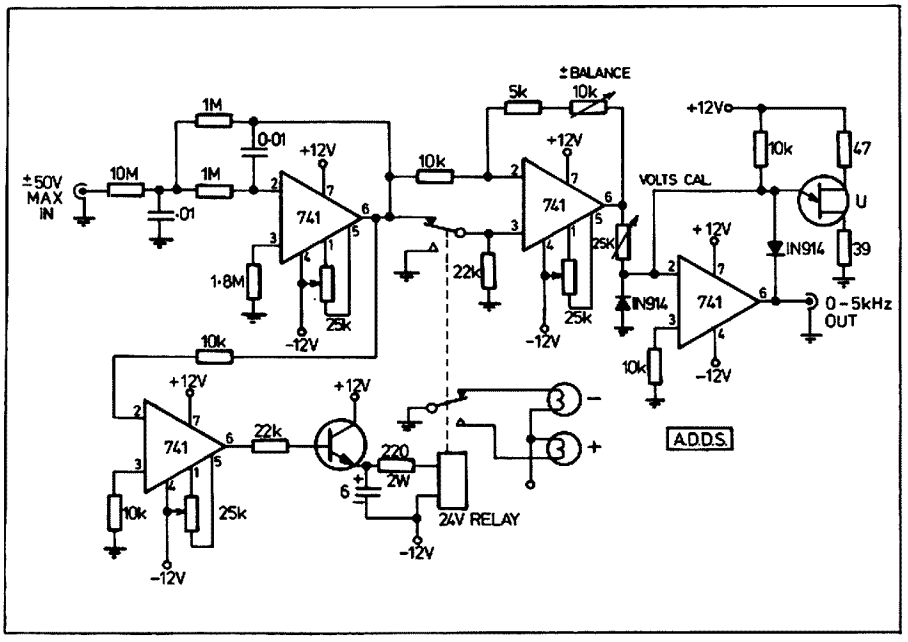
FOOTNOTE:

The frequency compensation arrangements in this amplifier were based on the use of a commercial yoke assembly with a nominal value of stray capacitance between the target connection and earth. Clif Danforth, VK7CD has built the amplifier, and reports that when he used a low capacity target connection, it was necessary to reduce the low frequency compensation network across the emitter resistor of Q5 to 470 pF and 200 ohms. If necessary, the values of these components should be altered until all smearing can be eliminated by adjustment of the "LF COMP" potentiometer. ■

TRY THIS WITH THE TECHNICAL EDITORS

DVM ADAPTOR FOR FREQUENCY COUNTER

This circuit is from "Master Handbook of 1001 Practical Electronic Circuits", edited by Kendall Webster Sessions. The three 25k potentiometers are used to set the 741 outputs to ohm volts. U is a unijunction transistor such as a 2N4853 or a 2N1671. ■



QSP

73

The following comes from "Worldradio", March 1978.

"The traditional expression, '73', goes right to the beginning of the landline telegraph days. It is found in some of the earliest editions of the numerical codes, each with a different definition, but each with the same idea in mind — it indicated that the end, or signature, was coming up. But there is no data to prove that any of these were used.

The first authentic use of 73 is in the publication 'The National Telegraph Review and Operator's Glude', first published in April 1957. At that time 73 meant 'My love to you!'. Succeeding issues of this publication continued to use this definition of the term. Curiously enough, some of the other numericals used have the same definition now that they had then, but within a short time the use of 73 began to change.

In 'The National Telegraph Convention' the numeral was changed from the Valentine-type sentiment to a vague sign of fraternalism. Here 73 was a greeting, a friendly 'word' between operators and it was used on all wires.

In 1859 the Western Union Company set the standard '92 Code'. A list of numerals from one to 92 was compiled to indicate a series of prepared phrases for use by the operators on the wires. Here, in the 92 Code, 73 changes from a fraternal sign to a very flowery 'accept my compliments', which was in keeping with the florid language of that era.

Over the years from 1859 to 1900 the many manuals of telegraphy show variations of that meaning. Dodge's 'The Telegraph Instructor' shows it as merely 'compliments'. The 'Twentieth Century Manual of Railway and Commercial Telegraphy' delines it in two ways, one listing as 'my compliments to you', but in the glossary of abbreviations it is merely 'compliments'. Theodore Edison's 'Telegraphy Self-Taught' shows a return to 'accept my compliments'.

By 1908, however, a later edition of the Dodge 'Manual' gives us today's definition of "best regards", with a backward look at the older meaning in another part of the book where it is also listed as 'compliments'.

'Best regards' has remained ever since as the 'put-it-down-in-black-and-white' meaning of 73, but it has acquired overtones of much warmer meaning. Today, amateurs use it more in the manner that James Reid had intended that it be used — a 'friendly word between operators'."

HITCH HIKING

With his finger (of scorn?) a hitch hiker says, "You furnish the car, petrol, attend to the repairs and upkeep, pay the insurance and I'll ride with you. But if you have an accident I'll sue you for damages." Maybe he'll bash your head in if you don't keep alert. Thus you would lose your car as well. How many members in organizations are hitch hikers or drivers? Adopted from "Worldradio", March 1978.

AMATEUR EXAMS

"Candidates apparently do not read the questions carefully and therefore do not understand what the examiner really requires."

This quotation is taken from a letter, published in Radio ZS, from the Postmaster-General to the SARL on the results obtained from a recent exam in South Africa. The letter goes on to give further details of candidates' results.

The problem is not unique and local candidates would be well advised to read the question thoroughly before attempting the answer.

NEW ZEALAND REPEATERS

"Tan years ago people would not have believed that there would be 25 FM repeaters operational in New Zealand by mid-1977. This number includes the one 70 cm repeater (Channel Q at Wellington) and is in addition to the 6 AM repeaters operational in the South Island. With an average of one repeater for every 130 amateurs, New Zealand ranks among one of the most 'Repeaterised' countries in the world." Article in "Break In", November 1977.

2m EQUIPMENT

Reports coming through from Europe indicate that the 144-148 MHz segment of the spectrum is being used in the Middle East for military traffic. One report states that many thousands of unmodified hand portable and fixed stations have been sold to Middle East countries for use in this band. "Radio Communication" April 1978.

GOT PROBLEMS?

Nov. '77 OST quotes a local club bulletin which describes how one prospective amateur is learning code and theory from club members. The 20-year-old student was injured in a fall and is almost completely paralysed. He has to learn code with a special machine attached to his chin and sends it with his tongue.

NEW PREFIX

According to "Radio Communication", April 1978, the prefix series J2A-J2Z has been provisionally allocated by the ITU to the Republic of Djibouti, the 154th member of the ITU.

FEE DIFFERENTIALS

"The effectiveness of the self-discipline of the amateur service was officially recognized in the Federal German parliamentary question hour on 10 November 1977. In answer to a question from the West Berlin deputy as to the reason for the difference in the monthly fees for amateur radio stations (DM3) and for CB fixed stations (DM15), the Parliamentary Secretary of State replied: 'The effort required on the part of the FRG Post Office for the licensing and supervision of amateur radio stations is considerably less than that lor low power CB fixed stations. In contrast to these CB stations, amateur stations may only be operated by persons who have passed an examination, the standard and level of which are determined by international regulations; this means that the effort and outlay of the Post Office for monitoring purposes are considerably reduced.'" "Radio Communication", April 1978. ■

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AN AR SPECIAL: EQUIPMENT REVIEW —
THE ICOM IC22S

The ICOM IC-22S is the latest in the ICOM 22 series to be marketed in this country by VICOM of Melbourne. The 22's have built up an enviable reputation in the two metre FM field over the years probably due to several very good reasons. Firstly they have been usually available from stock or at the worst on very short order. Secondly there has always been a good supply of crystals available for the various repeater and simplex channels, and last but perhaps the most important, they have proved to be highly reliable in service. If, however, trouble did occur, VICOM always had the required spare parts and expertise to put things right.

The 22S is fully synthesized. That is, unlike its earlier relations, it does not require a set of crystals for each channel. In place of the crystal board is a diode matrix board with the capability of programming 22 channels. As supplied, it is set up for repeaters one to eight and simplex channels 40, 50 and 51. Appearance is almost identical to the earlier IC-22A. The colour has been changed from jet black to a dark charcoal grey and a duplex A, duplex B, simplex switch has been added.

The addition of the frequency synthesizer has added to the complexity of the unit to a marked degree. The original 22 had 23 transistors, 3 FETs, 3 ICs and 16 diodes, where the new 22S has 34 transistors, 7 FETs, 13 ICs and up to 128 diodes. Most of the additional components are required for the new frequency determining section.

Most of the general specifications for the 22S are the same as the earlier models, but it is interesting to see that the spurious output of the transmitter is now a specified item at —60 dB down on carrier level.

Even with all of the new circuitry the overall current drain from a 13.8 volt source is still the same at 2 amps on transmit and 400 mA on receive when squelched.

One new feature is the addition of a substantial heat sink at the rear for the final output transistor, another is some positive high SWR protection in the form of an SWR detector in the final output circuit and an amplifier to provide cut-off for an earlier stage.

The IC-22S sold here in Australia is set up so that channels can be programmed at 25 kHz intervals. However, other versions are produced in Japan to suit both the American and European channel spacing plans. The English version is known as the IC-240.

IC-22S CIRCUIT DESCRIPTION

In general the 22S is similar to the earliest models and readers are referred to the review of the **IC-22** in the December 1974 issue of Amateur Radio. Perhaps the most significant change in the receiver section is the new ceramic discriminator. This will provide better long term stability. The receiver RF stage is still a 3SK40 and the first mixer has been changed from a single gate FET over to the dual gate 3SK40. In practice no difference in performance was detected but cross modulation characteristics should be slightly better. The transmitter starts off at 10.7 MHz and this is mixed with the output of the synthesizer to produce the required output frequency. The same synthesizer frequency is fed to the receiver first mixer to produce the first receiver IF of 10.7 MHz. Diode switching is used throughout as with the earlier models, hence there is no audible click when changing from transit to receive or vice versa.

THE 22S ON THE AIR

It took a little while to get used to the operation of the duplex/simplex switching. There is no indication of duplex operation other than the position of the switch. It is hard to understand why an LED indicator was not included to give a warning. However, once mastered operation became very simple and by using the facilities provided by this switch some unexpected operating features were found. When working on a repeater it is possible to switch to reverse so that transmit and received frequencies are changed over. This enables one to check other stations working into the repeater to see if simplex operation is possible. This also means that repeater channels not in use in the area can be used for simplex contacts. Taking this one stage further, a repeater input frequency can be used for simplex operation without using the transmitter offset at all.

In all, it was difficult to pick the difference between the **22S** and a 22A that happened to be in the shack at the time. Although the 22S uses a smaller loud speaker than the 22 or 22A, no difference could be detected in the received audio quality.

Full details are included on the method of programming additional channels and plenty of spare diodes are included with the transceiver. It appears that an accurate match is needed for the transmitter output. We found that if the SWR exceeded 2 : 1 when operating in the low power (1 watt) position that an audio howl appeared on the transmitted signal. It also seems that after some 22Ss have been operating for a long period of time, they are subject to a slight drift higher in frequency. Some units have been noted to shift up to 3 kHz. It should be noted that this only appears in isolated instances and this amount of shift is not serious.

THE IC-22S ON TEST

A few quick checks were carried out to see if the unit was up to spec. It was. Transmitter output was measured on a Horwood power meter. It was 11.5 watts in the high power position and 0.75 watts in the low power position. On receive the mute opened at .2uV, an excellent figure.

INSTRUCTION MANUAL

The manual provides most of the informa-

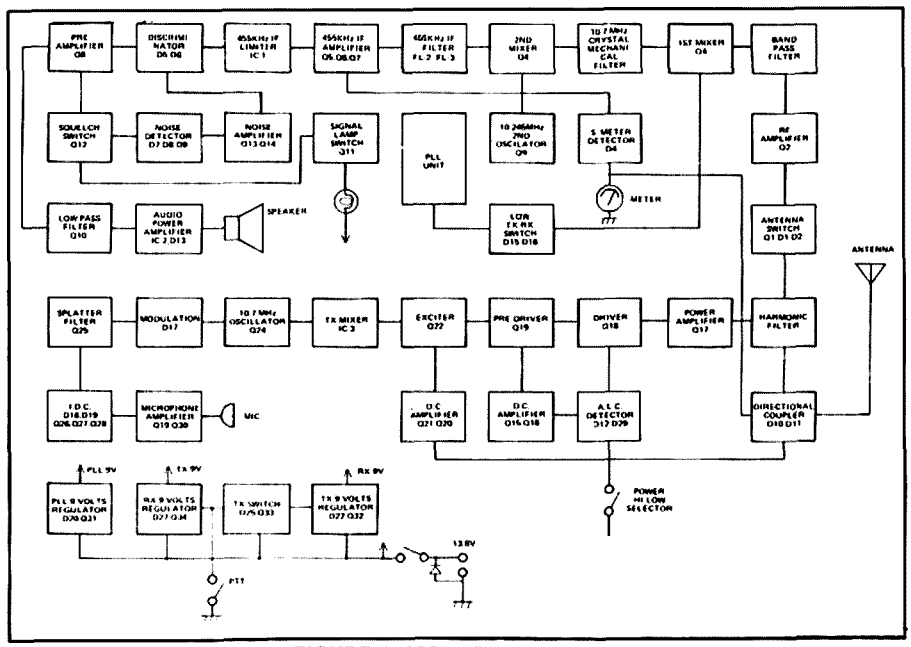
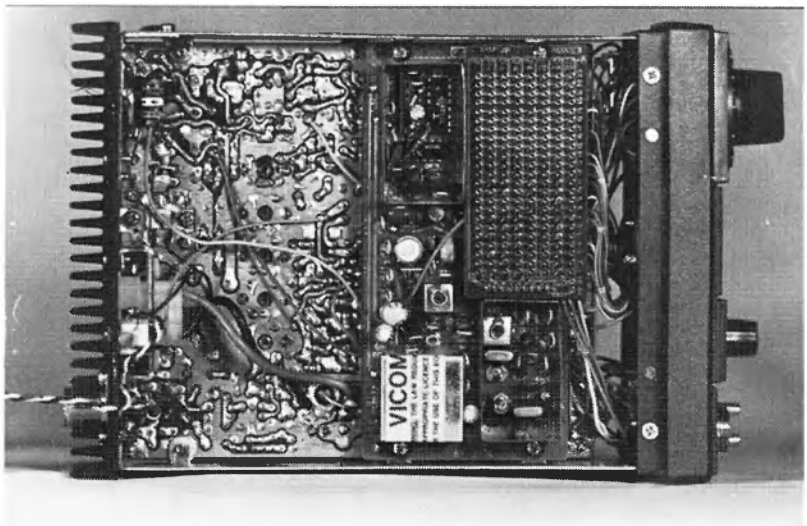


FIGURE 1: IC22S Block Diagram.



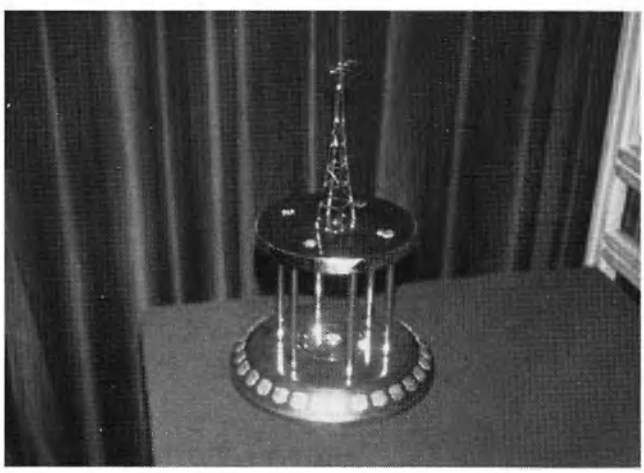
tion needed. The operation aspect is well covered and clear photos indicate most points that could require adjustment. A large scale circuit diagram is included which is a great improvement over the miniaturised version in the earlier books. Also new is a complete voltage chart for both transmit and receive conditions.

At the current list price of $279.00, the 22S represents excellent value. Considering the channel capability it is actually cheaper than the model it supersedes and as sales have proved, it appears to be the way most amateurs want to go.

Our test unit was supplied by VICOM International, to whom all enquiries for the IC-22S should be directed. ■

The Versatile IC22S with cover removed showing programming board.
(Photo by Reg Goudge)

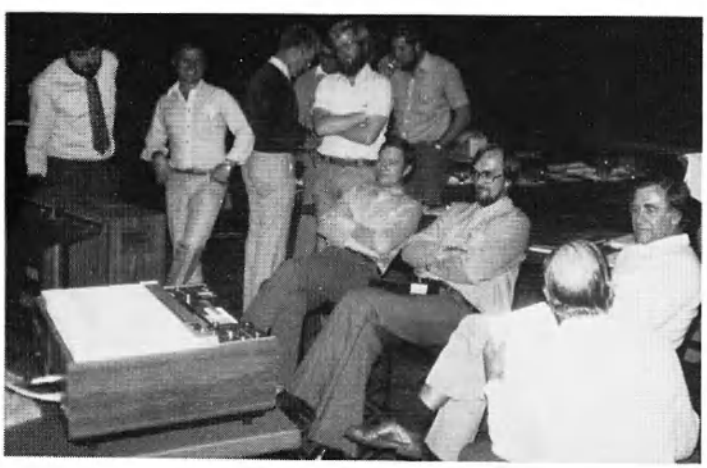
1978 FEDERAL CONVENTION — PICTORIAL ROUND-UP



The Perpetual Remembrance Day Trophy.

Ian Hunt (left) VK5QX and David Wardlaw VK3ADW, present the RD Trophy to Ted Howell VK1DH.

Federal Councillors working for you.



1.15 a.m. — RELAXATION!!

GOODWILL THROUGH INTERNATIONAL AMATEUR RADIO

Ian Hunt VK5QX

A recent visitor to Australia, Captain Tanongsuk Tuvinun of the Royal Thair Army, spent several months working with a Defence Establishment in Adelaide. Whilst not at this stage an amateur operator, but showing signs of becoming such, Captain Tuvinun, called Tanong for short, when back in Thailand has as one of his senior officers HS1JN Jumnong Sowanna, who is an Admiral in the Royal Thai Navy, and also a member of the Royal Thai Amateur Radio Society.

When Tanong arrived in Adelaide he found that he was working with Ian VK5QX and the amateur radio connection soon became known.

Needless to say, it was not too long before Ian had Tanong on the air talking back to Bangkok and several contacts were made with Kam HS1WR, who is the President of the Royal Thai ARS and a Colonel in the Thai Army. Contact was also made under these circumstances with Hans HS1BG, who is a Vice-President of the Society.

These links having been established and the bonds of friendship woven, it was thought by the Council of the South Australian Division that some further gesture of friendship would be desirable and in order.

Tanong had told Ian VK5QX that reference books in Thailand were both difficult to obtain and quite expensive.

The VK5 Division Council decided to ask Tanong to take back to Thailand on behalf of the Division a set of books to be presented to the Royal Thai ARS.

These books were presented to Tanong by Ian VK5QX as Vice-President of the Division. As shown in the cover photograph, the presentation was witnessed by Bob Edgar VK5RS and Ron Catmur VK5FY, both of whom worked in the same area as Tanong and Ian.

The books presented comprised both Volumes 1 and 2 of the RSGB Handbook, the RSGB VHF/UHF Manual, the ARRL Antenna Handbook and an American handbook on VHF/UHF Antennas.

It is hoped that the provision of these books may in some small way contribute to the advancement of Amateur Radio in Thailand and serve as a useful reference for members of the Amateur Radio Society In that country.

Ian VK5QX. ■

COMMERCIAL KINKS

With Ron Fisher VK3OM
3 Fairview Avenue,
Glen Waverley 3150

The Realistic DX-160 was discussed in this column quite some time ago in general terms. A letter recently from Mr. A. Ward VK4WK suggested a few simple modifications for the receiver. It is claimed that they result in Improved stability and better SSB resolution.

(1) To improve the ripple content of the built In AC power supply. Break the lead from the output side of SW 11.2 to the .5 amp fuse. Now wire in a small low resistance LF choke. The secondary of an old speaker transformer is ideal, however the resistance should be no more than one ohm (suitable LT filter chokes are available). One end of the winding should go to the switch and one to the fuse holder. A small voltage will occur (.5 volt) but this did not affect performance. The modification resulted in improved SSB reception on 21 MHz and higher.

(2) The next modification was to isolate the BFO from the HF oscillator and provide it with its own stabilised supply. Disconnect SW 10 : 1 from the point where It connects to the positive point of Zener diode D7. Connect a 5.1 volt Zener across C48 to earth. Reconnect SW 10 : 1 to the 10.2 positive line via a 500 ohm ¼ watt resistor. This modification provides better BFO regulation with improved SSB and CW resolution.

(3) This modification applies to the band spread system. Due to the design of the tuning system and the coupling between stages, the receiver goes slightly out of trim during the rotation of the band spread dial towards the high frequency end. The remedy Is to connect a padder capacitor in series. A value of about 16 times the maximum of the band spread capacitor is suggested.

Apparently quite a few of these sets come misaligned on band "E". Check and make sure that yours isn't lined up on the image rather than the required signal.

Our thanks to VK4WK for his ideas. Next month a few simple modifications for the TS-520. ■

RATBAG CBERS ON RAMPAGE

Events of 29 April to 2 May at Greystanes

(From a deposition by VK2BPP and details from WIA N.S.W. Division)

Having been enjoying a pleasant Saturday out with family and friends, Bruce Pinkerton VK2BPP returned home about 23.30 hours to be met by his next door neighbour with the advice to get the family into the house quickly to avoid trouble. A group of CBers had left a petition under Bruce's front door about 20.30 hours.

Earlier in the evening, the neighbour said, he had been confronted by two groups of CBers, some 35 to 40 In number. The last confrontation was shortly after 20.00 hours, when he had been threatened. They made a demand to know VK2BPP's whereabouts and to pass on the message that if a device jamming their channel was not switched off in an hour they would damage VK2BPP's aerial installations. The neighbour also said that members of the group had been in the back yard and on the roof and he had tried to disperse them.

VK2BPP, having obtained a torch, then saw the damage done to his Oscar satellite tracking, VHF/UHF and HF aerial systems, the coax and control cables cut and whole sections removed. It was then that a group of CBers began forming In his driveway, some apparently drunk. Upon sighting them Bruce asked why, and who was responsible for the damage. Observing aggressiveness, he telephoned the police who arrived about 23.45 hours and the group dispersed. He then found all his house fuses had been removed and both his and his neighbour's gardens severely trampled. Telephone harassment then began.

Another group of CBers arrived about 00.30 hours and around 04.15 hours empty cans were thrown into the garden and at the house. At one stage there were over 80 cars in the street.

On Sunday, Bruce was visited by a friend to whom he had been giving help towards his AOCP instruction. The friend told him that the jamming device operated a "beep-beep" signal on 27.155 MHz from dusk to dawn using light switches out of DMR roadworks warning lanterns. Other similar devices had been previously located in the area and discovered by two CBers. A listening post was then set up and logged the commencement of the interference at 17.15 hours. From 18.00 hours CBers began driving up and down the street but when the police arrived a little later they had all gone. At 20.45 hours a party of two CBers and three nearby amateurs went off on foot to search for the device which, It is understood, was found in a tree some 250 metres away.

Another threatening telephone call came in at 01.00 hours on Tuesday morning and it was later that the loss of his 2 metre mobile whip was discovered. ■

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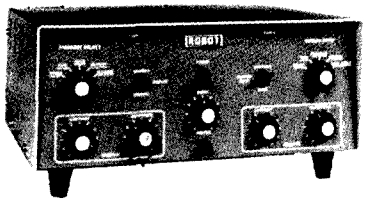

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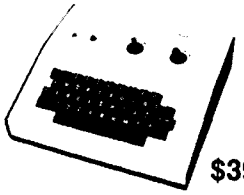

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Automatic CR & LF at end of 64 or 72 character line
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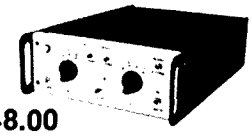

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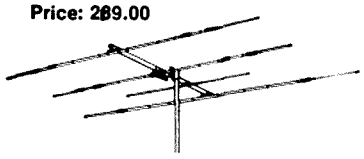
CUSHCRAFT ATB-34

10, 15, 20 meter antenna.
Price: 289.00



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TRIO KENWOOD: TS820, 160-10 metres.
TRIO KENWOOD: TS700A — 144-148 MHz all mode transceiver.
TRIO KENWOOD: TS600A — 50-54 MHz all mode transceiver.
TRIO KENWOOD: TR-7400A — 144-148 MHz FM transceiver.
YAESU MUSEN: FT101E — 160-10 metres, AM, SSB, CW transceiver.
YAESU MUSEN: FT301 series, 160-10m AM, SSB, CW transceiver.

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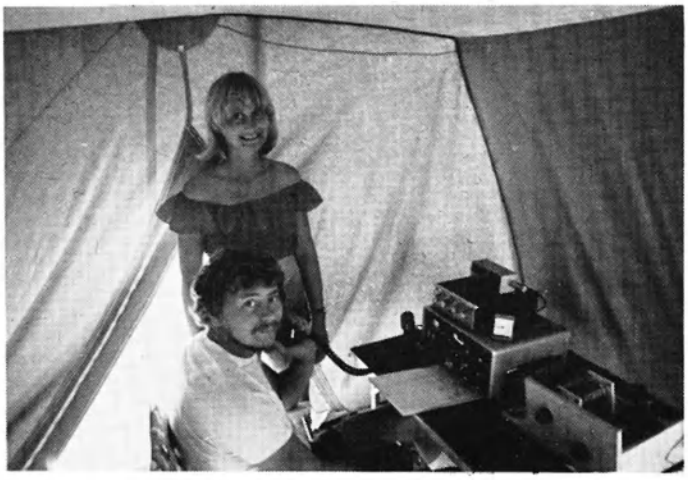
WOOMERA AMATEUR RADIO CLUB — FIELD DAY ACTIVITY

ABOUT THE CLUB

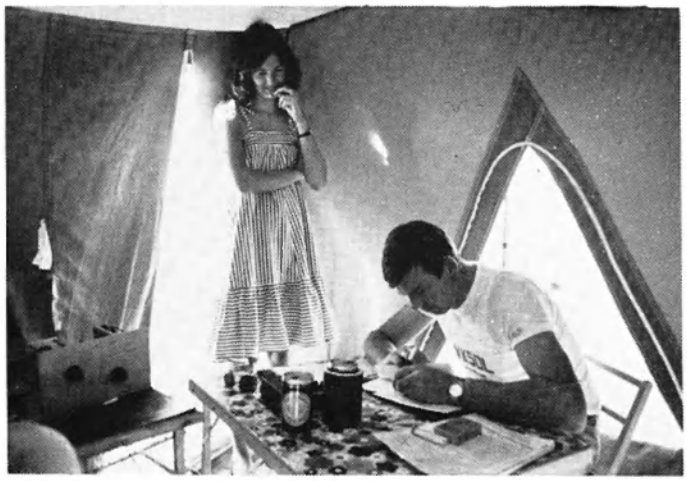
Of the eight club members licensed, three are Americans. The club (possibly the only one in Australia) has an operating roster, i.e. one week in eight you can operate from your home. The club equipment can be used any time.

The club has recently purchased equipment to operate Mode "A" through the Oscar satellites.

We were given a 50 per cent subsidy by the Woomera Board (equivalent of Local Government). ■



John Nankervis VK5OJ and wife Carol, replenishing refreshments(?)



Dick Menz VK5OL and YL Gabrielle Chlebeck of Andrew VK5ZWO.

WARC '79 FUND RAISING BY ILLAWARRA ARS

The Illawarra Amateur Radio Society of Wollongong, N.S.W., during the latter part of 1977, took up the challenge to raise funds towards the WIA participation in WARC '79.

A raffle was conducted and the net proceeds amounted to $400.

Picture shows Tim Mills (left) VK2ZTM, President of the N.S.W. Division of the WIA, receiving a cheque for $400 from Brian Boseley VK2BCI, Secretary of the Illawarra Amateur Radio Society, at the Society's monthly meeting for April 1978.

On accepting the cheque, Tim thanked the members of IARS for their initiative, and in particular thanks to John Hodkinson VK2BHO, who conducted the raffle.

Tim, in an address to the meeting, spoke of the importance of WARC '79 to all amateurs and also the role that the WIA plays in serving the interests of amateurs generally.

(Information from Ian Bowmaker VK2ZJA.) ■

QSP

MARIS
MALTESE AMATEUR RADIO INTERNATIONAL SOCIETY

Tho MARIS is a society of members whose interests are radio experiments and communications. It is world wide.

The headquarters of the society is in Canada, and its Director is George MUSCAT (VE5GNM). There is a branch of the society in Australia, and the Director is Paul Muscat (VK5PQ), located in South Australia.

To be a member of the society you have to be of Maltese origin or married to a Maltese person. You also have to be a licensed amateur radio operator of any class.

For further information please contact one of the following members:—

Len Pearman (VK2NNU), 7 Damien Avenue, Wentworthville, NSW 2145; Sam Galea (VK2NOG), 57 Fairview Road, Canley Vale, NSW 2166. ■

WE DO OUR BEST!

Switchboard Op.: "Good morning. Can I help you?"
Voice: "Yes please. I am inquiring about zener diodes."
Switchboard Op. (after pause): "I'm sorry, Sir, but Mr. Diodes doesn't work here any more." ■

G2NM

The call sign G2NM, which belonged to the late Gerald Marcuse, is very well known to old-timers. News from the Chichester and District ARC is that G2NM has been issued as a commemorative call for use on 24th-25th June to enable old-timers to repeat contacts made by the late G2NM. ■

CONTESTS

Kevin Phillips, VK3AUQ
Box 67, East Melbourne, 3002

RD CONTEST 1978 — RULES

The Remembrance Day Contest Rules for the 1978 Contest will be published in the July issue of AR. The contest will be held on Saturday 12th and Sunday 13th of August.

CONTEST CALENDAR

May	27-June 4	Townsville Pacific Festival Contest
June		
	2/5	CHC/FHC/HTH QSO Party
	17/18	West Virginia QSO Party
	17/18	All Asian Phone
	18	WAB LF CW Contest
July		
	1/2	Venezuelan Phone Contest
	8/9	Radiosport Competition
	15/16	Ten-Ten Net QSO Party
	15/16	Sunshine State—Jack Files Memorial (VK4 only)
	22/24	Rhode Island QSO Party
	29/30	Venezuelan CW Contest
	29/31	Country Hunters CW Contest
August		
	12/13	REMEMBRANCE DAY CONTEST 1978
	19/20	SARTG RTTY Contest
	26/27	All Asian CW Contest
September		
	16/17	Scandinavian Activity Contest CW
	23/24	Scandinavian Activity Contest Phone
October		
	28/29	CQ WW Phone Contest
November		
	25-26	CQ WW DX CW Contest

QSP

YL INT'L SSBers CONTEST

1978 annual QSO party (contest), CW only 19th May 18.00-24.00hZ, CW and Phone 20th May 00.01hZ to 23.59hZ on 21st May; one 6-hour rest period per 24 hours of contest period (note in log), all bands. Suggested frequencies: CW 3565, 7070, 14070, 21070, 28070 kHz, Phone 3925 (VK 3690), 7290, 14333, 21373, 28673 kHz. Further details from VK3LC or VK3XB.

NEW PREFIX

A station signing 8J3ITU will be operative during the 14th Plenary of the CCIR to be held in Kyoto from 7th to 23rd June. ■

AMATEUR SATELLITES

Bob Arnold

VK3ZBB

There are three ways in which information can be obtained to ascertain the location of satellites and their time of acquisition and loss at various locations within Australia.

1. Reference can be made to the equator crossing predictions which appear in these columns, used in conjunction with the "Standard Orbits" published in "Amateur Radio", October 1972. These standard orbits are for OSCAR 6 but are applicable to OSCAR 7, and in due course a similar set of figures will be presented for OSCAR 8. It is not desirable to produce the figures for OSCAR 8 until the orbit has settled down to a defined pattern.
2. On behalf of AMSAT, Skip Reymann W6PAJ, PO Box 374, San Dimes, California, USA 91773, has produced calendars containing all orbits for each satellite. These orbital calendars are most useful but it is necessary to do a certain amount of calculation to determine the time of acquisition and loss at any particular location. Please note the two calendars are each available for $US3.00 to AMSAT members and free on request to AMSAT Life Members.
3. Harry Starr VK4XQ, of Gold Coast Computer Services, PO Box 206, Surfers Paradise 4217, has set up a service for OSCARS 7 and 8 based on the precise location of an individual QTH. This service provides all accessible orbits for each day, giving time of acquisition and time of loss. For each orbit, reference is made to a series of charts giving the following information:—
   (a) The particular reference number.
   (b) The equatorial crossing of the ascending node orbit that will produce these figures.
   (c) The time in minutes after equatorial crossing when the satellite will first be heard.
   (d) For each minute in the pass, azimuth and elevation to the satellite.
   (e) The time of loss.

   Harry will supply this service for either satellite at a fee of $20 for the charts and the first six months orbit predictions. Thence, $10 or each subsequent six months. For each set of charts include $1.00 for postage. A proportion of these charges will be donated for future satellite development. All Harry requires to provide this service is the latitude and longitude of your QTH.

OSCAR 8

The month of April saw a stabilisation of OSCAR 8 and the parameters given in the attached table are reasonably reliable for the calculation of orbital data. However, no one has yet come up with information to enable accurate tracking to be calculated and the azimuth and elevation positions for each visible pass are still guess-work, and from the limited number of reports received this lack of data is causing some troubles.

Mode A operation is scheduled for Monday through Friday (GMT) with Mode J activated on Saturdays and Sundays. Results on Mode A are superior to those obtained through OSCAR 7 and many contacts can be heard. At this QTH we still suffer from a fall away in signal strength as the satellite proceeds to the north — as with AO7 this is probably due to the antenna of the satellite being in shadow relative to the ground station.

Reports of activity on Mode J are widely variable with few stations making good QSOs. Col VK5HI reports excellent results as do the Japanese operators. The lack of activity on this Mode is probably due to several factors — (i) Antenna systems designed for the correct polarisation on 435 MHz; (ii) Converters with adequate sensitivity; (iii) Break-through of 145 MHz harmonics on 435. Careful attention to these factors should improve results and increase activity on this Mode.

OSCAR 7

This satellite continues to operate well on Mode B with fair results on Mode A. Mode switching has been less apparent of late and the predicted Modes are now more reliable. The last few days of April have seen excessive noise on Mode B and distortion of audio which has made some QSOs quite impossible. This difficulty has been noticed before and it has corrected itself; let's hope it will do so again.

ACTIVITY

Several stations which were active in OSCAR 6 days have returned to AO8, maybe other "old-timers" will also be heard again.

At the request of a number of amateurs I am publishing a list of VK stations heard during the past two years — some are still very active, some spasmodic and others are not heard at all these days.

VK1 — VP, BH, MP, FT, RC.
VK2 — PU, AOC, ZN, ALU, AYC, AQG, BAE, AWW, RX, BOJ, BVR, ZI, AHE, ZTA, ZSL, ZFX, ZXL, ZAZ, ZAA.
VK3 — BFC, AMN, WM, AUQ, AOC, BER, ACR, ADR, ACH, ACL, BH, AWW, ZUR, ZDW, ZPA, ZBB, YJI, YFT, YIL.
VK4 — LO, XQ, XZ, RY, TL, ZDA, ZIL, ZDE, ZMC, ZRF, ZRQ, ZBB.
VK5 — NY, QR, GU, MT, NC, EU, HI, GW, LZ, SV, ZPS, ZIW, ZIM, ZAU, ZDG.
VK6 — WG, KJ, HK, XY, CU, LM, ZFY, ZED, ZFQ, ZCC, ZKO, ZGQ, ZHM.
VK7 — LZ, AZ, JG, ZAH, ZAK.

CONTINUITY

As I shall be away for the next couple of months, Charlie Robinson VK3ACR will be your scribe. Thanks, Charlie, I am sure you will have some interesting notes, particularly through your contact with the AMSAT Pacific Net.

For those who may have requested OSCAR information, my apologies for the delay — I will reply as soon as possible.

OSCAR 7

JULY 1978

Date	Orbit	Mode	Time Z	Long. °W
1	16579	B	0134	81.6
2	16591	A	0034	66.4
3	16604	B	0128	80.0
4	16616	B	0027	64.9
5	16629	A	0121	78.5
6	16641	B	0021	63.3
7	16654	B	0115	76.9
8	16666	A	0014	61.7
9	16679	B	0109	75.3
10	16691	B	0008	60.2
11	16704	A	0102	73.8
12	16716	B	0002	58.6
13	16729	B	0056	72.2
14	16742	A	0150	85.8
15	16754	B	0050	70.6
16	16767	B	0144	84.2
17	16779	A	0043	69.1
18	16792	B	0138	82.7
19	16804	B	0037	67.5
20	16817	A	0131	81.1
21	16829	B	0030	66.0
22	16842	B	0125	79.5
23	16854	A	0024	64.4
24	16867	B	0118	78.0
25	16879	B	0018	62.8
26	16892	A	0112	76.4
27	16904	B	0011	61.3
28	16917	B	0106	74.9
29	16929	A	0005	59.7
30	16942	B	0059	73.3
31	16955	B	0154	86.9

OSCAR 8

JUNE 1978

Date	Orbit	Time Z	Long. °W
1	1218	0048	51
2	1232	0053	53
3	1246	0059	54
4	1260	0104	55
5	1274	0109	57
6	1288	0114	58
7	1302	0119	59
8	1316	0125	61
9	1330	0130	62
10	1344	0135	63
11	1358	0141	65
12	1371	0002	40
13	1385	0008	41
14	1399	0013	43
15	1413	0018	44
16	1427	0023	45
17	1441	0028	47
18	1455	0034	48
19	1469	0039	49
20	1483	0044	51
21	1497	0050	52
22	1511	0055	53
23	1525	0100	55
24	1539	0105	56
25	1553	0111	57
26	1567	0116	59
27	1581	0121	60
28	1595	0126	61
29	1609	0132	63
30	1623	0137	64

JULY 1978

Date	Orbit	Time Z	Long. °W
1	1637	0142	65
2	1650	0004	41
3	1664	0009	42
4	1678	0014	43
5	1692	0020	45
6	1706	0025	46
7	1720	0030	47
8	1734	0035	49
9	1748	0041	50
10	1762	0046	51
11	1776	0051	52
12	1790	0056	54
13	1804	0102	55
14	1818	0107	56
15	1832	0112	58
16	1846	0117	59
17	1860	0123	60
18	1874	0128	62
19	1888	0133	63
20	1902	0138	64
21	1915	0000	40
22	1929	0006	41
23	1943	0011	42
24	1957	0016	44
25	1971	0021	45
26	1985	0026	46
27	1999	0032	48
28	2013	0037	49
29	2027	0042	50
30	2041	0047	52
31	2005	0053	53

SATELLITE PARAMETERS

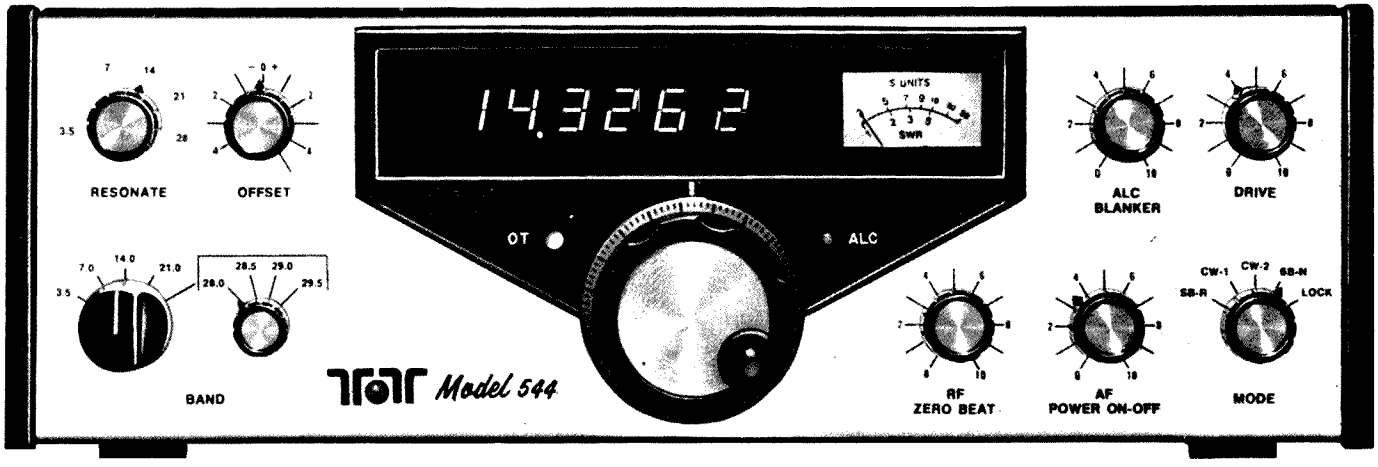
		OSCAR 7	OSCAR 8	R-S	OSCAR Phase 3	P76/5
Launch Date		15 Nov. 74	5 Mar. 78	During 1978 Four Satellites	Est. Dec.79	
Inclination Degrees		101.7010	98.99	82	57	99.655
Orbit Period Minutes		114.94478	103.23162	102	11 hr. approx.	105.729
Orbit Increment Degrees		28.736208	25.80867			26.43
Apogee km		1461	930	950	24249	1025.968
Perigee km		1450	910		932	
		OSCAR 7	OSCAR 8	Russian Series	OSCAR Phase 3	P76/5
MODE A	UP	145.85-145.95 RC	145.85-145.95 RC	145.80-145.90		
	DN	29.40-29.50 L	29.4-29.5 L	29.30-29.40		
MODE B	UP	432.125-432.175 LC			435.150-435.290	
	DN	145.925-145.975 Inverted LC			145.850-145.990 Inverted	
MODE J	UP		145.90-146.00 LC		145.850-145.990 435.150-435.290	
	DN		435.10-435.20 inverted L		Inverted	
BEACONS		A 29.502 L A 435.10 RC B 145.972 LC 2304.1 LC	29.402 L 435.095 L		145.995 435.145	435.970 A0 Modulation No communication

Polarisation for Southern Hemisphere:
L — Linear. LC — Left hand Circular. RC — Right hand Circular.

graham e. stallard

27 WHITE AVE., LOCKLEYS 5032
SOUTH AUSTRALIA – PHONE: 43 7981

Authorised Australian Distributor for . . .
TEN-TEC



SPECIFICATIONS

GENERAL

Frequency bands: 3.5-4.0, 7.0-7.5, 14.0-14.5, 21.0-21.5, 28.0-28.5, 28.5-29.0, 29.0-29.5, 29.5-30.0 MHz. Ten meter crystals furnished for 28.0-29.0 MHz. All circuits permeability tuned. Tuning vernier 25 kHz per revolution, typical. 9 MHz i-f filter, 8 pole crystal lattice. Direct frequency readout: [Model 540 — slide rule, color coded dial indicates 100 kHz segment, dial skirt increment to 1 kHz. Accuracy ± 1 kHz from nearest 25 kHz calibration point. 25 kHz pulsed calibrator. Model 544 — six digit, 0.43" high LED numerals. Least significant digit indicating 100 Hz green, all others red. Accuracy ± 100 Hz. No calibrator in this model.] Automatic sideband selection, reversible. VFO frequency stability: Less than 15 Hz change per F°, averaged over a 40° change from 70° to 110°, after 30 minute warmup. Less than 10 Hz change from 200 to 240 VAC line voltage when using TEN-TEC power supply. Power required: [Model 540 — 12-14 VDC, 500 mA receive, 18 A maximum transmit. Model 544— 12-14 VDC, 1 A receive, 18.5 A maximum transmit.] Modular construction: [Model 540 — 10 plug-in assemblies and 7 fixed circuit boards. Model 544 — 10 plug-in assemblies and 9 fixed circuit boards.] Semiconductors: [Model 540 — 47 transistors, 33 diodes, 11 ICs. Model 544 — 65 transistors, 38 diodes, 14 ICs, 1 LSI, 6 LED displays.] Power switch remotely controls power supply. Snap-up front feet. Construction: Rigid aluminum chassis, sub-panels, top and bottom. Cycolac plastic side panels. Finish: Etched aluminum panel, textured black top and sides. Size 4½"x13⅝"x13". Net weight: 12 lbs.

RECEIVER

Mosfet rf amplifier. Preselector resonate control. 0.3 uV for 10 dB S+N/N. 2.6 kHz band width, 1.8 shape factor at 6/60 dB points. AGC controlled by rf gain control. Meter automatically switched to "S" meter when receiving. Offset tuning with defeat switch and LED indicator. Built-in speaker in bottom. External speaker/phone jack. Less than 2% audio distortion. WWV reception at 10 and 15 MHz. CW filter (optional), 150 Hz wide, two positions, shape factor 7.2 @ 6/60 dB.

TRANSMITTER

200 watts input, ssb and cw. 100% duty cycle. Instant band change, no tune-up required. 8 pole ssb filter. Automatic Level Control on front panel. LED indicator shows operation in ALC region. Cw sidetone fed into audio amplifier when in cw mode. Sidetone adjustable for tone and volume. Automatic cw offset of 750 Hz. Press-to-talk. Meter indicates SWR when transmitting. High impedance microphone input. Rf output impedance 50-75 ohms, unbalanced.

TEN-TEC

PLEASE PHONE, CALL OR WRITE, FOR FURTHER PARTICULARS OF THE TEN-TEC RANGE

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 publishers.

February 9th, 1978.

The Editor,

Dear Sir,

After finally getting on the air again I was pleased to find activity on 160 metres over the 28/29 January week-end. Heard between 0830-1400 BMT were K0RF, K5MA, W5YU, K7NN, K6SE, N6DX, KH6CC, ZL1MQ, VK3IM, VK6HD, VK5KO, VK4XA, VK4TI, and dozens of JAs. My aerial was an 80m Inv-vee to a Codan antenna tuner. Six metres had a few openings while I was at home.

14-12-77 — 0845 to 0900 GMT — VK8ZCJ, VK8VV.

7-1-78 — 1015 to 1115 GMT — VK4s: DO, ZTV, GM, ZWB, DV in Rockhampton area: VK4s: ZBC, ZBW, FU in Brisbane area and VK2ZDY.

15-1-78 — 0100 to 0115 GMT — VK4ZBC, ZEC in Brisbane area.

20-1-78 — 0900 to 1100 GMT — VK2s: ZNS, ZPP, ZAY, ZIO, HO, ZVL. VK4s: ZIL, ZWH, LE and VK1RK.

29-1-78 — 0500 to 0530 GMT — Asian language SSB on 49.980 MHz. Signal peaked at beam heading of NW at 5 x 5.

I wish to pass my best wishes to all past ham friends and wish to let them know that I'm back on the air from Clifton Beach (20 km north of Cairns) on all bands 160-2m using a TS520S/TV506/IC22S using various aerials.

Previous calls: K6CAA, K5COU, KH6GLU, KX6BK, VK3ND, VK4ABA, VS5AA, VR3DY, FW8DY, 5W1AF, and operator at 9M6AB. I still have logs and QSLs from most operations and anyone who worked me under any of those calls can still get a QSL.

Ed DeYoung VK4LX, Box 2058, Cairns. ■

7/4/78.

The Editor,

Dear Sir,

Instead of the "DX and You" column why don't you rename it DX and ME. The person you picked to write that column has about as much appeal as a Sunday "sexie".

He has used the column as a soap box to expound his own inability to relate to the wonderful hobby of Amateur Radio. I can imagine a new licensee reading that in an effort to find out how the experts get to work the rare DX countries, and heading straight back to stamp collecting. Sir, you do the hobby a disservice by allowing said gentleman to rave on about the virtues of rag chewing and chewing the fat with a mate in Kilowatt Alley, California, on 20 metres.

I find myself wondering what would have happened when I was logged in by the Clipperton Operator, had I commenced yarning on about my ingrown to-nail, my wife's green tomato relish and the new beaut box I just bought for $1,000 which enables me to work Joe on Channel 40 FM.

OK, we are all entitled to our personal approach to our hobby, but I am sick and tired of hearing of people such as the author of your DX column using the airwaves to ram home the point that they aren't turned on by that sort of thing.

I am offended by his attitude and think that the column DX and YOU is just what it says. An introduction to where it's at and how to get that rare station. This could be of great use to a newcomer.

His attitude to QSLing confirms what I have often suspected of some Australian Amateurs, especially from Norfolk Island. Hundreds of dollars in IRC coupons and mail have been spent by overseas Amateurs in pursuit of various awards for achievement in DX. Commercial as it may seem, it is the only way to get some confirmations of countries, especially rare ones. Our friend here seems to be one of those with waste paper baskets overflowing with cards which some unfortunates have sent to him. I can imagine the frustration of the Amateur who had the misfortune to get him as a "first VK OM" waiting five years for that card which will never return.

Even the formality of writing CFM and signing it on the back of the DX station's card would be a little better than the incinerator.

I realise you need space for other contributors so I'll conclude in a fairly famous statement.

"The final courtesy of a QSO is a QSL."

There are no time limits on QSOs or in fact what constitutes a QSO. I hope I never meet the author on a six metre TEP opening where there is maybe two or three minutes to exchange necessary QSL information.

If your column insists on using the space to expound the virtues of the author may I suggest you scrap it again or use it for some other good cause.

Yours faithfully,

Stephen R. Gregory VK3OT. ■

56 Coleman Street,
Wagga Wagga 2650.

The Editor,

6th April, 1978.

Dear Sir,

I noted with interest that the Department of Posts and Telecommunications has granted combined CB and Novice Licences for $25 — no doubt as a minimal form of compensation to the Amateur Service for the "rape of 11 metres".

I point out that there are some FULL AOCP and "Z" call amateur operators who are engaged in training and encouraging CBers to up-grade to Novice — and higher qualifications, who, in order to perform this function, pay the $12 for their amateur "tickets" and $25 for the privilege of talking to CBers in order to spread the good news of amateur radio. There are not very many of us in this area and, I suggest, it would not be unreasonable to suggest that a similar "Combined CB and Full Licence" fee should be made available at least on the same terms as for the Novices. While we may not be making much of an impact on the hordes of CBers (licensed and unlicensed) who now occupy the 11 metre band, at least we ARE making an effort that will incidentally reduce the problems faced by unqualified, non-technical users on the 27 MHz area. To that extent, the Minister for Posts and Telecommunications could quite reasonably grant this concession. Accordingly, I request that this matter be given publicity via your valuable journal.

Yours faithfully,

Rex Black VK2YA.

The WIA executive has this matter in hand and a report will be made in due course through WIANEWS.—Ed. ■

Box 1513, G.P.O.,
Brisbane 4001.
16th March, 1978.

The Editor,
Dear Sir,
It's amazing! A retailer's advertising appears in AR (March, p. 35) announcing 5 element 11 metre beams!

What, buy one now, and be prepared for 1982 when the band reverts to the Amateur Service? or maybe the intended market is elsewhere (along with the featured FL-110 linears), notwithstanding that legislation forbids the use of high-gain antennae on 11 metres.

Yours faithfully,

Mervyn Eunson VK4SO. ■

3rd March, 1978.

The Secretary,
The Wireless Institute of Australia,
Dear Sir,
It gave me very great pleasure last week to receive your letter informing me of the award to me of the Alan Shawsmith Journalistic Award. Our hobby of Amateur Radio is one in which awards are much sought after, but always with the thought in mind that we may be lucky enough to top the score in the next contest, or to finally gain that one hundredth QSL for the DXCC. The thought that any of us can gain the distinction of a Journalistic Award had certainly never come to my mind, making the receipt of the plaque (and the cheque) a complete and very pleasant surprise.

Would you please convey my sincere thanks to the Publications Committee and to Alan Shawsmith for selecting my contribution for this award. Without the happening of the Scout Jamboree and "That Field Station" there would not have been an article to write, so I must also say thanks to the large team who made the whole effort a success. In particular I should mention Bill Rose VK3ZMI, whose photographs contributed so much to the success of the article.

Yours sincerely,

Max Dawkins VK3TR ■

The Editor,
Dear Sir,

I would like to make a suggestion for a new Australian Award; currently there are very few certificates available to VK stations for any form of achievement within their own country. As a former Federal Awards Manager of the WIA, I am well aware of the interest shown in awards by VK stations and also the important role they play in helping to maintain activity on the bands. Those who were active during the period of the Cook Award in 1970 will undoubtedly remember the boost that gave to local activity. At the present time when our very bands are under considerable pressure from many quarters the more activity that can be promoted the better.

For many years the WAVKCA (Worked All VK Call Areas Award) has enjoyed enormous popularity with overseas stations and remains virtually the only award issued by the WIA to overseas stations. For a DX station to achieve this award takes a very considerable effort and many operators often make comments to me that they are trying to get it. Some years ago a VHF version of the award was made available to VK stations and this too is a very worthy achievement as any VHF operator will tell you. To have any real meaning there must be some sense of achievement in attaining the requirements for an award. The WAVKCA awards have this and to get either version takes a lot of operating. There is no value in an award that can be obtained in a very short time as it doesn't seriously promote activity or represent any definite achievement that is out of the ordinary.

What I would like to suggest is an award to be available to VK stations only for contacting all areas of Australia on a minimum of five (5) different bands. The requirements to be the same as those for present WAVKCA award for each band, i.e. one station from VK1, three stations each from VK2, VK3, VK4, VK5, VK6 and VK7, one station each from VK8, VK9 and VK0. Operation to be on any authorised bands but the requirements to be met for stations as above on each band, making a total of 110 confirmations in all. An application could be made for say 80, 40, 20, 15 and 10 metres or, say, 160, 20, 15, 10 and 6 metres, etc., as long as the five band requirement is maintained.

After many years of operating on a wide variety of bands I can assure you that such a requirement is sufficiently hard to be interesting but at the same time certainly not so hard as to be unobtainable. This is unfortunately pretty much the case with some of the overseas awards such as Five Band DXCC, etc., where due to our remoteness and different band allocations such as 80 and 40 metres puts local stations at a very severe disadvantage.

One requirement that would be necessary would be to retain the QSL card to prove contact. This is more necessary today than ever before as there are now many stations operating in our bands from within VK who are unlicenced and many operators could find themselves thinking they had an area worked when such may not be the case. By requiring QSLs it is fair to all and no funny business can take place.

To help encourage Novice participation a subsection with a three band requirement could be allowed for 80, 15 and 10 metre operation. This would then make a version of the WAVKCA award available to all licensees regardless of type. Any award obtained at a reduced licence level, i.e.

Novice or Limited, could count towards the full award at a later time, e.g. a Novice having obtained three bands with the Novice call would only have to get another two under the higher grade of licence to reach the same standing as a Full licence applicant.

Yours faithfully,
Geoff Wilson VK3AMK. ■

21st April, 1978.

The Editor,
Dear Sir,

The latest issue (April 1976) has two articles on aerials, and I found them both interesting in concept. However, I found a bit of trouble with both of them.

1. Arthur's (3LJ) article was well written and understandable. My problem was with dimensions. Figure I missed one basic dimension, although the text gave an approximate overall of 175 feet. The article also missed telling us whether the dimensions are to centres of traps or between traps. I know it is a matter of cut and try, but it is nice to know exactly what another chap had, and start from there.
2. Hans' (2AOU) article was not dissimilar to those published many years ago. I found it about as readable as the last one — i.e. very heavy going. Hans is obviously a very bright chap, and like a lot of technical writers, assumes that his readers are just as bright. Unfortunately I'm not that bright. He's also given just enough information to whet the appetite and sell beams, but not enough for us home builders to easily reproduce one.

I have one other problem — regarding Contests. There is reference on occasions to "rules the same as last year". This was the case for this year's ARRL CW contest. However, I couldn't find the rules in last year's issues or even for several years back. I finished up not bothering, even though I really wanted to have a go at it. I've been in it many years ago, but didn't try to use the same system because contest rules change from year to year (e.g. RD). Is there some way in which you could have a very simple 4 line summary to each contest each year, giving:—

Times
Scoring system
Exchange numbers each way
Address for sending logs.

I found the same frustration with the WPX.

Now I know you have limited space, and you try very hard to actually do what I've suggested. What I'm asking is for a short summary of each contest. Alternately, if rules are the same from year to year, give the date of AR when the previous rules were published.

Yours sincerely,
Bruce H. Bussenschutt VK5OR.

Editor's Note:—

1. Perhaps Arthur (VK3LJ) could write to me with the information requested and we shall publish it in due course.
2. Re contests — the matter has been given to the Federal Contest Manager.

The Editor,
Dear Sir,
It is with concern that I read the April 1978 edition of the magazine and find on page 19 an article entitled, "The N.S.W. RTTY Group", by S. E. Molen VK2SG.

Although the article contains some facts about the operation of the Wireless Institute of Australia, N.S.W. Division RTTY Group, there are a number of incorrect statements.

The first is that of the standards for speed and shift. The policy of the Group is that there are no standards at this time laid down for amateur RTTY operation and members are free to utilise such standards as they wish, provided that they are within the P. and T. Department's regulations. Operation is currently being carried out in N.S.W. on both 45.45 baud and 50 baud Baudot and 110 baud ASCII with both 170 and 850 Hz shifts.

With regard to repeaters it is proposed that the Group will operate a RTTY repeater in the Sydney area in the near future. The Newcastle repeater will be operated by the Maitland Postal Institute Radio Club.

The other area of concern is that of the last paragraph's content. The Group is a group under the framework of the N.S.W. Division and as such members of the Group are required to be members of the WIA. The reasons for this are of course obvious although every assistance will be provided to anyone interested in RTTY if they contact the Group.

The Secretary of the Group is Phil Card VK2ZBX and mail can be sent to the Divisional address as indicated.

The author of this article is not a member of the WIA and it causes some concern that something can go to the extent of being actually published in the magazine without its content being verified with the Division concerned.

I would appreciate the checking of articles for publication that purport to represent the views of this Division be done with more care in future.

Ian Mackenzie,
Secretary, N.S.W. Division
Wireless Institute of Australia.

(The article referred to above was provided by the Publicity Officer of the N.S.W. RTTY Group. We therefore did not consider it necessary to check with anyone else as to the accuracy of the article. The standard quoted is a common International HF standard. Further, if an article is of interest to members of the WIA, we will publish it whether or not the author is a member of the WIA.—Ed.) ■

98 Heaslip Street,
Wollongong, N.S.W. 2500

The Editor,

15th April 1978

Dear Sir,

LET'S SET THE RECORD STRAIGHT ON AIDS TO PROPAGATION

In AR of April 1978 under the title — WIANEWS — Records VHF/UHF, a statement is made which requires comment on behalf of all EME experimenters, past, present and future.

The statement is — "All these contacts were direct without the use of satellites, repeaters, EME or other such aids".

Now look at the type of AID which provided the path to the moon and back at 70cm.

1. The path loss is over 260 dB.
2. There is typically a rapid, random fade over a 15 dB range (several times a second).
3. The AID (the moon) is moving in two dimensions when an azimuth-elevation mounting on the antenna is used, and it moves a distance equal to its diameter each 2 minutes.
4. The AID is ½ degree in diameter, as seen from the earth.
5. The AID has a relatively low coefficient of reflection for radio signals.
6. The AID has to be located by astronomical calculations if the sky is cloudy.
7. Doppler frequency shift is present, often to an extent greater than the bandwidth of the receiving system, and it doesn't stay constant.
8. Polarisation of the signal varies by several full rotations over the path on many occasions.

Thus, to achieve echoes, let alone communication, using the moon as an AID, requires equipment, etc., which has to be of a standard much higher than that presently used for purely terrestrial-path contacts (on 70cm and above) — which rely heavily on the presence of AIDS such as the existence at the time of super-refraction ducting and other similar anomalous conditions of the refractive index. Such conditions may occur relatively infrequently over very long paths and when they do it's ON.

I am in no way detracting from the fine efforts, know-how and perseverance of those amateurs who choose to use the terrestrial path and who have achieved much longer than "normal" distance for contacts on VHF, UHF and SHF, but I'm afraid that little, if any, of the equipment presently used in Australia for this work would have a hope of achieving anything like an echo from the moon on 70cm or on the higher frequency bands.

Let's face it, the EME path is just another communication path — albeit approximately ½ million miles long — which is available for long distance contacts on the amateur bands of 50 MHz and above, and it may be used by amateurs wherever they are located and in any direction which they may so choose.

The EME path is not like using a Repeater or Satellite (an extra-terrestrial Repeater), as it is a much worse means of propagation of radio waves than the boundary of the duct, air mass boundary condition or anomalous refractory gradient which will successfully propagate similar frequency radio waves near the surface of the earth — but it will do so if one is prepared to develop the equipment and "know-how" to use it successfully.

After all what is so sacred about "direct" (how direct?) paths inside the ionosphere, and which employs AIDS such as reflections, forward scatter, etc., to achieve long distance communication (sometimes), when the frequency used has the unique property of being able to penetrate the ionosphere? Is there something infra-dig about using a quite natural (non-man-made) means of reflection outside the ionosphere rather than another means of reflection/refraction/forward-scatter inside the ionosphere?

Is the use of knife-edge refractions from a mountain range infra-dig? After all, the moon is made up of mountains and earth (not super-reflective green cheese!)! So what if you have to go about ¼ million miles to get there, first.

NOW LET'S GET DOWN TO "BRASS TACKS"

We amateurs are communicators — right? and one of our aims, particularly at VHF, UHF and SHF, is to make contacts over the greatest possible distance on the earth's surface (in any direction that we please). We can do this by two ways at present.

1. By relying on the use of natural phenomena to propagate the signal between the two points. This requires the station builder-operators at each end of the path to strive to develop their equipment and operating techniques to the utmost to exploit the chosen means of communication over the distance involved.
2. By relying on the use of artificial (man-made) aids, placed such that the path length is increased as much as possible in the desired direction. Amateurs desiring to use these artificial aids have firstly to construct or get someone else to construct the device chosen and then place it in the best position (terrestrial) or orbit (satellite) for the paths in which they are interested, then, secondly, to construct (buy) suitable equipment and operate it in the required manner — to achieve communication over paths which are limited in length and direction by the type of device and its location in relation to that of the station.

Encouragement to advancement of amateurs in each of the above two methods of long distance communicatoin at frequencies above 50 MHz differs in my view, because use of the first method relies totally on the abilities of the amateurs at each end of the path. Awards for achievement of the longest distance, or of a specified minimum distance, etc. (up to half of the earth's circumference!) is one way which may encourage these people.

When an artificial aid is chosen to be used (and why not, if it will meet the requirements of those involved), then those whose decision it is to construct and to locate the device may be assisted in various ways by other amateurs, including financial aid and then by utmost use (not abuse) of the device once it is functioning.

Over to you for comment! But don't put EME together with artificial aids to communication; it's just another way, made by nature, and using exactly the same sort of natural phenomena as any other way of getting to the desired point on the earth's surface. "You point's your antenna horizontally or you points your antenna somewhat upwards", so what?

Lyle Patison VK2ALU.

P.S.: I would suggest that your comment not be along the lines that EME communication will only be successful it high power and tremenodus antennas are used, on 70cm, at least. Just a random sample from a recent EME Newsletter —

"JA9BOH worked VE7BBG on 3-12-77. JA9BOH used 8 yagis and 250 watts and VE7BBG uses one of the smaller size dishes. Since then significantly lower noise figure receive preamp transistors have been developed for general use." I don't want to give you the impression that EME communication is a pushover, it takes lots of time, effort and some know-how to become successful, but amateurs are supposed to be experimenters, or are they?

Editor's comment — Mmmmm — picky picky!! — no one has ever questioned the tremendous effort required for EME. Apologies for the non-use of the blue pencil in the item referred to.

I hope that the publishing of this letter in full helps to heal the wound caused and enlightens other amateurs in the challenge and rewards of EME. ■

Manawatu Branch NZART,
P.O. Box 1718,
Palmerston North

The Editor,

31st March, 1978

Dear Sir,

There appears to be some confusion as to the frequency of our six metre beacon. The following information is a summary of the three beacons maintained by the branch:

Location — Mt. Stewart; 175° 29' 10" E, 40° 12' 20" S.

Height — 135m ASL.

Mode — +800 Hz FSK, call sign "ZL2VHP" and carrier.

Radiation — horizontal polarisation, omni-directional.

Frequency — 6 metres, 52.500 MHz; 2 metres, 145.250 MHz; 70 cm, 433.250 MHz.

The branch would appreciate reception reports and comments on any of the beacons. These should be addressed to:

VHF Beacons, P.O. Box 1718,
Palmerston North, New Zealand.

An application has been lodged for a second 6 metre beacon, this to be operated by the Upper Hutt Branch and located on Mt. Climie, which is about 30 miles NE of Wellington. Other details are not known at this stage.

H. N. Wiggins ZL2BFR, Beacon Trustee. ■

P.O. Box 22,
Halls Gap

The Editor,

26-4-78

Dear Sir,

May I to bring your and your readers' attention the planned introduction of a 100 kW chanel 5A TV translator, to be located at Mt. Dundas in western Victoria. This, I believe, can be considered another coffin nail driven in to wrest the 2 metre band from our possession, and I'm told is only the start of a planned proliferation of channel 5A translators around Australia. Whether we be operating on the SSB or FM sections of this band, we must consider this action a threat to our occupancy of yet another VHF band.

The 432 MHz band is under threat and six metres is unusable in Brisbane and Melbourne, 220 MHz is just a sad memory to some, and 11 metres is our latest example of how tenuous our hold on any frequency is.

The possible interference to Oscar satellites, TVI and receiver front end problems will inevitably drive more and more operators from 2 metres and, with the commercials clammering for more band space, 4 MHz of almost unoccupied spectrum will look very attractive.

With WARC 79 and other problems, we as amateurs must back the WIA as one, both with representations to our Government and financial help.

Please, whether you are a HF or VHF operator, the Wireless Institute of Australia needs all amateurs' support as the only recognised body representing our interests.

Yours faithfully,
Robert Wilkins VK3AUR.

(The message is only too clear.—Ed.) ■

The Editor,

18-4-1978

Dear Sir,

Would you please grant me space to reply to a letter in these columns by VK3SV regarding a previous letter of mine on the controversial G5RV antenna.

Except for the first paragraph in VK3SV's letter, it was most constructive. I would explain to VK3SV that I did not read the excellent articles in AR 1974 for the amateurs concerned, because at that time I was busy putting together one of the country's most unique radio, gramophone and movie museums, dealing with such matters as to obtaining a spark coil for a 1912 Telefunken spark transmitter, a diaphragm for a 1926 Western Electric 17A exponential theatre horne, the correct adjustment for the shutter of an 1896 Edison projecting "Kinetoscope", and so on.

VK7NOW did not come on the air until December 1977.

Regarding my "rash" statements re the length of the 300 ohm flat ribbon feeder stub for the G5VR, I merely quoted what was told to me during a QSO with a ZL, and I repeat his words, "I have had many contacts with G5RV on 40 metres and he informed me that, somehow, the textbooks have got the wrong information — the correct length is 32 ft. 6 in."

I would theferore assume that G5RV knows what he is talking about — he designed the antenna.

I agree entirely with VK3SV that any specific type of antenna does not perform the same in all locations. There are many variables, such as nearby objects which absorb or reflect radiation, the Geometer reading of the ground, and so on.

VK3SV states that he started off with a certain length feeder, then trimmed it back to 29 ft. 3 in. for zero SWR".

That is like starting out with a Daimler double six and because it uses too much petrol, to replace this with an XJ6 motor.

I have it on good authority that, provided all the measurements are correct, the way to reduce the SWR is to vary the length of the 75 ohm coax — not the 300 ohm stub.

However, at its best, the G5RV is only a compromise all-band antenna, which is ideal for portable work, because it is easily transported and erected.

No multiband wire antenna (except a Rhombic) is as good as a beam on 20, 15 and 10 metres, and no multiband antenna is as good on 80 metres as an inverted V which is cut for a specific frequency.

To summarise I would say this: Beware of the "law of commonsense" and realise that theoretical capabilities of antennas are seldom realised in practice. Think carefully before putting up any antenna — is it suitable for the job in hand? Finally, accept the fact that there is no wonder "antenna to end all antennas" — some types are more suited for certain jobs, but they all have their limitations, even the mighty Rhombic.

Finally, when VK3SV and myself have gone to "the big broadcasting station in the sky", mere mortals on earth shall still be arguing that such and such antenna is better than the other.

Yours sincerely,
Jim Davis VK7NOW ■

REPEATERS

At the recent Federal Convention in April it was agreed that there would be no change to the FM Section of the 70cm band.

The FM Section is reprinted below:—

438
.025
.05
.075 — Mobile Voice
.1
.125
.15
.175
.2
.225 — Mobile Voice Prim.

Repeater Outputs:
.25
.275
.3
.325
.35
375 — Mobile Voice
.4
.425
.45
.475
.5
.525 — Mobile Voice Nat. Prim.
.55
.575
.6
.625
.65
.675 — Mobile Voice Prim.
.7
.725

Simplex:
.75
.775
.8
.825 — Voice Prim.
.85
.875
.9
.925
.95
.975
439.0 — Voice Nat. Prim.
.025
.05
.075
.1
.125 — Voice Prim.
.15
.175
.2
.225
.25

Repeater Outputs:
.275 — Mobile Voice
.3
.325
.35
.375
.4
.425 — Mobile Voice
.45
.475
.5
.525
.55
.575 — Mobile Voice
.6
.625
.65
.675
.7
.725 — Mobile Voice
.75
.775
.8
.825 — Mobile Voice
.85
.875
.9
.925
.95
.975
440.00

Inputs are 5 MHz below outputs.

All primary repeater channels to be allocated in each State first.

All channels not designated for Voice can be allocated by a State or the Federal Repeater Committee as required (linking repeaters or for use on other modes).

Therefore at this stage the UHF mobile service has ten repeater and three simplex channels.

The following Band Plan for FM on 2 metres is printed for comment before being put to each Division for voting. All comments to be sent to the Federal Repeater Committee care of the Federal Office in Toorak.

RECOMMENDED MODIFICATIONS TO THE WIA BAND PLAN FOR THE 144 MHz BAND

1. INTRODUCTION

There appears presently to be a need to make provision for additional simplex and repeater channels in the segment 146-148 MHz, and to provide additional channel space for various special purpose communications.

The Committee has also considered the need to keep primary voice communication channels and special purpose channels clearly distinct from one another, preferably by allocating these two types of channels in distinct segments of the band.

It would also appear that, in order to provide an adequate number of simplex and repeater channels for the future, it is desirable to implement a 25 kHz channelling system.

2. RECOMMENDATIONS (See Chart below)

2.1 That primary voice communication channels (simplex and repeater) be located in the segment 146-147 MHz.

2.2 That special purpose nets (special liaison nets, data nets, etc.) and special purpose or local coverage repeaters be located in the segment 147-148 MHz.

2.3 That 25 kHz channelling be implemented as follows:—

(a) **Simplex:** Immediate availability of all possible 25 kHz simplex channels in the segments 146-147 and 147-148 MHz.

(b) **Repeaters:** In the segment 146-147 MHz, only repeater channel pairs on 50 kHz channel spacings to be used at present; 25 kHz splits reserved for future use.
In the segment 147-148 MHz, 50 kHz and 25 kHz split channels both to be immediately available, with no priority of usage.

2.4 That repeater channels be allocated by State Repeater Committees, bearing in mind, however, that certain special purpose repeater channels may be allocated on a national basis.

3. DISCUSSION

3.1 It is felt that this proposed system conforms well with existing usage and requirements within all States.

3.2 By concentrating the *major voice* communication channels (simplex and repeater) within the segment 146-147 MHz, this plan provides for greater convenience of channel switching than would be the case were these channels spread across the full 2 MHz.

3.3 Interference problems between major voice communication channels and special purpose channels are minimised by allocating them in separate segments of the band. This is especially valid in the case of microprocessor and data nets; with the implementation of 25 kHz channelling, high speed data transmissions would cause interference problems to adjacent speech communication channels.

3.4 This plan does not in any way reduce or limit the number of channels available, nor the freedom of State repeater committees to allocate them as they see fit.

146-147 MHz
PRIMARY VOICE COMMUNICATION CHANNELS

	50 kHz splits existing channels	25 kHz splits
Repeater Inputs		
	146.000	
		.025
	.050	
		.075
	.100	
		.125
	.150	
		.175
	.200	
		.225*
	.250	
		.275
	.300	
		.325
	.350	
		.375
	.400	
Simplex		
		.425
	.450	
		.475
146.5 = national calling ch.	.500	
		.525
146.45} 146.55{ primary	.550	**
		.575
146.60 = RTTY*** (national) others = secondary	.600	
Repeater outputs		.625
	.650	
		.675
	.700	
		.725
	.750	
		.775
	.800	*
		.825
	.850	
		.875
	.900	
		.925
	.950	
		.975
	147.000	

25 kHz splits

* Repeater channels reserved for possible further use.

** All simplex available immediately.

*** RTTY channel is an exception to the recommended rule of allocating special purpose nets above 147 MHz, as it is an established and well populated channel.

The simplest method of designating 25 kHz simplex splits is to give them a letter, e.g.: 146.475 = 49A, 146.525 = 50A.

147-148 MHz
LOCAL OR SPECIAL PURPOSE OPERATION
(voice or data)

No distinction in priority between 50 kHz and 25 kHz channels.

	Channel	Suggested use
Repeater outputs		
	147.025	
	.050	
	.075	
	.100	
	.125	ATV liaison (nat.)
	.150	
	.175	
	.200	
	.225	
	.250	
	.275	
	.300	
	.325	RTTY (national)
	.350	RTTY (national)
	.375	
Simplex (special purpose)		
	.400	ATV liaison
	.425	ATV liaison
	.450	ATV/SSTV/FAX
	.475	SSTV/FAX liaison
	.500††	*not yet allocated*
	.525	not yet allocated
	.550	micro net†
	.575	data net
	.600	data net†
Repeater Inputs		
	.625	
	.650	
	.675	
	.700	
	.725	ATV liaison (nat.)
	.750	
	.775	
	.800	
	.825	
	.850	
	.875	
	.900	
	.925	RTTY (national)
	.950	RTTY (national)
	.975	

† Already in use for this purpose in VK2 and VK3. Recommended nationally.

†† is used in bigger States as national secondary voice channel. It was felt that 7 simplex channels that were specifically allocated was sufficient for all States (to keep within the principles outlined in para. 3.1 and 3.2). ■

MT. GININI REPEATER STOLEN

On Saturday morning (1st April 1978) the Channel 7 repeater on Mt. Genini was stolen.

The DCA compound was entered using bolt cutters and the University building was broken into through the side by removing the metal cladding and insulating material. The power cable was cut, turning off the University's seismic recording equipment. This accurately established the time of theft at 0711.

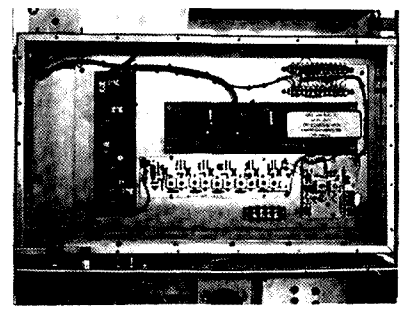
The only equipment stolen from the hut was the repeater, which comprised the power supply, duplexer, receiver, and transmitter. This was done in such a way as to suggest that the equipment is going to be put back into service.

The matter is being investigated by the ACT Police and the District Radio Inspector is assisting with the enquiries.

The Committee of the ACT Division has resolved to re-establish a new repeater as soon as possible. To this end a fund has been established with an initial target of $1,000.

Unfortunately a new facility will not be available until after winter. This therefore makes the return of the original equipment vital. If anybody has any information on this matter it should be forwarded to the Secretary, ACT Division, P.O. Box 46, Canberra City. ■

The repeater is unique in its design using eight home constructed aluminium cavities. The design is based on the ARRL repeater handbook.



Transmitter with aluminium cover removed.

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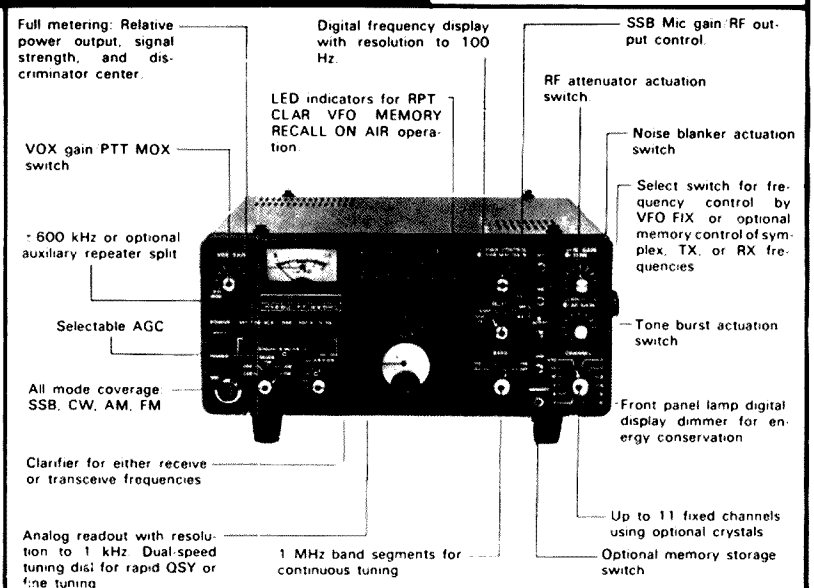

FT-225R without Digital display available at lower price.

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Eric Jamieson, VK5LP
Forreston. 5233

AMATEUR BAND BEACONS

VK0	VK0MA, Mawson	53.100
VK1	VK1RTA, Canberra	144.475
VK2	VK2WI, Sydney	52.450
	VK2WI, Sydney	144.010
	VK2RHR, Mittagong	144.120
VK3	VK3RTG, Vermont	144.700
VK4	VK4RTL, Townsville	52.440
	VK3RTT, Mt. Mowbullan	144.400
	VK4RBB, Brisbane	432.400
VK5	VK5VF, Mount Lofty	53.00
	VK5VF Mount Lofty	144.800
VK6	VK6RTV, Perth	52.300
	VK8RTU, Kalgoorlie	52.350
	VK6RTW, Albany	52.950
	VK6RTW, Albany	144.500
	VK6RTV, Perth	145.000
VK7	VK7RNT, Launceston	52.400
	VK7RTX, Ulveratone	144.900
	VK7RTW, Ulveretone	432.475
VK8	VK8VF, Darwin	52.200
JA	JA2IGY, Nagoya	52.500
KG6	KG6JDX, Guam	50.110
KH6	KH6EQI, Hawaii	50.110
TI	TI2NA, Costa Rica *	50.080
W	WA6JRA, Los Angeles, USA *	50.091
ZL1	ZL1VHF, Auckland	145.100
	ZL1VHW, Waikato	145.150
ZL2	ZL2MHF, Upper Hutt	28.170
	ZL2VHP, Palmerston North	52.500
	ZL2VHF, Wellington	145.200
	ZL2VHP, Palmerston North	145.250
ZL3	ZL3VHF, Chrislchurch	145.300
ZL4	ZL4VHF, Dunedin	145.400

* Denotes a new listing.

Information comes to hand from Graham VK8GB that during a contact with Erik TI2NA in San Jose, Costa Rica, he learned Erik runs a beacon 24 hours a day on 50.080 sending "TI2NA TEST" in CW. In May or June he hopes to run another beacon on 52.080. He listens on 50.150 and 52.150 when the beacons are on. He uses a Swan 250 and a 4 element yagi.

Graham also further mentions HL9WI in South Korea on 9-4-78 at 0043Z heard the WA6JRA beacon in Los Angeles, which runs 100 watts. As a result of these two reports the above two beacons have been included in the list.

Continuing on from the excellent conditions reported last month from Darwin, Graham VK8GB sends a further letter to keep his diary going!

28-3-78: 6 metres, 0930 to 1255Z, JH1, JA2 and JA6.

29-3-78: 6 metres, 1017 to 1440Z, JA1, 2, 6 and 7, KG6JIH and KG6DX, 10 contacts. On 2 metres: JH6TEW, JR6NCT, JA6SZC and JR6NSV, 1130 to 1241Z.

30-3-78: 6 metres, KG6JIH, KG6JDX, JA2, 4, 5 and 6 for 7 contacts.

31-3-78: 6 metres, 1042 to 1319Z, 22 contacts in districts JA1, 2, 3, 4, 5, 6 and 7.

1-4-78: 6 metres, 0321Z. KH6IAA; 1135Z, JAKT, JA1HHL.

2-4-78: 6 metres, 0300Z, KH6JSI; 0620Z, KH6IJ; 1040 to 1347Z, 16 contacts. On 2 metres: 1146 to 1155Z, JH6HJI, JA6ABG, JH6TEW and JA6UKI.

3-4-78: 6 metres, 1205Z, 5 contacts JA1 area.

5-4-78: 6 metres, Brian VK8VV worked JH6TEW, HL9WI, JA4 and 5 between 1133-1200Z.

6-4-78: 6 metres, 1020 to 1250Z, KG6JIH, KG6JDX, plus JA1, JA2 areas, for 7 contacts. On 2 metres: 1122 to 1223Z, 14 contacts in JA4 and 6 areas.

7-4-78: 6 metres, KH6IAA 0325Z, 0333Z to KH6HI and 0635Z KH6JSI. Also worked 12 stations JA1, 2, 5, 6, 9 and 0 areas. On 2 metres worked 38 stations between 1116 and 1304Z in JA4 and 6 areas.

8-4-78: 6 metres, 0215Z KH6HI, 0630Z KH6JSI. Three JA1 and KG6JIH. On 2, metres: 1120 to 1230Z worked 10 stations JA6 area.

9-4-78: 6 metres, 1048 to 1232Z, JR6HJD, HL9WI and KG6JDX. On 2 metres: 1117 to 1220Z worked 10 stations JA4, 5 and 6 areas.

Graham includes the following notes for your information from his diary — 27-3-78: 3D2CM worked to JA. 28-3: FK8AB on 52.035 between 0426 and 0440Z worked JI1HHX, JA1RJU and JA1LZK. KG6JIH worked KH6HI and 17 VK4s and around 0350Z KG8DX worked VK2BXT and VK2BOV. 29-3: P29HV, ZDU, ZOK, ZJP and ZWW all worked KH6IAA 0903 to 0941Z. Other P29s active are ZPS and AS. 30-3: YJ8KM to JA, 0824 to 1031Z. 31-3: Good JA opening to VK5/VK3, also Perth. VK6WD worked 32 JA stations. 1-4: KH6 regularly working 3D2CM. JA to YJ8KM and ZL4LV. KG6DX to VK5KK and hearing VK3OT; also works JA8 and hears KH6EQI and ZL TV. 2-4: Gary HL9TG is located at Pyong Taek, 60 km south of Seoul, runs an SB110 to a "Swirloo" antenna. KG6 hearing ZL TV again. 5-4: Bill HL9WI confirmed the FM signal on 49.305, heard regularly in Darwin, is HLKA located in Korea. JA to VK3. 8-4: JA to VK2, VK4. WB6LBJ/DU6 heard on six in JA. KH6HI to KG6DX 0230Z. VS5AM reported active on six. VK3AUR worked KH6HI. KG6JIH hears VK4RTL. 7-4: VK8VV worked KH6NS, who used a Swan 250 to an 80 metre dipole! (The wet string will be out next . . . 5LP.) 8-4: KH6JSI works VK4, VK8, YJ8ZM 0630Z. 9-4: 0043Z HL9WI hears WA6JRA beacon on 50.091. HL9WI works into Perth.

Graham advises the KH6EQI beacon is being heard daily, sometimes with signals to S9 + 20 dB. It runs 700 watts to a yagi and needs to be strong if you expect to work anyone. "We often hear it when the yagi is pointed at the U.S. At 0400Z it points at Guam and 0700Z at the South Pacific. On two metres we have had 12 openings to JA during the month of March and a total of 20 openings to 9-4 inclusive. I have had 269 contacts with JA4, 5 and 6 during this period on 2 metres. Brian VK8VV says that on FM the flutter on JA signals is gone and they are armchair copy. Finally, Ken VK6ZFQ is running skeds to JA nightly on 144.200."

It makes one positively drool at the mouth to read of all the variety of contacts available in Darwin, and this appears only to be the start, the sunspot count is rising, and the next two years might well produce some very spectacular contacts. Thanks once again, Graham, for your letters.

Tony VK6BV in Kalgoorlie sends two letters with information of DX activity in his area, opening with a contact to VK8VV on 7-11-77. 13-11 produced 31 contacts in VK1, 2, 3 and 5. Almost daily openings through the rest of November to the Eastern States, then on 3-12 worked 42 stations in VK1 to 5 and ZL2 and 3. 23 further openings through to 28-1-78 when six metre activity took a rest until Tony heard JAs on 50 MHz. Called CQ on 52 MHz and worked JH4SSP, who had worked 50 VK stations that day. 14 JAs were worked on 7-4 in JA1, 2, 7, 8 and 0. The contact to JA8US was over a distance of 5,134 miles, the whole opening occurred between 0433 and 0524Z, signals varying between S3 and S9+. On 12-4 worked JA1, 2, 3, 4, 5 and 6, 15 contacts 0448 to 0540Z, to S9. 13-4: JA1 to 0, 26 stations, 0325 to 0900Z. A further opening same day, 1345 to 1430Z, working JA1, 3, 5 and 6, to S9 with flutter. One HM heard but too weak to work. One JA station informed Tony that on 13-4 the Japanese stations had worked all VK States, P29, KH6, VS6 and some other areas, but no ZLs. QSL info for HL9WI: Manager WA5ZWC, or to Bill Boykin, HQ, 8th Army Engineers, APO, San Francisco 96301. Any HL cards can be sent to this address and he will forward on via the bureau. So far Tony has not made it to JA on 2 metres.

George P29HV writes to fill us in on the happenings in Papua New Guinea. On 6 metres the season has been much better than 1977, when the best was the spring equinox giving JA1 to 6 only. The unexpected opening on 3-12-77 gave JA1 to 4 and JA6. The autumn equinox so far has produced contacts to all JA call areas including the difficult JA8 and JR6 (Okinawa). Also has worked KG6, KH6 and HL9 several times. The season first started on 2-2-78 and has been open on six metres nearly every night since, firstly around 1200Z but now earlier around 0930Z and last longer, often fading out as late as 1400Z, although Malaysian TV can often be seen as late as 1530Z. The earliest the KH6EQI beacon has been heard is 0720Z, but normally comes in about 1800Z.

George regularly monitors TV stations and so far has copied stations from China, Indonesia, Malaysia, Phillipines, Korea, Hawaii and Japan, the last named being Japanese channels 1, 2 and 3, which are equivalent to the Australian channels 3, 4 and 5, and had been able to monitor the sound from these channels on his National GX400M portable on the FM band using the built in whipl No 2 metre signals heard.

KG6 from Guam often fade in just before the JAs fade out, with strong signals at times. No afternoon TEP, all goes over their heads in Port Moresby. KH6EQI first received 12-3. On 29-3 worked KH6IIA and on 8-4 three stations, and copied Hawaiian TV channel 2 and 3 (Aust. 1 and 2). No Es worked from VK since 2-2-78. Last november TV from Darwin on ch. 6 and 8 copied, indicating further contacts with Darwin possible on 2 metres. Through December much high band TV from Townsville, Cairns and Mackay, but nothing during January and February. Signals returned in March, on 20-3 P29ZEV Col drove to the top of Paga Hill, 250 feet a.s.l. beside the city of Port Moresby, and was able to key up the Townsville repeater VK4RAT-2, strength 3, 0652 to 0757Z, when signals faded, no one at other end to make a QSO!

Activity is increasing on P29 on six metres, and from Port Moresby are Ken P29ZDU, Jane P29ZOK his XYL, Hugh P29BH, Lea P29LS, Wayne P29ZWW, George P29HV and John P29ZJP using a portable 3 watt SSB rig, and has worked JAs several times. In the Gulf Province there is Graham P29DJ, from the Highlands; Peter P29ZPS at Yonki; Madang Province P29ZNL; Sepik Provinces Jim P29AS. Consideration is being given to the establishment of a 6 metre beacon for P29, and George asks if I think it would be a good idea. Sure do, hope it can be operational for the 1978 summer Es period! Thanks, George.

From Kerry VK2BXT comes a note advising opening to JA1, JA7 and JA8 on 17-3-78, 0318 to 0348Z. 27-3: JR1 and JH2, 0446 to 0512Z, and 28-3, 0321 to 0424, KG6JIH and KG6GIO firstly, then JA1, 2 and 3. KG6JIH was very good, and they were also working Ross VK4RO and Rod VK4ZRQ. Kerry's contacts were between 52.030 and 52.070.

Steve VK3OT sends along quite a lot of information, some of which has already been covered and confirms what has been written. Steve mentions VR4DX is still looking for a six metre rig to operate from the Solomon Islands, as long as he can quit it when he leaves. Why? Is six metres that bad! VS5AM in Brunei on 6 metres looking south!

Signals on 6 metres have been reaching the VK3 area from many points north during March and April. 26-3: VK3OT worked JH8FRI, JA7ITT/8 and JH8KJI 0600Z at 5 x 3. Heard by DU0WPX JA DXpedition north of Manila at 0618Z. 30-3: JH1WHS on CW 559. 313-3: KH6EQI beacon heard at VK3AUR at 0630 at 519. 1-4-78: VK3AUR hearing KH6EQI again at 0508, 0519. From 0510 to 0606 VK3OT, VK3AMK, VK3AKK, VK3VZ and VK3AWY worked JA1, JA2 and JA4 after monitoring 50.110. Melbourne also had JF3, JA7, JA9 and JA0 up to 9+ at times. 2-4-78: 0333, JA0AGA 5 x 9+, band held until 0416Z with JA1, 2, 9 and 0.

JA2BZY reported to VK3OT he has worked 19 countries on 6 metres; March 1978 brought him 3D2CM, FK8AB, KH6s and YJ8. 3-3-78: CE3OK worked JA5CMO at 0005Z on 50.095. 26-3: FO8DR heard in Japan about 0400Z. 30-3 and 31-3: YJ8KM worked over 200 JAs in all areas! Clay KL7FBI in Alaska has not heard anything on 6 metres so far, only a few pings. Now has 600 watts going on 2 metres but so far only QSOs through Oscar.

11-4: 0438 to 0505Z , VK3AMK worked JA1, 3, 5, 9 and 0. 12-4: VK3OT worked GK6DX, 559 at 0401Z. Had CW QSOs with JJ1, JG1, JR3 around 0408Z. Between 0423 and 0504Z Steve had 60 contacts with JA1, 2, 3, 4, 7, 9 and 0, with SSB to 9++. Total QSL count for 1-4 to 12-4 showed 110 JA to all areas except JA5. At this time YN1H was 9+ 30 dB on 10 metres. JAs forever seeking VK9NI on Norfolk Island.

Steve asks for notes from those interested of all VK, ZL and Pacific openings for inclusion in

SMIRK/73 VHF column. He also reminds you of the 6 metre liaison frequency of 28.575 to 28.585, 0300 to 0700Z daily.

Either the VK4s, particularly in the north, are too busy working all the exotic DX or have closed down as I haven't heard a squeak from anyone up there for many moons. What about something, chaps? Gordon VK4ZBI has written from the Rubyvale area, Central Highlends, to advise on some of the 2 metre activity there. Around Easter some favourable troughs in the atmosphere produced some good signals around 144.1. On 26-3 Ivan VK4QO was to transmit from Biloela to Harry VK4LE at 2030Z using channel 50 and a 10 element quad. Nothing happened but Gordon did work Frank VK4FU 5 x 5. This is an E/W contact along the Tropic of Capricorn, 185 miles, 10 watts each way. On 27-3 Gordon kept his daily early morning sked at 2000Z with Harry VK4LE, 85 mites away, and contacted Claud VK4UX, 330 miles away, signals weak at first but later peaking to 5 x 9; also worked Lee VK4RH on FM over a distance of 420 mites. Gordon suggests the Brisbane gang should get up in the mornings around 0830 local time and scan the bands, much better conditions exist than in the evenings!

Thanks for writing, Gordon. Pleasing to note there are still areas around keeping the two metre section going in VK4, and shows there are areas elsewhere other than between Albany and Adelaide and Melbourne where conditions do improve enough to allow a few contacts. Keep up the good work, boys!

We are all saddened to hear of the equipment from the Mt. Ginini repeater near Canberra being stolen, and Andrew VK1DA has written stating the equipment was stolen from their hut on 1-4-78, about 0700 local, with the gear being skilfully removed because it was done by persons who knew (1) what they wanted, (2) where it was, and (3) how to disconnect without breaking anything. The University owned equipment in the hut was not touched.

The ACT Division is going ahead with the re-establishment of the beacon and has set up a fund with a target of $1,000 needed to get the system going again. The project will again be headed by Peter Smith VK1DS, who designed all the RF stages for the previous gear. Some PCBs are available but no information on the metal-work. The duplexer has to be rebuilt from scratch as the one at Ginini consisting of six cavities was neatly removed! The Division is appealing for any help which can be forthcoming from other areas as they have to erect their own building this time, too. Due to weather conditions at Ginini it is unlikely any new equipment can be installed before spring. So can any other repeater groups or individual people assist in any way, financially or otherwise?

The above theft, coming right on top of the destructive vandalism of the EME equipment at Dapto, paints a rather sorry picture for the continuing state of amateur radio. On the matter of the EME equipment, Lyle VK2ALU reports the University staff have evaluated alternative sites for the 432 MHz dish and have selected one, and are now obtaining estimates of the cost before making a decision whether to proceed.

On the brighter side, Andrew advises VK1VP and VK1RK have both worked JAs on 6 metres in late March; also Phil VK2BVM, just across the tracks at Oueanbeyan, worked his JAs too, using the familiar handbag radio, the IC502 barefoot to a 3 element beam! Incidentally, Andrew suggests other areas contemplating the erection of repeaters might well copy their proven design instead of going through the many problems of individual designs. Good idea.

Roger VK2ZTB forwards a paragraph from "Wireless World" which should be of interest to readers. It is headed "Now TE mode on 432 MHz", and reads: "The record breaking long distance 3.180 miles contacts made on 144 MHz via ionospheric reflection between amateur stations in Venezuela and Argentina reported in the March issue have proved to be more than just one-time freaks. During February world records on 144 MHz were again broken — and more than once. First the record was extended to 3,825 miles as a result of an SSB phone contact between KP4EOR in Puerto Rica (about 18 degrees north) and LU5DIZ in Argentina, and then again to 3,940 miles when KP4EOR worked a 10 watt station LU8DIN, also in Argentina, but over a 100 miles further away. CX88E in Chile also heard KP4EOR, but perhaps the most sensational of all is that YV5ZZ in Venezuela is reported to have heard the Argentinian LU3AAT on 432.1 MHz! All these contacts and reception reports appear to have been due to TEP mode propagation. Whereas, until recently, this form of ionospheric reception was thought not to extend much abve 70 to 100 MHz, it has thus been shown now to extend to 144 MHz and even above 400 MHz, although of course this still has to be confirmed by two-way contacts.

"This sudden extension to the upper frequency limits of TEP appears to be another reflection of the very rapid rise in sunspot numbers which has re-opened almost daily the 28 MHz band during recent weeks and also brought to British listeners the sounds of American citizens' band operation on 27 MHz."

Roger adds: "That evening type TEP (Class 2) could support such high frequencies is an important event. It supports the notion that Class 2 TEP is partly a scatter mode and partly a guided mode of propagation, using small-scale field-aligned irregularities in the ionosphere over the equatorial region. It seems that the upper frequency limit of evening type TEP has been rapidly extended beyond 400 MHz; again amateurs have been at the forefront.

"With regard to the JA-VK and KP4-LU contacts on 144 MHz, almost certainly these have been via Class 2 evening type TEP, considering the times, signal characteristics reported and the circuits involved. I am endeavouring to get some ionospheric information to do an analysis of these events with a view to showing what mode of propagation supported the contacts. I refer readers to my 1972 article in AR when I mentioned the possibility of evening type TEP supporting propagation on 144 MHz. It also seems that the section of the ionosphere that supports this propagation affects satellite doppler shift as reported in 1974 in the AMSAT Newsletter (The Inverse Dopper Anomaly). If the equatorial ionosphere generates small-scale irregularities of such density that they will support 432 MHz propagation, then undoubtedly these same irregularities will affect 400 MHz satellite signals." Thanks, Roger.

Gil VK3AUI sends some pages of the "Radio ZS" magazine which is published in South Africa, and there are a few interesting bits for you. The UHF bands from 1215 MHz and higher are the same as for VK area. However, on the VHF scene they have 50 to 54 MHz, 144 to 148 MHz and 430 to 440 MHz. On 432 MHz there has been recent confirmation of what appears to be the South African record distance for that band of 900 km between ZS1HS and ZS3B on 5-11-77.

In the section devoted to the world above 50 MHz, the sub-editor ZS6IY writes: "It is rather a barren world from the ZS point of view excepting for FM activity at the major centres on 2 metres via repeaters; 70cm has a few adherents and activity is minimal. Despite the many hundreds of multi-mode 2 metre transceivers and many transverters about, there is very little sustained SSB activity and very much less on 70cm. Oscar activity is relatively lively due to the excellent support rendered by Greg Roberts ZS1BI on a 'one man band' basis. ZE1JJ is unable to secure his WAC using the EME mode since there is no other station operating in Africa to make this possible. . . . It is considered that a fair statement of the present position and a positive proposal is 'That the bands 50 MHz and above will continue to stagnate until such time as a well directed and active system of VHF working groups is introduced to promote activity throughout South Africa on an area or branch basis as convenient, and under council authority through a VHF manager, and furthermore that the arrangements finally decided upon be maintained as a permanent feature of SARL policy and activity'. To be submitted to SARL AGM 1978."

Well, there you have it, things are not so bright in that part of the world, but maybe they have been sharing some of the TEP DX which has been evident in so many other areas recently. Maybe the former paragraph tends to explain why there seems to have been no recent 50 MHz contacts across the Indian Ocean to VK land for so long, and why there has never been a 144 MHz contact. It has been stated before that the long path between the two continents is a difficult one to support the conditions necessary for such contacts, but they do not seem impossible today, but will be if there is no 144 MHz activity at the African end.

A letter has come to hand from Bruce VK2AMT, which covers a point of interest not generally thought about. Here is a portion of Bruce's letter: "I have read your column in AR for many years with great interest. However, it is not obvious to any newcomer to this part of the spectrum what modes are used in the UHF region for DX work . . . "

O.K. The following brief statements would probably cover the requirements of the question. 432 MHz in the main is covered by CW and SSB, mostly the latter. The region 432.000 to 432.100 is largely requested to be kept clear by high power stations due to interference with EME stations. Above that any present activity would not go much above 432.200, if you leave out ATV. There is some FM activity around 435 MHz, in many cases using commercially built multi-channel equipment.

Around 432.1 MHz the CW may be transmitted from straight transmitters from a lower frequency crystal and separate receiver/converter combination, but I guess most activity centres around transverters which use an HF transceiver as the SSB source mostly at 28 to 30 MHz, but some at 14 MHz, and with an oscillator chain producing the required 404 MHz for injection. There are quite a few operators using modular or stripline constructed transverters of commercial production giving about 10 watts output at 432 MHz. These are often used barefoot, although the tendency now is for some stations to use 100 watt linear amplifiers to raise the signal levels. Antennae range from 7 element yagis through to 18 element high gain devices, or stacked arrays.

Much the same situation exists at 1296 MHz except for the lack of high output linear amplifiers. Here CW operation can be undertaken by using 144 MHz as the originating source, but this is generally not suitable for SSB, which generally would use 144 MHz as the originating SSB source to a suitable oscillator chain. There are many such combinations. Antennae are mainly three to six foot dishes, although I remember years ago Rod VK2BQJ, when he operated from VK5, used a stacked array of yagis with good effect.

Also for 1296 MHz operation some operators use varactor diodes to triple from 432 MHz, but this would then be limited to CW or FM. So there are many combinations, all of which have their advantages and disadvantages, so it seems the newcomer might well speak with those already in the game to get some basic ideas if in doubt.

It seems Western Victoria is to suffer on the 144 MHz band with the proposed introduction of a Channel 5A TV station there, probably about 1980. Steve VK3OT has written to his local member of Parliament, who happens to be the Prime Minister, and received confirmation that a 5A was going to be erected there. (See Letters to the Editor, this issue.) Such a station is going to affect quite a large area of 144 MHz operators throughout Victoria and even South-Eastern VK5; there are always those listeners well out of the service area of TV stations who try their utmost to receive them, and then complain of inerference. So now there will be three Channel O stations to interfer with six metres, as they have always done, and a total of four 5A stations to be heard in the 144 MHz band. Things look really bright for the future, don't they?

Before closing, you might be thinking there has been no activity in VK5 of late. No worries, we have been working our share of JAs, KG6, etc. We haven't had the openings like the northern boys, but we have equalled or had better than VK3, so we are not grumbling, it's just that it would simply be repetition to go over it all again!

So we close with the thought for the month: "If we exaggerated our joys as we exaggerate our woes, our troubles would lose all their importance."

The Voice in the Hills. ■

VK-ZL OCEANIA Dx CONTEST RESULTS 1977

OVERSEAS AMATEUR STATIONS

PHONE

DJ4PT	7925	JH0DQX	640	UK4PNZ	1768	UA9UF	5158	OK3IF	988	SM7ANB	1765
DL7KB	2635	JA0YAN	690	UK4FAO	540	UA9CAE	4488	OK2BKR	1176	SM3VE	638
DL0SK	2160	JA0XWE	8	UB5WE	3081	UA9OH	1996	OK2BLG	670	SM5AKT	50
DK8FS	1332	LU1BAR/W3	1722	UY500	517	UA9FU	1826	OK3KFF	612	SM5CCS	8
DM3YSO	2875	N3RL	1349	UY5OQ	296	UA9OS	371	OK1DMM	570	SM7AAQ	8
DM3SIC	520	N4MM	3728	RB5IOV	6	UA9MS	248	OK1MGW	240	SP3OOI	3289
DM3SBM	507	W5OB	444	UK5IAZ	2380	UK9HAC	1900	OK1KR	231	SP9KRT	380
DM3SQO	297	W6HX	7252	UO5ON	292	UK9FAA	1703	OK1KZ	168	SP3FYW	8
DM3OAA	133	W8YA	1026	UO5AP	234	UW0IX	2926	OK1ATZ	341	VE1AI	696
DM2COJ	120	K8VIR	400	UA6LAX	810	UA0MI	2835	OK1FBH	120	YO3AC	616
DM2BUB	90	W9SS	1408	UA6AOC	51	UK0FAA	8484	OK1BBJ	96	YO3RF	580
DM5YIG	6	K9AB	672	UK6AAJ	3535	UK0AAB	7410	OK2BPK	72	YO3AQJ	120
EA3NA	2436	K9IL	144	UD6DER	797	UK0CBE	39	OK2MSP	72	YO3CB	50
EA2IA	1008	WB2FVD/0	20	UM8NNN	2			OK1MIN	48	YU1ELM	984
EA1TA	95	KA6RR	8878					OK1DKW	8	YU1GMN	972
EI7CC	48	KH6IJ	3720					OK1IDD	32	YU4CBC	40
F2RO	160	LA1KI	4956					OK1CIJ	4	YU2HDE	36
F6BFH	140	LA5WQ	1320	**CW**				OK2BJR	2	YU2CBK	36
G3YPW	2574	LA2ZN	639					OK1DJD	2	YU2RYK	2
HA7KLG	1826	LA5IH	78	DL3KB	2340	JA8GU	1664	OK2BBQ	2	YU2RYN	2
HA9KPU	840	OH2JW	8990	DL0SK	1710	JA6AKW	1367				
HB9DX	330	OH8OS	6902	DL3KD	960	JA6GGD	147	**USSR**			
HK3LT	1078	OH1PS/Z	1584	DL1YA	8	JR6CF	108				
I1BGJ	1456	OH3G	549	DM2AYK	4560	JA5CEK/6	102	UA1DZ	5236	UO5OGX	184
I2AT	1272	OH2BH	416	DM2FGN	340	JA7GAX	7844	UA1QBM	1498	UO5GR	138
I2DMI	600	OF7NW	272	DM3SIC	232	JA7GLB	5075	UA1AGK	513	UW6OE	486
JE1SSE	15428	OH5BM	121	EI7CC	18	JA7DNO	938	UA1ZZ	2	UA6CP	50
JA1WZG	9153	OH2PQ	90	EP2SV	867	JA7KXD	688	UK1AAA	4400	UK6LEZ	1767
JA5KJD/1	3650	OH5UX	85	EP2IA	396	JA7DAH	486	UK1CAA	3887	UK6FAA	410
JA1AEW	2970	OH1TD	44	F6DYY	944	JA7WEE	270	UC2ABT	1500	UK6PAA	32
JK1ASM	2176	OH6ML	32	F5IN	240	JA8PON	168	UA2EC	572	UF6DG	210
JA1OHD	1634	OF3NJ	36	F9BB	240	JA9NFO	2928	UC2WP	175	UF6BN	2
JA1UNT	1548	OK2BKR	2091	G3PVA	561	JA9APS	1120	UC2WAZ	8	UF6FOF	2
JA1BUI	466	OK1WT	1455	G3KSH	320	JA9AQE	825	UK2WAF	1845	UL7GAA	836
JA1AAT	324	OK1ATE	770	HA9KPU	1602	JA9SQO	793	UP2NV	4186	UL7CT	616
JR1YGP	184	OK2BLG	756	HA5KKG	1170	JA9CWJ	72	UP2BAO	1176	UL7GBD	288
JA1LB	56	OK3KFF	400	HA5KBM	352	JH3LCU/0	2492	UP2OM	450	UL7CAD	70
JI1VTD	2	OK1MP	387	HA5JK	64	JA0RQV	1482	UK2BBB	5876	UM8NNN	32
JA2HLX	25326	OK1KCP	126	HA6VO	24	JA0NCE	40	UK2PAO	115	UM8NAJ	6
JR2BPV	1928	OK3CGP	126	HA9RU	18	JA0GZ	21	UK2PCR	60	UJ8JAS	375
JR2NZH	1668	OK1KZ	80	HB9OX	280	WA1QNF	72	UO2GOQ	1856	UI8BI	304
JE2UJG	1416	OK2QX	52	JE1SSE	6369	W2LW	4050	UQ2PP	2	UA90H	1747
JE2LPC	810	OK3KAP	36	JA1ITS	3591	W2FCR	2166	UK2GKW	2507	UA900	1746
JA2YDU	600	OK2BJR	12	JA1BHJ	2622	W3TV	168	UK2GAC	671	UA9JAA	1513
JA2LFG	240	OK1BBJ	4	JA1GLT	2240	W4MM	1701	UK2GJG	480	UW9PT	1320
JA3BRB	3612	ON6AM	203	JA1AAF	3051	W5SOD	352	UK2GCB	420	UA9AED	672
JA3NMV	312	OZ5KF	9568	JA1WVK	1804	W5OB	94	UR2RCU	1120	UW9WL	660
JR3CVJ	232	OZ4PM	378	JA1OHD	960	N6JM	225	UR2QD	429	UA9FGF	384
JA3MFE	64	OZ2BM	40	JR1IOS	616	W7IR	12599	UK2RAX	252	UW9WZ	384
JE3JDJ	30	OZ1A/D	2	JG1RJB	506	W7JKA	135	UA3EAL	192	UA9OAD	315
JA4BKL	3549	PI1ARS	300	JA1OP	320	K9AB	2277	UA3LAB	180	UA9CAL	280
JA4YFH	3640	PY1BKA	16	JA1KKA	216	K0FX	1658	UA3DFY	18	UA9OS	258
JA4GXS	1296	SM2DMU	7749	JA8BI/1	192	LA20	90	UA3QEL	16	UA9HBO	246
JA4GAX	68	SK7CE	2800	JF1UKJ	18	LB1G	2	UK3AAC	644	UA9OBG	90
JA5SNR	6208	SM4DQE	1106	JA1AAT	8	LA5H	2	UK3TBF	603	UA9HAL	120
JA5VOB	368	SM5CCS	693	JA1YYE	4	LZ1WI	680	UA4ADY	203	UA9QE	24
JA5UOM	224	SM4DHF	488	JH1OEL	2	LZ2JF	336	UA4SM	165	UA9UOZ	24
JA5CHB	40	SM5EMR	44	JA2HLX	13448	LZKDD	66	UC4CAR	84	UK9HAC	3067
JA6WSB	10660	SM7AAQ	2	JH2ZKT	5508	OH1XX	5050	UK4PAA	2960	UW0LT	6355
JA6GGD	4968	SP3DOI	13702	JA2BI	4296	OH5UX	1316	UK4WAB	480	UA0MI	3288
JA5CEK/6	133	SP9KRT	30	JR2BPV	1840	OH8OS	1224	UB5WF	1230	UW0IX	3276
JA6BD	108	TG8NE	630	JA2MYA	891	OH5YX	800	UB5WAL	616	UA0IAP	2800
JA7FAS	9019	VE7AV	612	JE2LPC	378	OH2BAH	742	UB5UAT	330	UA0AAC	868
JA7EID	7018	VE7AY	612	JE2RZA	192	OH2BJH	740	UB5OE	144	UA0OBW	468
JA7BAL	633	VE1AI	40	JA2OJ	360	OH6ID	531	UY500	54	UA0ML	280
JA7DAH	287	YO3AC	1100	JA2YCZ	108	OF7NW	440	UB5HCU	5	UA0SGJ	220
JH7JDB	2	YO3ZA	132	JE2KPM	60	OH3AG	400	UK5WBG	2268	UA0LZ	36
JA8SW	825	YU1NYP	4602	JA2ACR	70	OF3NJ	132	UK5MAF	1530	UK0FAA	3625
JA9BMP	7456	YU1GMN	1652	JF3BDP	20328	OH1ML	120	UK5HAA	232	UK0LAB	3220
JA9APS	2760	YU2CBK	72	JH3XCU	7140	OH2KN	105	UK5ZAK	178	UK0CBE	1700
JA9PPC	814	YUZCBK	72	JA3BRB	3146	OH6VV	27	UO5AP	742		
JA9SQO	730	YU1NZR	6	JH3CXL	2310	OH1PS/2	90				
JA0FMB	2904	9H4G	90	JA3YKC	1692	OH5LP	2				
				JA3ARM	423	OH6UC	2				
USSR				JR3XEX	369	ON4XG	260	**LISTENERS' SECTION**			
				JA3BCT	140	OX3ZM	18				
UA1DZ	3717	UK2BBB	3990	JA3[illegible]MV	70	OZ4PM	2220	**PHONE**			
UW1AE	869	UQ2GOG	711	JA3MFE	44	OZ1LO	2163				
UA1MU	640	UR2QD	3120	JA4AXB	6467	OZ7BW	1080	DL-A361/156337	550	JA6-1697/1	2310
UK1CAA	1377	UR2QA	217	JA4BKL	833	OZ7YG	312	DL-A33/131090	414	JA8-3891	1722
UC2AFA	290	UR2RCU	12	JA4AQR	248	OZ5OP	32	HA9-007	36	JA8-3888	1406
UK2WAF	1547	UV3CE	4842	JA4CZM	304	PA0CLC	686	JA7-3331	11410	JA3-9092	870
UK2FAD	36	UA3AAK	1380	JA4GXS	24	PT2TF	280	JA6-8331	8904	JA2-8670	150
UK2AAB	24	UW3EQ	756	JA4KXT	24	PA0VB	80	JA1-16780	7626	JA2-8783	120
UP2NV	1284	UK3DAH	2688	JA5SNR	3267	PA0CYW	32	JA1-18277	6789	OK2-22130	1560
UP2BAO	85	UK3EAZ	156	JA5PFI	768	PA0MRM	8	JA5LFB	6260	OK3-26555	210
				JA5HLM	256	OK1KSO	1649	T-SASAKI	3816	OK1-18684	72
				JA6BSM	8584	OK1KRS	1350	JA6-9304	3696	ONL-383	2144
								JA5-1231/3	2520	OZ-DR1815	

DM5323/M	1564	DM1428/M	780
DM7215/I	1500	DM3501/G	540
DM8252/H	1500	DM6754/A	234
DM87081/G	1488	DM5850/N	130
DM8721/G/A	1078	DM8580/A	90

CW

DM-6754/A	2014	JA0-2811	920
DM8979/0	900	JA8-3891	60
DM0721/G/A	110	JA3-8783	56
JA1-4570	5440	JA5-1231/3	40
JA7-6824/7	4284	OK2-19749	308
JA4-4665	1440	OK1-11861	816

■

AROUND THE TRADE

FRG-7 OWNER'S GUIDE

Dick Smith has introduced a guide to the Yaesu FRG-7 Short Wave Receiver which, according to Dick, "continues from where the instruction booklet with the set leaves off".

The six-page guide was written specially for Dick Smith by noted short wave correspondent Arthur Cushen, M.B.E.

It describes the step-by-step procedure for tuning stations on known frequencies, provides information on international short wave and amateur bands to listen to, explains the 24 hour clock and G.M.T., lists transmission times and frequencies for broadcasts for the major short wave transmitting countries of the world and concludes with a run-down on short wave listening as a hobby.

Dick Smith is offering this useful guide FREE with each Yaesu FRG-7 receiver sold through his eight electronics stores or by his mail order department.

UHF PRE-SELECTOR FILTERS

Spectrum International's Low Loss factory tuned, Pre-Selector Filters are a 3 pole inter-digital design. They have the traditional bar transmission line structure and are constructed from brass stock.

The electrical design approximates to a 0.1 dB ripple, Tchebyscheff characteristic.

TECHNICAL DATA

PSf1432 — $38.70, freight extra. Freq. Range (MHz) 420-450; Ripple, typ. 0.1 dB; I.L., typ. 0.15 dB; Impedance, nom. 50 ohms; VSWR, peak, typ. 1.25; Shape Factor, 30 dB 4:1; Power, max. 100W. Mech. Data: Length (plus coax's) 7¼ ins.; Width 4½ ins.; Thickness 1 inch; Connectors, std. BNC.

432 Linear Amp. — EDL432.

PSf1296 — US$38.70, freight extra. Freq. range (MHz) 1250-1340; Ripple, typ. 0.1 dB; I.L., typ. 0.2 dB; Impedance, nom. 50 ohms; VSWR, peak, typ. 1.25; Shape Factor, 30 dB 4:1; Power, max. 100W. Mech. Data: Length (plus coax's) 3 ins.; Width 4½ ins.; Thickness 1 inch; Connectors, std. TNC (BNC avail.).

PSf1691 — US$49.95, freight extra. Freq. range 1850/1750; Ripple, typ. 0.1 dB; I.L., typ. 0.2 dB; Impedance, nom. 50 ohms; VSWR, peak, typ. 1.25; Shape Factor, 30 dB 4:1; Power, max. 100W. Mech. data: Length (plus coax's) 2½ ins.; Width 4½ ins.; Thickness 1 in.; Connectors, std. TNC.

PRE-SELECTOR FILTER APPLICATION NOTES

Low loss pre-selector filters exhibit high attenuation to out of band interfering signals and negligible loss to desired in-band signals. They also attenuate the "image noise" band in heterodyne receiving systems thereby providing up to 3 dB improvement of receive system noise performance.

Receiver front end selectivity is difficult to realise in the typical small UHF converter. The addition of an external pre-selector filter can result in much improved performance for the sensitivity and out-band intermodulation (IMD) characteristics.

In urban areas having high concentrations of FM, TV and mobile radio transmitters, most receivers have excessive "birdie" responses due to out of band signals. The addition of a pre-selector filter before the receiver tends to eliminate the spurious responses. In fact many receivers seem dead after fitting a pre-selector filter due to the resulting very low background noise, but jump to life whenever an in-band station is tuned in.

Another excellent application is following an up-converter, to clean up the transmitted spectrum before high power amplification.

Let's keep our transmissions clean.

— Submitted by Spectrum International.

Spectrum International of Concord, Massachusetts, USA, have advised that their XF102 filter is no longer available and all stocks are exhausted. The XM-107-S04 will continue to be available as before. XM-107-SO4 will continue to be available as before. ■

QSP

MT. GININI REPEATER

From the President of the VK1 Division comes news that the fund for the replacement of the Mt. Ginini repeater will be closed on 30th June, 1978, although any later donations would naturally be accepted with grateful thanks. A list of donors will be prepared for publishing in AR at a later date. ■

IARU NEWS

The following items have been extracted from the IARU Calendar No. 95:—

> "In the last end-of-year Calendar, we characterized 1976 as a year of growth. The year 1977 carried forth that growth, as the Union welcomed into membership eight new societies, representing amateur radio in Bahrain, Botswana, Indonesia, Jordan, Oman, Papua New Guinea, Sierra Leone, and Turkey. The membership of the Union now stands at 99, and applications have been received from Grenada and Senegal (ballots and full details enclosed in this Calendar).
>
> Preparations for the 1979 World Administrative Radio Conference continued throughout the year to be the prime task of the IARU. The International Working Group met again, this time in England, and produced a four-page leaflet entitled 'The Case for Amateur Radio', designed for use by IARU member-societies in their efforts to justify the Amateur Radio Service to their administrations. 'Use it, or lose it!' became the motto stressed in the monthly WARC Newsletters mailed from Headquarters — a motto of amateurs as we continue to justify our present frequency allocations and our demands for more. To this end, amateurs in Australia shattered the 1296 MHz world distance record when VK6WG successfully established two-way communication with VK5QR 1888 kilometers (1178 miles) away on 25 January. YV5ZZ and LU1DAU subsequently smashed the world's two-metre record when they spoke over a distance of 5000 kilometers (3107 miles) in October. Such breakthroughs by amateurs aid us considerably in justifying our claims that amateurs continue to contribute to the state of the art in electronics, and to offer significant findings in propagation theory."

The Organisasi Amatir Radio Indonesia was elected to membership of the IARU.

> "The Deutscher Amateur Radio Club, the society of the Federal Republic of Germany, gave 800,000 visitors an impressive demonstration of amateur radio at the Berlin International Radio and Television Fair. Over 100 square yards of floor space were made available to the DARC volunteers, and DK0IA was put on the air around the clock. All Berlin amateurs were invited to an outdoor barbecue on 27 August (held between exhibition tents so all fair-goers could see first-hand how many hams were in the area).
>
> The DARC volunteers set up displays on Oscar satellites, state-of-the-art design of amateur equipment, and VHF repeaters. West Berlin's repeater, DL0SP, was linked to repeater DL0XX on the West German border, and daily reported the activities to DARC headquarters at Baunatal.
>
> Audience participation is important in holding interest, so a visitor's bar was set up complete with headphones for attendees to eavesdrop on DK0IA. Also a map outfitted with light bulbs flashed the location of each QSO, teaching a lesson in geography as well as in international friendship.
>
> The Bonn chapter of DARC has taken over the Federal German Chancellor's office, displaying 200 QSL cards and 20 radio awards and diplomas on the reception area walls. The display is intended to represent typical amateur radio activities. So far at least 54 newspapers throughout the Federal Republic of Germany have published stories on the unique display."

On 12th February, 1978, KP4EOR established a successful two-way SSB contact with LU5DJZ, a distance of 6,319 km. A contact was also made with LU3AAT.

Two further amateur societies are seeking IARU membership. These are the Grenada ARC and the Assoc. des Radio-Amateurs du Senegal.

The President of the IARU, Noel B. Eaton VE3CJ, advises that the work of his WARC Advisory Committee (loosely known as the IWG) seems now to have completed the preparatory phase of planning for WARC 79 and that it be transformed into the actual team to represent IARU at WARC 79. These conclusions were reached at the meeting of the Group in Geneva last February, which was also attended by David Wardlaw, the Federal President. Whilst the team for WARC 79 cannot be completely finalised at this early date, the IARU President has chosen the following for the basic team: VE3CJ, W4KFC, W1RU, K1ZZ, WA6IDN, SP5FM, OA4AV and VK3KI.

There will be, he states, further nominations to this basic WARC team. He will be attending the meetings of all three IARU Regions to be held during the year.

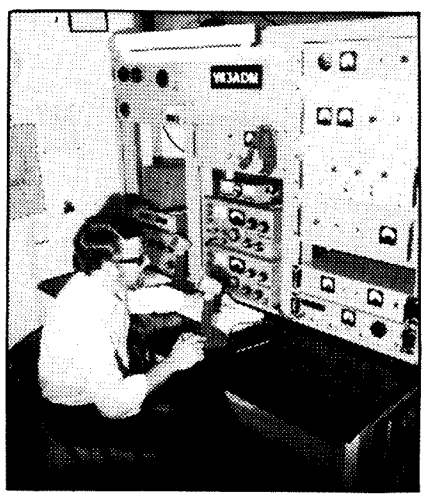
Meanwhile, the IARU group referred to has produced an excellent leaflet entitled "The Case for Amateur Radio", designed to assist the amateur societies of developing countries in educating their national administrations on the need for the Amateur Radio Service in these nations. Copies will be in English, French and Spanish. This leaflet is quite one of the best on amateur radio ever produced and it is sincerely to be hoped it will be read and understood by administrations in the over-numerous less developed nations possessing an ITU vote.

The WIA recently received news that arrangements had been concluded between DARC (West German Am. Radio Society) and the Radio Society of Sri Lanka whereby a number of DARC members had volunteered to participate in a training course to be held in Colombo during October for amateur radio trainees. The DARC volunteers would fly to Colombo and the expenses of the project would be met as to 50 per cent by IARU Region 1, with some contribution from IARU Region 3. The WIA

AMATEUR RADIO ACTION

(published by Newspress Pty. Ltd. — publishers of CB Action)

IS THE NEW GENERATION AMATEUR MAGAZINE



Whether you're a CBer, wondering how hard it is to become a Novice, a Novice — wondering how hard it is to obtain your full ticket, or an old time ham — wondering what the hell is going on anyway — we think you will find plenty to interest you in this new magazine.

AMATEUR RADIO ACTION will go on sale at newsagents throughout Australia during the last week of May (NSW and Vic) and the first week of June (all other states).

The topics covered will include in-depth technical reports on the latest equipment by David Rosenfield (VK3 ADM), reports on DX activity on all bands, what's happening in VHF, UHF, RTTY, SSTV,AND ATV, International reports on overseas amateur operations, "build it yourself" technical projects, propagation forecasts . . . .and the many other things which go to make for interesting and informative reading.

We firmly believe that a magazine, be it on motorsport or amateur radio, should make interesting reading—we think you will agree that AMATEUR RADIO ACTION fills this requirement.

The magazine is dedicated to the advancement and promotion of amateur radio and, most importantly, assisting the student and Novice while, at the same time, not being "written down" to the extent whereby the old time ham has little to gain from it.

The views of AMATEUR RADIO ACTION may not coinclude with those of the "establishment" — but surely a fresh approach and controversial ideas can often cause major and/or minor reforms to the benefit of everyone.

For instance, why should ITU standard morse be the standard for examinations when you're rarely likely to hear it on air anyway?

Why are copies of past Novice exam papers impossible to obtain although copies of the A.O.C.P papers are readily available?

Are multiple question A.O.C.P. papers to be introduced — if so, when?

These are just a few of the questions which we'll be looking at in the first few issues of AMATEUR RADIO ACTION.

IF YOU'RE INTERESTED IN RADIO, THEN SOONER OR LATER YOU WILL BE INTERESTED IN AMATEUR RADIO — AND AMATEUR RADIO ACTION MAGAZINE IS THE ONE YOU'LL BE READING . . .!

First issue on sale last week of May (Victoria & New South Wales) — first week of June (all other states)

Available at all newsagents throughout Australia

Executive decided this was a most worthy project and donated $250.

On 1-1-1979 the CCIR will have been in existence for 50 years.

TELECOMMUNCATION JOURNAL COMMEMORATES 20 YEARS OF SPACE FLIGHT

The October number of the Telecommunications Journal*, the monthly review of the international Telecommunication Union (ITU), commemorates 20 years of artificial earth satellites by publishing two articles; one evoking the very beginnings of satellite techniques, the other dealing with an application of satellites which has, as yet, only been introduced on an experimental basis.

The first article, by L. S. Vedeshin and V. P. Dudykin, describes the preparation and launch on 4 October, 1957, of Sputnik I, the world's first artificial satellite.

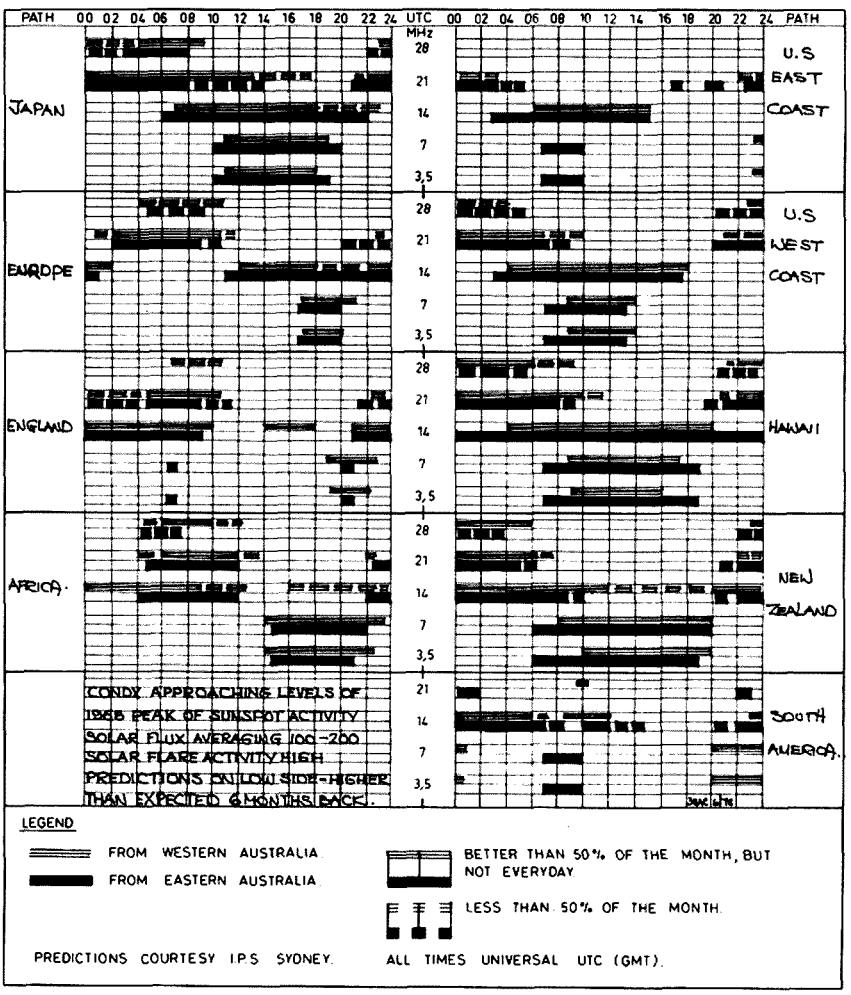
In the second article, entitled "The Broadcasting-Satellite Conference", Ib Lonberg, the Chairman of the conference which was held in January-February of this year in Geneva, discusses the Plan for direct broadcasting from satellites in the 12GHz band.

Earlier this year the Telecommunications Journal published a "Table of artificial satellites launched between 1957 and 1976" (price: 25 Swiss francs), which is a complete list of all satellites successfully launched from Sputnik I until the end of 1976.

* Telecommunication Journal, separate editions in English, French and Spanish. Subscriptions, by surface mail: one language, 75 Swiss francs a year; two languages, 150 Swiss francs a year; three languages, 225 Swiss francs a year. Price for a single copy: 7.50 Swiss francs. There are special rates for delivery by airmail. The Telecommunication Journal may be obtained from the Sales Division, International Telecommunication Union, Place des Nations, CH 1211 Geneva 20 (Switzerland). ■

IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



Due to circumstances beyond my control I have no summaries to offer with this month's chart. However, news is that solar activity has now reached a level equivalent to the peak of cycle 20 in 1968. Forward predictions are being revised to an estimated smoothed running number around 150 in approximately 18 months time. Then a broad peak extending over perhaps 18-24 months.

There are many indications that the higher frequency bands 28 and 50/52 MHz will really come to life as indeed reports do indicate quite extensive DX being worked on both 10 and 6 metres. I am currently preparing a brief report on cycle 20 and awaiting further information regarding forecasts for cycle 21 to add to the report. I am enjoying some fine DX on 21 MHz to just about all parts of the world.

Of course winter will see some changes in some bands but the equinoxial periods in September 1978 and March 1979 will produce some really fine DX on all bands. If you are not prepared — now is the time to get ready to join the QRM on all bands. More next month.

Good DX. 73s VK3NAC. ■

AOCP EXAM AUGUST 1977

POSTAL AND TELECOMMUNICATIONS DEPARTMENT
AMATEUR OPERATORS' CERTIFICATE OF PROFICIENCY

August, 1977.

SECTION M (Theory)
(Time allowed — 2½ hours.)

NOTE:—SEVEN questions only to be attempted. Credit will not be given for more than **SEVEN** answers. All questions carry equal marks.

1. (a) Draw the circuit diagram of an amateur station transmitter suitable for operation in the 144-148 MHz band. Explain briefly the theory of operation of each stage of the transmitter.
   (b) Describe how you would tune the transmitter described in (a).

2. (a) With the assistance of a sketch indicate the ionospheric layers which exist during hours of —
   (i) daylight, and (ii) darkness.
   (b) Explain the meaning of the term maximum-usable-frequency (M.U.F.). Explain why this frequency is not constant over a long period.

3. (a) With the aid of a sketch showing the main component parts, explain the theory of operation of a cathode-ray tube.
   (b) Show a method of connecting a cathode-ray oscilloscope to a telephony transmitter to indicate its depth of modulation.
   (c) Sketch the pattern obtained when using the connections shown in (b) if the carrier is modulated at a depth of 100 per cent.

4. (a) What is meant by the following terms when used in reference to an iron-cored transformer:
   (i) turns ratio; and (ii) impedance ratio.
   (b) List the losses associated with the operation of a power-transformer and state how these may be minimised.

5. (a) Using diagrams, explain the principle of operation of a crystal microphone.
   (b) Draw a circuit diagram of a solid-state pre-amplifier, the input impedance of which will approximately match a crystal microphone.

6. (a) Draw a circuit diagram of a DC-DC converter and explain the theory of operation.
   (b) List any advantages the converter in (a) has over the vibrating reed type converter.

7. Draw a circuit diagram of the radio-frequency amplifier and converter stages of a transistor type superheterodyne receiver. Explain how oscillation is produced in the converter and how the incoming signal is mixed with the oscillator frequency to produce the desired intermediate frequency.

8. Under what circumstances would you use:—
   (i) an absorption wavemeter,
   (ii) a heterodyne type frequency meter,
   (iii) lecher wires,
   (iv) a grid-dip oscillator,
   (v) a cavity resonator?

9. A resistance of 3 ohms is connected in series with three resistances in parallel of 20, 50 and 70 ohms respectively. This combination is connected across a 30 volts power supply Calculate:—
   (i) the total current flowing,
   (ii) the power dissipated by the 50 ohms resistor,
   (iii) the current through the 20 ohms resistor. ■

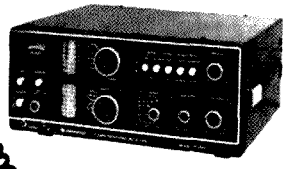
WHAT'S BLACK & WHITE AND TURNS 2-METRE OPERATORS GREEN ?

THE KENWOOD TR-7400

This is the one, the Kenwood TR-7400 FM mobile transceiver of 25/10 watts and complete 2 metre band coverage (144-148 MHz). It has the largest digital readout in its class, and the 800 channel coverage with PLL frequency synthesizer provides you with all existing and proposed Australian repeaters. A convenient front panel switch offsets the transmit frequency up or down 600 kHz.

WHENEVER YOU WANT TO MOVE UP — KENWOOD HAS THE WAY

TR-2200 2-metre VHF FM portable receiver



R-300 all band or ham band communications receiver

The new TS-520S HF transceiver — ideal for the novice

TS-700 2-metre VHF all mode transceiver

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International Marketing Dept.
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5-Chome. SHIBUYA — KU,
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EXTRA SPECIALS FOR NOVICE LICENSEES:

	$ c
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SIDEBAND SE-502 8 23 CH. USB / AM 240V AC / 12V DC SWR / RF Meter 28.3-28.6 MHz 15W PEP —	160.00
UNIVERSE 224M — 24 CH. USB / AM Mobile 28.480-28.595 at 5KHz spacing Clarifier tuned transmit and receive 15W PEP	150.00

AMATEUR EQUIPMENT:

KENWOOD TS-520S 10-160M SSB / CW transceiver 240V AC	Still only	650.00
KENWOOD TS-820S 10-160M SSB / CW transceiver w / DIGITAL READOUT	Still only	1,000.00
KENWOOD DG-5 Digital display for TS-520S		175.00
KENWOOD DK-520 Conversion kit DG-5 to TS-520		25.00
KENWOOD TR-7400A 2M 25W FM 12V DC transceiver	Still only	400.00
KENWOOD TV-506 6M transverter	Still only	175.00
KENWOOD AT-200 Antenna match box		150.00
YAESU MUSEN FT-101E 10-160M AC / DC transceiver w / Speech processor		POA
YAESU MUSEN DM-901D Deluxe AC / DC 160-10M DIGITAL transceiver		POA
YAESU MUSEN FT-7 Mobile 80-10M 20W 12V DC transceiver		POA
YAESU MUSEN FL-2100B 80-10M 1200W Linear Amplifier		POA
YAESU MUSEN FRG-7 .5-30MHz General coverage receiver		POA
YAESU MUSEN SP-101B Extension Speaker		30.00
ATLAS 210X 80-10M Mobile transceiver c / with HD cable		825.00
FDK MULTI 800D 800 channel (5KHz) 2M FM transceiver 1-25W Adjustable output slow / med / fast up / down tuning free split VFOs Memory		325.00
FDK DD-800 Bright Remote display for the 800D for mobile use		40.00
FDK MULTI QUARTZ-16 24 CH. 10W 12V DC 2M transceiver w / crystals for repeaters 1 to 8 and channels 40 & 50	Still only	175.00
ICOM IC-202 2M SSB Portable transceiver — a few only —	Still only	175.00
KEN KR-400 Azimuth antenna rotator w / 28V AC control / indicator box		100.00
KEN KR-500 Elevation antenna rotator w / 28V AC control / indicator box		125.00

COAX CONNECTORS: (specify types)

PL-259 suit RG-8U or RG-58U, Solderless PL-259 suit RG-8U or RG-58U	each	.75
SO-239 — 4 hole, 2 hole or single hole w / lock nut mounting	each	.75
In-line Splices — suit RG-8U or RG-58U	each	.75
Double Male connector —		.85
3 pin & 4 pin microphone sockets	each	.85
3 pin & 4 pin in-line microphone plugs	each	.85
3 circuit microphone jacks		.85
Car cigarette lighter plugs		.85
2'6" coloured jumper leads w / crocodile clips — bundle of 5 —		3.00

ACCESSORIES:

FERRIS SWR / FIELD STRENGTH Meters	15.00
Bumper Mounts — fit any bumper — with 3 / 8" 24 thread antenna mount	7.00
Gutter Mounts — with 3 / 8" 24 thread antenna mount	4.50
5 metre lengths RG-58U with PL-259 connector one end	3.00
3' lengths RG-58U with PL-259 connector each end	2.50
M-RING body mount	3.00
GLP Right angle connector RG-58U to SO-239 w / lock nut & weatherproof cap	3.50
MLS Right angle connector RG-58U to PL-259	.90

TERMS strictly cash with order; PRICES subject to change without prior notice;
INSURANCE — full risk insurance free; FREIGHT — Air, Rail, Road or Postage is extra;
Allow for freight charges, where applicable, when sending order — surplus will be refunded when goods despatched; All orders cleared on date of receipt of order.

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LINEAR HF POWER AMPLIFIERS

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390 George Street, Brisbane (near McDonnell and Easts)

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THE ANSWER TO THE NOVICE'S DREAM AT A NOVICE'S PRICE

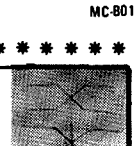
FT-7

FEATURES:
Modern compact styling for easy under-dash mounting.
Size 230mm x 80mm x 290mm.
80 to 10 *metre operation.*
VFO controlled.
Noise Blanker that really works.
Facilities for fixed channel operation.
Ideal for the shack or the mobile at a price that you can afford.
Only $548 including mobile mount, microphone and cables.

Where do you get an 80 to 10 metre trapped vertical antenna complete with guy ropes and radial traps for only $113? At GFS of course. * MC-801 KB-105 – $113.

* * * * * * * * * * * *

Sick of yelling your head off at those rare DX stations while others are getting 5/9 reports from them? Then get with it!! The manufacturers state 14dB forward gain and 26dB front to back ratio.



SQ-20	20 metre Swiss Quad	$255
SQ-15	15 *metre Swiss Quad*	$137
SQ-10	10 metre Swiss Quad	$128

LOOK AT THESE PRICES AND COMPARE!!

FT-101E	160-10m x 260W Tcvr	$839
FT-301	160-10m x 200W Tcvr	$878
FT-301S	160-10m x 25W Tcvr	$649
FT-7	80-10m x 2[illegible]	$548
TS-520S	160-10m [illegible] Tcvr	$899
FL-2100B	80-10[illegible] ear Amp	$539
FL-110	16[illegible] Linear Amp	$235
FRG-7	[illegible]MHz Comm Rx	$325
YO-301	[illegible] series Monitorscope	$375
YO-100	[illegible] series Monitorscope	$263
YP-150	Dummy Load/Wattmeter	$ 97
FP-301	301 *series 20Amp* PS	$183
FT-901DM	160 – 10mx Tcvr	$1475

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2 METRE MULTI-MODE TRANCEIVER

Following in the footsteps of the FT-901D's design philosphy

YAESU's latest transceiver, from GFS, the FT-225RD, offers new developments in a 2 metre multi-mode transceiver. A few of its features are: 24 watts PEP output, Digital and Analogue Frequency Readout, modern Phase Locked Loop local oscillator circuitry, and optional *Frequency Memory Unit, plus many more. Contact GFS* for information.

NEW! COMBINATION FREQUENCY COUNTER AND SIGNAL CENERATOR – DX-555D

Technical Data:
10Hz to 220MHz counter.
0.4 to 30 MHz generator.
600Hz tone oscillator.
2mS and 200mS gating time.
5 Digit LED display.
Switchable KHz and MHz

Featuring a 220 MHz counter upper limit and 30 MHz generator upper limit.

Generator frequency is read directly on the counter.

A MUST FOR EVERY HAM SHACK.

$213

DX-555 same as DX-555D but with 30MHz counter.

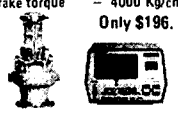
Only $175

* * DON'T FORGET TO ENQUIRE ABOUT OUR FINANCE PLAN. * * * * *

VS-1

EMOTATORS ROTATORS

MODEL 502CXX Heavy duty.
Rotation torque – 600 Kg/cm
Brake torque – 4000 Kg/cm
Only $196.



MODEL 1102MXX Extra Heavy Duty
Rotation torque – 800 Kg/cm
Brake torque – 10,000 Kg/cm
GFS Price only $314

MODEL 103LBX Medium duty.
Rotation torque – 450 Kg/cm
Brake torque – 1500 Kg/cm
GFS Price only $145

ACCESSORIES FROM GFS

FS-301 HF In-line power and SWR meter, 3 ranges: 0-20, 200, 1000W – $49
FS-302 VHF In-line power and SWR meter, 50-170MHz – $58
SWR-15 SWR/Field strength meter 3.5 to 150MHz – $15.50.
SWR-200 Osker Block SWR/POWER meter – $69
QTR-24 24 Hour World Clock – $31.
5D-FB low loss double shielded foam dielectric Co-ax, 2 dB loss per 100 ft. at 100MHz. $1.20 per metre.
LP-30 low pass filter, 50W power capability. Ideal for novice use – $9.50.
VS-1 mini mic compressor, 46dB of compression – $25.
MC-801 Katsumi mic compressor – $45.

* * * * * * * * * * *

FS-302 – $58
50-170MHz

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AWARDS COLUMN

Brian Austin, VK5CA
P.O. Box 7A, Crafers SA, 5152

AUSTRALIAN DXCC TOP LISTINGS AS AT 23-4-78

PHONE

VK6RU	322/354	VK2APK	300/313
VK4KS	320/339	VK4FJ	297/324
VK6MK	314/341	VK4PX	297/304
VK5MS	313/344	VK6LK	295/301
VK3AHO	304/326	VK5AB	293/316
VK4UC	301/306		

CW

VK2EO	317/346	VK3XB	280/300
VK2QL	308/337	VK3NC	266/297
VK3AHQ	308/331	VK6RU	267/296
VK3YL	299/322	VK4RF	262/279
VK4FJ	297/329	VK4KX	261/266
VK2APK	291/304	VK3YD	258/281

OPEN

VK6RU	322/354	VK4PX	304/315
VK4KS	321/345	VK4UC	304/310
VK4SD	318/339	VK2SG	301/311
VK2APK	311/329	VK3YL	300/323
VK6MK	310/337	VK4RF	292/309
VK4FJ	309/341	VK3XB	288/308

DXCC NEW MEMBERS SINCE 24-8-77

PHONE

VK4VC	Tally	255
VK2YO	,,	110
VK4AAU	,,	120
VK3AGB	,,	100

OPEN

VK7BC	,,	129
VK6FI	,,	107

CW

VK4LV	,,	103

See previous AR for General Rules for ARI HF Awards.

WORKED ALL ITALIAN PROVINCES (WAIP)

1. The WAIP is issued to those amateurs who can show confirmation ot a two way contact on the HF bands since 1-1-1949 with —
   (a) a fixed amateur station in at least 60 provinces of the Italian Republic, for foreign amateurs;
   (b) a fixed amateur station in at least 75 provinces of the Italian Republic, for Italian amateurs.
2. The same station may be worked twice or more, if in different provinces.
3. The minimum reports considered are: RST 338 and RS 33.

List of Italian Provinces:

Agrigento	Messina
Alessandria	Milano
Ancona	Modena
Aosta	Napoli
Arezzo	Novara
Ascoli Piceno	Nuoro
Asti	Oristano
Avelino	Padova
Bari	Palermo
Belluno	Parma
Benevento	Pavia
Bergamo	Perugia
Bologna	Pesaro
Bolzano	Pescara
Brescia	Piacenza
Brindisi	Pisa
Cagliari	Pistola
Caltanissetta	Pordenone
Campobasso	Potenza
Caserta	Ragusa
Catania	Ravenna
Catanzaro	Reggio Calabria
Chieti	Reggio Emilia
Como	Rieti
Cosenza	Roma
Cremona	Rovigo
Cuneo	Salerno
Enna	Sassari
Ferrara	Savona
Firenze	Siena
Foggia	Siracusa
Forli	Sondrio
Frosinone	Taranto
Genova	Teramo
Gorizia	Terni
Grosseto	Torino
Imperia	Trapani
Isernia	Trento
L'Aquila	Treviso
La Spezia	Trieste
Latina	Udine
Lecce	Varese
Livorno	Venezia
Lucca	Vercelli
Macerata	Verona
Mantova	Vicenza
Massa	Viterbo
Matera	

HEARD ALL ITALIAN PROVINCES (HAIP)

1. The HAIP is issued to those SWL who can show confirmation of a HRD since 1.1.1949 of —
   (a) a fixed amateur station in at least 50 provinces of the Italian Republic, for Italian SWL;
   (b) a fixed amateur station in at least 40 provinces of the Italian Republic, for foreign SWL.
2. The list ol provinces is the same as for the WAIP.
3. The HAIP is divided into four classes:
   (a) Phone — one band.
   (b) Phone — two or more bands.
   (c) CW — one band (at least 10 Hrd's on CW on the same band; the other Hrd may be on Phone).
   (d) CW — two or more bands (at least 10 Hrd's on CW on two or more bands).

Starting 1-1-1978 DAIP and HAIP awards can be endorsed for single band and/or for all 95 Italian provinves. ■

WICEN

AN ABBREVIATED EMERGENCY PROCEDURE

The NSW WICEN Committee was asked to provide communications for the Schofields Air Show in October 1977. With no other guide available it was decided to use conventional procedure to handle formal type of traffic but it soon became obvious that a less formal, more efficient procedure was required to handle the traffic. Since the organisers of the Air Show were used to snappy aeronautical procedure they suggested that we could improve our efficiency if we changed our procedure. This was tried and proved on the second day to be an effective procedure for rapid emergency communications.

For those who have not listened to aeronautical communications the relevant principles are that it is a controlled net where sub-stations' call signs only are used since it is implicit that they are in contact with the control station unless stated otherwise. When a sub-station wishes to call control he does so by stating only his call sign and control indicates that he may transmit by repeating the call sign. If control requires confirmation from the sub-station he gives this by stating only his call sign. To signify the end of his transmission the sub-station states his call sign. The following example shows how this can be done in a WICEN operation or exercise and comply with the regulations as long as control identifies the net every ten minutes. The regulations do permit abbreviated call signs to be used and two possibilities are to use the last letter of the call sign only if there are only a few stations in the net, or if there are more stations the last two or three letters of the call sign can be used. The latter has the advantage that the operator can readily recognise his own call sign even in the presence of interference and distractions.

Sub-station calls control — Bravo Mike Mike.
Control acknowledges — Bravo Mike Mike.
Sub-station message — Can you advise duration of exercise. Bravo Mike Mike.
Control message — Exercise will end at 18.00. Bravo Mike Mike.
Substation acknowledges correct receipt of message — Bravo Mike Mike.

It will take some time for operators to change from normal amateur procedures but I suggest you try it for your next exercise in case you need it in an emergency to handle large volumes of traffic.

Mike Richter VK2BMM,
NSW WICEN Deputy Co-ordinator. ■

WICEN operators at Schofield Air Show.

MAGAZINE INDEX

Syd Clark, VK3ASC

73—October 1977
Communicate on 10.25 GHz; Home Brew Tilt-Over; Minimise Feedline Loss; How About 6 FM; WAS Easily; Fool the Wire Wizard; Ultra Simple Diode Checker; Beat the PC Shortage; Identify the Transformer; Sub-Audible Tone Encoder; Build a Com-Coder; Attache Case Portable; Build a Beeper Alarm; Try Your KIM-1 on RTTY; SD Sales Z-80 Review; Title Your Pix with a Micro; Mastering Network Operations; Try a Trapped Dipole; Liberate Your Wilson HT; Novice Antenna Specials; Sound Operated Relay; Traffic Handling Explained; The Third Hand; Vehicle Security System; One Cent Channels for the IC-22S; The Missing Length; Design a Circuit Designer; Sensitive Meters Saved; Big Bust in Amarillo; Right Way, Wrong Way, Navy Way; Living with the Family Ham; Add Jazz to Your Tempo; Interested in Television; Simple Electronic Siren; Digital to Audio Decoder; Synthesise Yourself.

BREAK IN January/February 1978
Amateur Radio DXpedition to Raoul Island; Membership; Using the SL600 Series ICs; A Mobile Voltage Regulator; Vertical Antennas; Vertical-Horizontal Antenna Rotator.

HAM RADIO January 1978
Broadcast Quality Television Camera; Microstrip Transmission Lines; Microwave Path Evaluation; Low-Band Solution SSB Phasing Techniques; Test Generator for RTTY; Microwave Bibliography; GaAs Field Effect Transistors; New Operational Amplifier Challenges the 741; Microprocessors: A Microprocessor Controlled Keyboard.

QST—January 1978
The El Paso Solar Powered Repeater; The Groundshade Antenna; A 220-MHz Transmit Converter; Twisted Wire Quadrature Hybrid Directional Couplers; An Inexpensive Morse Keyboard; The Women Among Us; From a Female Viewpoint; Public Service Begins with You; Sucessful Museum Exhibit; How to Avoid Ripoff; Rain of Terror; It's Been Quite a Year; A Brand New OSCAR, Pt. 1; My Amateur Radio Demonstration; The Great Idea; What's Your Serial Number; Code of Ethics Update; Moved and Seconded; Radio Jammer Closed Down; Operation by Allen Amateurs in the United States; 1978 Novice Round-up Announcement; Results, 1977 September VHF QSO Party.

RADIO COMMUNICATION February 1978
Audio Filters as an Aid to Reception; An Experimental Power Amplifier for 144 MHz Using a Power FET; A 12V Powered NICAD Charger; Microwave Path Checking; Some Meteorological Aspects of the Anomalous Propagation of Radio Waves.

SHORTWAVE December 1977
The Hazard of Hill-Top Operating Hypothermia; FM-Izing the TR1986 Modulator Unit; Vertical Two-Element Beams for Fifteen and Twenty Metres; A CMOS Morse Keyer; A Thermostatically Controlled Oven for the VFO.

73 November 1977
Build the Omni-OSCAR; Get Set for OSCAR 8; Build an OSCAR 2m Transverter; Predicting OSCAR Propagation; Try OSCAR Mobile; Tic Tac Touch-tone; Visual OSCAR Finder; Cheap Ears for OSCAR; Track OSCAR With Your SR152; Try a T-R for OSCAR 8; Track OSCAR In Real Time; Logical Thoughts About OSCAR; OSCAR DX; OSCAR frequency Relationships; Calculate OSCAR Orbits; CB to OSCAR; Track OSCAR 8; Build a 2m Power Amp; Build a General Purpose Pre-amp; Receive CW with a KIM; Build this SSTV Pattern Generator; Super Baud Bumper; QRZ—P-K4; Digital Timer Goes Mobile; Straining the Wind; Find that Meter Resistance; VE6 DXer Tells All; Remote Speaker Mike for Your HT; Split Your IC-22S; Remote Monitor for Your Scanner; Electronics Study Guide; Low Cost Tone Decoder; Hufco Counter Kit; A Single Tone Can Do It; Eye on the Weather.

73 January 1978
The Unbeatable Base-Loaded Three Element Rotary Vertical; Test Those ICs; Negative Numbers on a $9 Calculator; Think You Understand SSB; IC Timer Review; Forget Ohms Law; Brew Up a Signal Generator; Reprogram Your IC-22S; Try the ID VIP Method; Build a Deluxe QRP Transmatch; Dodge That Hurricane; Guilty or Not Guilty; New Life for Old Transformers; Simple Scanner for the IC-22S; Cool It; Weather Satellite Pix Printers; To Err is Human; Practical Computer Projects; You'll Like SOL; How to Keep Your Computer Happy; The Bionic Clock; Improve the AX-190 Receiver; Hooking the Kids; Tune Your Tower to 80/160; Clean Up Your Act; Where, Oh Where; Power Supply Regulation; Op Amp Insights; Home Brew an Elephant; Transistor Primer; I Love My GTX 1; How It Was; Build This FM Signal Generator; Grow a Giant Junk Box; Is It Glass . . . Or Iron?; Build a Simple Capacitance Meter; Simple Sequential Decoder; PC Techniques; Space Age Junque III; The Ham CBer; Ham Shack Anthropometrics; Hands Free Mobile Mike; Heath HT Goodies; Try the Sensor Keyer; Logical Logic; Pulses Galore. ■

LARA

Ladies Amateur Radio Association

This month In our feature series we introduce a well-known YL — Mavis VK3KS. Mavis obtained her licence in 1939, having been coached by one Ivor Stafford VK3XB. World War 2 suspended Mavis's early activity on radio after she had been on air for three months using a 5 watt battery powered transmitter.

In 1943 Mavis and Ivor married and after the war ended they resumed operations on air. A stay In East Gippsland, where Ivor was teaching, presented the challenge of operating without electricity in their home. Undaunted, they worked with a 2½ watt input battery powered set.

Later on they returned to Melbourne and in 1951 they moved to their Box Hill South QTH, where they have gradually built and used a wide range of equipment. A large tower in the back garden supports the beam they use for DX working, while the array of certificates on the wall of the shack indicates their success.

Mavis has been active in the world of DX, having obtained many awards, in particular from the YLRL, which she joined in 1950, sponsored by YL friends in the USA. She started joining in their competitions in 1958 and has been three times winner of the World DX Hafer Award in 1964, 1969 and 1970, and having joined the YL ISSBers in 1963, has also won the World 1st place YL/OM Team Trophy.

The calls 3KS and 3XB are famous in the world of CW and most of their awards are in the CW field exclusively. Mavis is a member of the First-Class Operators' Club, having been nominated for membership in November 1966. When she and Ivor took a trip to England and the United States in 1974 they attended the FOC dinner held In England In October.

Amongst Mavis's certificates are those of the DX Century Club (having worked 254 countries), the DXCC QRP (power less than 100 watts), worked all States, all zones and all prefixes. Like Austine VK3YL, Mavis also holds the WAC (worked all countries) award.

Among Mavis's other interests are floral art, gardening, knitting and crocheting and, until they left home, looking after her three children. Now, as a change, she gets to see her five grandchildren from time to time.

Unfortnately, arthritis has limited Mavis's activity over recent years, and we wish her the best of luck with her current course of treatment.

Another YL who has been in the news lately was Vicki Edmonds VK3ZTC, who featured in a segment on amateur radio of "This Week Has Seven Days" on Channel 7 in early May. Congratulations to our LARA TV star. ■

20 YEARS AGO

Ron Fisher, VK3OM

JUNE 1958
Today we are looking forward to WARC 79; 20 years ago we were looking forward to the equally important 1959 Geneva ITU Conference. An appeal for funds to send our own representative was in full swing. Just one pound per amateur was all that was needed. The Editorial page of June 1958 Amateur Radio was of course devoted to this important point.

Just twenty years ago Hans Ruckert VK2AOU published his first article on a Triband Beam Antenna in AR magazine. Just to prove that there is nothing new under the sun, Hans produced an updated version in the April 1978 issue.

Amateur Television, part four, by Eric Cornelius VK6EC, discussed the design of power supplies for the equipment described to date.

Temperature Compensation in Transistorised Receivers. How to stop frequency drift in those new fangled transistor receivers. The author, Hans Albrecht, is now minus the VK3AHH call sign and resident in West Germany.

Blind Lad Passes Oral Examination. In other words, Ray Bedson VK3ZEB passed his limited licence. A photo showed him tuning the AR7 receiver. Ray is still on the air with the same call sign and just as enthusiastic as ever.

A reprint from CQ magazine, The Command Twins, a cheap all-band SSB receiver. In other words, an HF Command with a "Q-fiver" following.

Apparently the first wrist watch transmitter was built in 1958. A range of 1,000 yards was claimed. ■

DIVISIONAL NOTES

MODERN CONDENSED VERSION

VK2 DIVISIONAL NOTES

VK2 WICEN has recently arranged insurance coverage for its operators at both personal and operation levels. VK2 WICEN is accredited by both the State Emergency Services and the Police. Inquiries about VK2 WICEN or any other group should be directed to the section involved c/-14 Atchison Street, Crows Nest 2065.

The VK2 Division has undertaken the position of Federal Contest Manager from VK3. The Orange and District Amateur Radio Society will carry out the task.

The RTTY Section has its first AGM in early June. Interest has extended interstate. Inquiries via the Division. A weekly RTTY news bulletin of material as used in the VK2 voice broadcast may be received on 7 or 14 MHz on Sunday morning. There is a repeat on 3.5 MHz in the evening.

This year's South-West Zone Convention will be held October 7-8 at Wagga and an invitation is extended, as always, to interstate amateurs to attend. It will be the 26th annual event. ■

COMING EVENTS

GOLD COAST HAMFEST
The Gold Coast Radio Club are making preliminary bookings to be held on a country property on Saturday, 29th July, 1978.

In addition to the usual trade displays, radio station, Army stand, etc., the Club Is also catering for families with a wide range of side shows and for families with a wide range of sideshows and dancing (old time) until late evening.

Further details from Kev Ayers VK4KD, Hamfest Organiser, 121 Nerang Street, Southport, Old. 4215. ■

HAMADS

- Eight lines free to all WIA members. $9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Commercial advertising is excluded. Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

FOR SALE

Yaesu FR101 Rx, all bands, all modes, 160m through 2m and Yaesu FL101 Tx, 160m through 10m, $1,200; 10 element 6m beam, $50. VK6ET, QTHR. Ph. (06) 276 8928.

Admiralty B40 HF Rx, working, fair condition, original loctal valves, except audio. Offers to VK4APD, QTHR. Ph. (07) 397 3751 A.H.

Coax Cable Belden 6214, 250 ft. What offers? Collins 52245 XMTTR WWII with MG set 1.5-12 Hz. Free. Collins GO9 XMTTR 3.0-18.1 Hz. Complete — Free. VK2BSP. Ph. (02) 48 6624.

MFJ Super Antenna Tuner, 200W, 10-160m, perfect condition and really works, $60; also Micronta SWR and watt meter, separate meters, 10, 100 and 1000W, $35. Both items practically new. VK2BEK, QTHR. Ph. (02) 476 5096, evenings.

Yaesu FT75B Tcvr, FP75B-AC PS, DC75B-DC PS, FV50C VFO, 11 xtal freqs. and handbook, as new, $500. VK3JS, QTHR. Ph. (03) 551 1367.

Yaesu FT100B Tcvr., jumpy on 40m, otherwise GC, $250. Des Taylor VK3BBT. Ph. (03) 459 9991.

For 2.3 GHz Band: Melabs 3-port circulator with termination, $15; Narda directional coupler, $15; bandpass filter, $15; HP mod. 394 variable attenuator, 1-2.3 GHz, $25. VK1VP, QTHR.

TS520, in good condition, with original carton, manual and bits, with microphone and spare set of finals, $598. 18 AVT/WB ant., reasonable cond. with approx. 10m 52 ohm coax. plus connectors, $90. Must sell. VK2NBN/VK2ANB, QTHR. Ph. (02) 699 9403.

SSTV Monitor, similar to Robot 70A, fast/slow digital convertor, W0LMD with full, half, quarter frame, video invert and grey scale generator, Eumig fast scan camera with optical through the lens viewfinder, 3.3 x 200m, $500. Stan VK3BHZ, QTHR. Ph. (060) 71 7244.

Matched Pair 8950 Tubes, new, and suit Swan 700CX Tcvr., $16 the pr.; several VHF power tetrode tubes, type QQVO3-20A, each $8.50; other tubes, QVO4-7 at $2, 2E26 at $3, 5763 at $2; xtals B7G base types at $3 each; 7027-7, 7006, 8016.6, 10833, 14080, 14375, 15030, 32500, 34000, 44000, all in kHz; top grade M/C meters, 2½" 0-150V AC with cat. mark for 115V, $10; 2½" 0-8A DC with external shunt, $8; the above square escutcheons, the following with round escutcheons, 2½" 0-200uA DC, circular movement calib. 0-50-100-150-200uA, $15; 2" 5-0-5V DC circular movement calib. 5-4-2-0-2-4-5V, $12; microswitches DPDT, new at $3. VK2BFJ, QTHR. Ph. (043) 32 5758.

TH3 Mk 3 3-element Beam, 14 ft. boom, 20, 15, 10m, $150. Enquiries Ralph VK2XD, QTHR. Ph. (02) 651 1168.

Pye Overland FM706 Transceiver, hybrid, ch. 40, 50, R2, R8, 10W output, good clean unit with car cradle and handbook, $60; TCA 1675 unit, ch. 40, clean, $40. VK3ACM, QTHR. Ph. (057) 68 2260, evenings.

Collins KWM2 SSB Tcvr with Collins AC power supply, spkr, Collins Samsonite CC-1 carrying case with new Shure 404C mic., had very little use, excellent, as new condition, $1,695; also brand new Drake T4XC Tx with 160 and and 11m, factory installed, Drake AC4 power supply, Drake R4C Rx with Drake noise blanker, Drake filters, extra receive xtls, including 160 and 11m, full international shortwave and marine band, WWV, all Drake factory installed, new Shure 404C mic. included, $1,795; also used Hygain TH6 Yagi with owner's manual and Hygain BN66 balun, $75. James Goodger VK2JO. Ph. (02) 36 7756.

Pye Cambridge 2m FM Carphone with *mic. and* manual, $35; 1676 low band AM carphone with manual, $30; Heathkit HW-32A, 20m mono band transceiver mic. and manual only. Best offer. Coils for 80 and 40m also included. FT-DX-401 transceiver with noise blanker and speech processor, good cond., $385 or best offer. VK3AQD, QTHR.

Yaesu FRG7 Rx, $220; BWD CRO 539C with probes, $450; RF oscillator Tech TE20D, $45; multi-band portable Rx, $30; Lenco L84 auto turntable, $150; C42 Rx/Tx (no power supply), $15. Eltham. Ph. (03) 439 1527 A.H.

Set of Asahi Mobile Antenna 80 to 10, complete with bumper mount, etc., $80; matching balun for same, $15; Waters com. preamp, $20; Shure 444 microphone, little used, $35. VK3TG, QTHR. Ph. (058) 52 1636.

Multi 7 2m Transceiver, 40, 50, R1, R2, R3, R4, R5, R6, R7, R8, $170; Lafayette HA-600A communication receiver with external speaker, $160. Both mint condition. VK2BOD. Ph. (02) 727 3272.

Yaesu FL2100B, 2-y-o, new 572Bs, excellent cond., 400W PEP on all bands 80-10, $400 or close offer; Eimac 4/125 Tetrode, suit HF or VHF PA, new with socket, $20; AWA BS50D with two wire working RC1-A remote control and two channel facilities, ch. 7, 4, 8 supplied, $100, ONO; spare 6/40, 6146B and 572B vales, new and used, offers? Contact VK3QT, QTHR. Ph. (055) 72 3166, Bus.

Cleaning Out Shack — New 100PF Johnson Tx cap., $5 ea.; AWA 25m 25W lo-band PA and exciter boards (data available), $40; Collins mech. filter, 455 kHz, $30; power transformers. Send s.a.e. lor full list. Mark Webster VK2BAK, QTHR. Ph. (02) 48 6241.

Hammerlund HQ170 Rx, 1.8 to 54 MHz, $200; HX500 Tx, $200; or $300 pair; Hallicrafter HT32 Tx, 240V, requires 110V for fan, $100; SX115 Rx, 110V transformer supplied, $200; or $250 pair; AVO multimeter EA113, $100; AVO model 7, $25; "Micronta" transistor tester, $20; Pat Ashby. Ph. (02) 57 5033, VK2AJ, QTHR. Ph. (02) 579 5718.

Europa-B 2m Transverter, 200W PEP output, with spare tubes, only ½ hours use. VK2AJT, QTHR. Ph. (044) 26111 (Bus.), (044) 22786 (A.H.).

Estate Late VK2OW. FL2100B linear in mint cond., with manual, less than 10 hours use, for quick sale, $400. VK2QL, QTHR. Ph. (02) 76 6861.

ICOM IC22A *2m* Transceiver, repeaters 2 to 8, simplex 40, 50, 51, mobile bracket and mic., good cond., $150. VK2BAD, QTHR. Ph. (02) 72 1107.

Yaesu FT101B, excellent cond., with instruction book and mic., $500. Reg Jones VK2AGP, QTHR.

FT301D and matching power supply, $1,000; FV301, remote VFO, $125. All units as new. VK3TG, QTHR. Ph. (058) 52 1636.

Hygain 2 Element Quad, 10-15-20m, almost new, with a 25 foot triangular steel tower, has built-in facility for extending higher, $250. Ph. (03) 598 9298.

Galvanised Tower with all hardware, crank-up, guyed 70 ft. up 25 ft. down, shifting QTH, $250; or will swap for Emotator 502CXX rotator or similar medium to heavy duty rotator in working condition. Contact G. Stevens VK3ZSQ, QTHR, or C/- Radio 3SR Shepparton for details. Ph. (058) 21 4477 (Bus.).

FTDX100, good condition, AC/DC, complete, $375, ONO. VK3ADW, QTHR.

Hewlett-Packard 355C and 355D, variable attenuators, DC to 1 GHz, as new, $110 for both; Ham-II rotator, brand new, $160. VK1VP, QTHR. Ph. (062) 48 5882, A.H.

KW77 Rx, covers amateur bands 160-10m, Crowncorder CTR 5400 battery operated 5 In. reel to reel portable recorder, Telefunken Magnetophon 204 stereo 7 in. reel to reel recorder, all in good condition. Offers to 1306 Glenhuntly Road, Glenhuntly, Vic. 3163.

Yaesu FT101E Transceiver, current model, with spare set of 3 new valves, $750; Yaesu FV101B, external VFO, $110; Yaesu YC610, digital display, $210. All equipment "mint" condition. VK3SB, QTHR. Ph. (03) 550 3521.

W2AU Balun, new, in original package. Ken product RF speech processor, Model KP-12A. Used less than ten hours. Roth Jones, VK3BG, 23 Gaudion Rd., Doncaster East 3109.

Yaesu FT301D Transceiver, complete with matching deluxe FP301D power supply, one month old. Cost $1,440, sell $1,200, ONO. P. Drady VK2NIE, Gillard's Rd., Lower Bucca 2493. Ph. (066) 54 3206.

10m Transceiver, ex CB, 23 ch., 12W PEP, 240V AC/12V DC, with built in SWR meter, $160; also Midland 13-892 24 ch. 12V DC only, $140. Ian VK3NCY, Box 322, Mentone, 3194.

Asahi, 14 MHz, 3 el., full sized beam, 18 ft. *boom,* gamma match (no balun required), 25 dB front/back ratio, VSWR 1.5 : 1 or better, unused, complete with carton and instructions, $155; 3 el., 14 MHz mini-beam (Zygi beam as per Radio Communications), good performer for restricted space or light weight rotator, $65. VK3ARZ, QTHR. Ph. (03) 232 9492.

Yaesu FLDX2000 Linear, 1200W PEP, excellent condition, $225. VK3CR, QTHR. Ph. (03) 772 4039.

Standard SR-C145B 2m FM 5 ch. Hand-held Tcvr., with nicad batts., AC charger and stand, ext. mic., case, English manual, $145. VK6PY, QTHR. Ph. (09) 271 7192.

Tentec S44 Triton IV, Includes noise blanker, CW filter, special electro-voice microphone and AC power supply, DC 25 amp circuit breaker fitted, $1,300. New Feb. 1978. VK5ZJP/VK5NJP, QTHR (now VK5XT). Ph. (08) 31 1638.

WANTED

Self-supporting Telescopic Tilt-over Tower, to 35 ft extended, if fitted with heavy duty rotator will purchase that as well. Will pay top price for the right tower. Sufficient dismantling by the seller will be required to facilitate shipping to my QTH. VK2BFJ, QTHR. Ph. (043) 32 5758.

Anyone going solid state? Crystals for AWA MR6A on 2m FM wanted, channels R3, 4, 5, 6, 7, 8, 40, 49, 50, 51, 52, V. David VK3ZDT. Ph. (03) 439 9649.

FT101B or similar, suit Novice, Rx covering amateur bands, rotator for small beam, freq. meter 3-30 MHz. Details to VK3NIL, 54 Spruhan Ave., Norlane 3214.

Any Amateur Radio Gear in any shape or form for the Royal Melbourne Institute of Technology's Amateur Radio Society, VK3MT. We have no gear and would like to get back on the air and have some nets with other school societies and amateur stations. Bruce Kendall VK3ZDM, QTHR. Ph. (03) 741 2382.

Help from Six Metre Operators to buy Yaesu FTV650B to send to VR4DX. Seven already in on the scheme (VK3OT, 3AMK, 3AKK, 3BID, 3ZZK, 6BV, 8GB), 13 more required. Aim is to have a 6m rig to loan for DX purposes to any worthy cause. You will have a say in its use and get the new country on six. Contact VK3OT, VK3AKK or VK3AMK if you wish to help.

FT200 Transceiver, complete with PS mike, manual and in good order. VK2AFP, QTHR. Ph. (066) 85 6217.

IC202, reasonable cond. VK5ZAT. Ph. (08) 277 6441 A.H.

FV400, ext. VFO or circuit diagram, to buy or borrow. For copying. VK3LP, QTHR.

FP75B or suitable HT transformer for same. VK4NAX, 23 Drummer St., Toolooa Est., Gladstone 4680.

SILENT KEYS

It is with deep regret that we record the passing of —

Mr. E. B. WHITE, M.B.E.	VK2HA
Mr. R. EDELSTON-POPE	VK3ARP
Mr. R. D. R. TRACY	VK3ART
Mr. M. BROWN	VK2OR

RICHARD EDELSTON-POPE VK3ARP

Many members will be saddened to learn that Dick Pope finally succumbed to a long-standing heart condition on 17th April, 1978. His cheery personality and wise counsel will be missed by very many amateurs, both *locally* and around the world.

Dick was brought up in Sydney, where he was actively interested in ham radio well before the Second World War. He obtained a Diploma of Commerce from Sydney and, during the war years, he served In the Royal Navy, first in the North Atlantic and then in command of a group of naval vessels engaged in escort and mine-sweeping duties in the Mediterranean Sea. He was awarded a DSC for his services before and during each of the Allied landings In Italy and South France and became known as "D-Day Dick"!

In 1946 he came to Melbourne to take a leading part in the setting up of TAA, becoming Director of Finance and Administration.

Dick took out his ham licence in 1950 and quickly made *many firm friends.* He was very active on construction work and for a time was Acting Treasurer of the WIA Victorian Division. He was, incidentally, very active as a worker for the Legacy movement.

Our sympathy goes out to his wife, Isobelle, and his family.

Very many of us have lost a very good friend.

Alan H. Reid VK3AHR.

Matching VFO and Speaker Unit lor Uniden 2020. Write details J. Moyle VK4ZT, QTHR.

Ham It, complete with indicator and control cable. VK3AMC, QTHR. Ph. (03) 92 9036.

Kenwood TS-520S in good working condition, 1-2 years old, also components suitable for linear ceramic capacitors .001 up, 5 kV x 2; variable capacitors (1), 10 pF-300pF (2), 1000 pF, both HV spacing and large capacitors suitable for power supply (2 x 8 mF), 7.5 kV. Details and dimensions to VK4ABS, QTHR. Ph. (07) 351 3298.

Has anyone and old faulty 80m Resonator Coil from an 18 AVT/WB they would let me have urgently? Also wanted 30L1 linear, any cond., even faulty, but complete. VK4LN, QTHR. Ph. (071) 82 2675.

EXCHANGE

Exchange Atlas 215 for an **Atlas 210.** My Atlas 215 is about 2 years old and is in first class cond. VK4XT, QTHR. Ph. (074) 62 2389.

TRADE HAMADS

For a very long time commercial advertising has not been accepted in AR Hamads, but as the result of discussions at the 1978 Federal Convention a decision was made to open up a "Hamads-Trada" section. The rate will be $10 for 4 lines plus $2 per line (or part thereof), minimum charge $10, prepayable. Copy is required by the first day of the month preceding publication. This will mean that in future 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 re-sold for merchandising purposes. ■

VICOM WON'T SELL YOU A RIG IN A FACTORY-SEALED CARTON !

When you purchase your ICOM, YAESU and KENWOOD product from VICOM, please don't expect to receive it in a factory-sealed carton. When we despatch any of these fine pieces of equipment to you we want to be certain it meets or exceeds the manufacturer's specs. We thoroughly predelivery check all transceivers before shipment and back this up with our VICOM 90 day warranty.

If getting a super discount from a backyard "bootlegger" show is important to you – or if you insist on a factory sealed carton from a supermarket, we suggest you shop elsewhere.

But if you want the positive assurance that you are receiving the value and performance you're entitled to plus ethical business conduct – then VICOM is the supplier for you!

accessories

MORSE KEYS

HK702 deluxe Key with marble base	$35.00
HK708 economy Key	$19.00
HK706 operators Key	$20.00
MK701 manipulator (side-swiper)	$38.00
EK103W electronic Kever	$159.00

CONVERTERS

144MHz, uses 28MHz IF	$69.00
432 MHz, uses 28MHz IF	$59.00
1296 MHz, uses 28MHz IF	$65.00

2m LINEAR

QM70 high power, 70w pep max, 2 metres	$129.00

LOW PASS FILTERS

FD30DM 32MHz Fc, 1 Kw max, 3 stages	$30.00
FD30LS 32MHz Fc, 200w max, 3 stages	$20.00

SWR/PWH METERS

VC2 twin meter, 3-150MHz	$34.00
Oskerblock SWR200, 2-200MHz	$75.00
SW410A 140-500 MHz, quality	$99.00
SW210A 1.8-150 MHz 20/120W direct reading	$79.00
SWX-77 professional 1.8-30MHz	$125.00

MICROPHONES

VM-1 noise-cancelling, dynamic, low Z	$8.90
VM-2 desk mic, dynamic with preamp, low Z	$29.80

BALUNS

AS-BL for beams	$31.00
BL50A 50 ohm 4Kw model, for dipoles	$25.00
BL70A 70 ohm 4Kw model, for dipoles	$26.00

antennas

TRAP VERTICALS

V4JR Nagara 40-10m, 5.2m high, no guys	$95.00
V5JR Nagara 80-10m, 6.7m high, no guys	$129.00
14AVQ/WB Hy-Gain 40 thru 10m	$109.00
18AVT/WB Hy-Gain 80 thru 10m	$149.00

hy-gain® Amateur Radio Systems.

NEW SHIPMENT
HF BEAM ANTENNAS

TH6DXX Hy-Gain Thunderbird 10/15/20	$355.00
TH3JR Hy-Gain 10/15/20 3el	$209.00
TH3MK3 Hy-Gain 10/15/20 3el	$279.00
203BA Hy-Gain 3el monobander, 20m	$199.00
204BA Hy-Gain 4el monobander, 20m	$259.00

5Y/2m Jaybeam, 7.8d8d, Length 1.6m, 5el	$35.00
8Y/2m Jaybeam, 9.5dBd, Length 2.8m, 8el	$45.00
10Y/2m Jaybeam 11.4dBd, Length 4.4m, 10el	$77.00
10XY/2m Jaybeam Xyagi, 11.3dBd, 10el	$89.00
AS210BW Asahi twin 10el, 18dB gain	$119.00

HF MOBILE ANTENNAS

MOBILE WHIPS

HUSTLER

RM10, 10m Resonator	$16.00
RM15, 15m Resonator	$16.00
RM20, 20m Resonator	$16.00
RM40, 40m Resonator	$20.50
RM80, 80m Resonator	$22.00
MO2 fold-over mast	$29.00
BM-1 bumper mount	$24.00

MARK HELICALS

HW40, 40m top loaded	$30.00
HW20, 20m top loaded	$30.00

2m ANTENNAS

The **RINGO RANGER ARX-2** is a 2M gain omni-directional antenna with three half-waves in phase and a one-eight wave matching stub. The Ringo Ranger gives an extremely low angle of radiation for better signal coverage. It is tunable over a broad frequency range and perfectly matched to 52 ohm coax. Price $49.

RINGO

4dB gain with reference to half-wave dipole.
6dB gain with reference to quarter-wave whip.

Lindenow 2m mobile whip	$35.00
Scalar ¼ wave whip, 2 metres	$6.50
Scalar 5/8 wave whip, 2 metres	$16.70
Magnetic base KLMG	$19.00

70cm BEAMS

80/70cm Jaybeam, 88el, 18.5dBd gain	$99.00
48/70cm Jaybeam, 48el, 15.7dBd gain	$76.00
PBM18/70cm Jaybeam 14.9dBd gain, 18el	$69.00
D8/70cm Jaybeam twin 8el, 12.3 dBd gain	$89.00
PBA1200 Daiwa Parabolic dish, also 1.2GHz	$349.00

TRAP DIPOLES

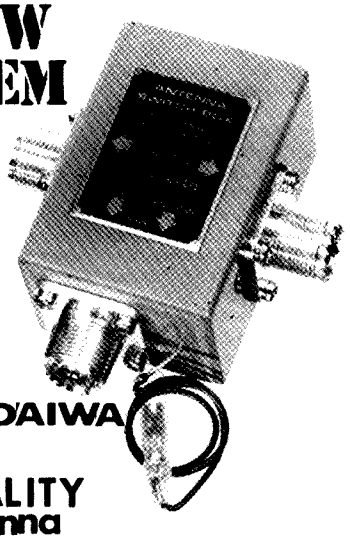
Midy VN 80-10m trap dipole	$99.00
AL48DXN 40 and 80m trap dipole	$59.00

DIPOLES

A4VPN 40m dipole kit	$29.00

Midy-V N

NEW ITEM



DAIWA

QUALITY antenna change-over relay

Two new models

Model CX-2L
Frequency Range: 1.8 thru 170 MHz
Power Rating: 100w pep
Power Reqd: dc 10-15V
Price: $45

Model CX-2H
Frequency Range: 1.8 thru 450 MHz
Power Rating: 200w pep
Power Reqd.: dc 10-15V
Price: $59.

KENWOOD

TS820S HF transceiver, digital	$1172.00
TS520S HG transceiver 160-10m	$747.00
TV506 6m transverter	$249.00
TR7400 2m digital mobile transceiver	$483.00
TR7500 2m mobile synthesised transceiver	$399.00
MC50 desk mic.	$58.00
MC10 ptt hand mic.	$16.00
AT200 matching antenna tuner	$169.00
SP820 matching speaker for TS820s	$58.00

YAESU

FT101E transceiver, 160 thru 10m	$899.00
FL2100B HF linear amplifier	$578.00
FRG7 Communications Receiver	$349.00
FT7 HF mobile transceiver	$569.00
FT901DM HF transceiver	$1 75.00
YO301 Monitorscope	$349.00

ICOM

STATE OF THE ART

PORTABLES AND ACCESSORIES

IC202E 2m ssb portable	$219.00
IC502 6m ssb portable	$219.00
IC215 2m fm portable	$219.00
BC20 nicad pack with Charger	$57.00
ICSM2 desk mic.	$54.00
IC5OL 6m linear, 10w out	$98.00
IC2OL 2m linear, 10w out	$98.00
mobile brackets for portables	$17.00

2m TRANSCEIVERS

IC245 2m fm digital mobile	$450.00
IC211 2m all mode transceiver	$750.00
IC22$ 2m fm mobile	$299.00

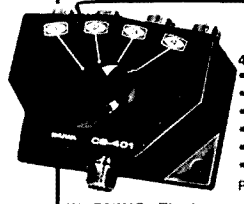
90-DAY WARRANTY ON ALL NEW PRODUCTS

SPECIAL

VOX-3 VOX attachment for TS700A transceiver	$20.00

PROCESSORS and COMPRESSORS

MC330 audio mic compressor	$71
RF440 rf processor, ac/dc	$119
RF550 rf processor with crystal filter	$159



QUALITY DAIWA

4 position quality coax switch
- frequency range up to 500MHz
- high isolation, unused outlets grounded
- insertion loss better than 0.2dB
- impedance 50 ohms
- contact resistance 20m ohm
- commercial quality

Price: $49.90

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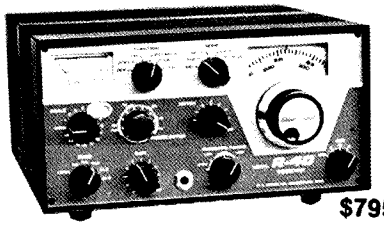


$795

Drake R-4C

Solid State Linear permeability-tuned VFO with 1 kHz dial divisions. Gear driven dual circular dials. High mechanical, electrical and temperature stability.

Covers ham bands with crystals furnished. Covers all of 80, 40, 20 and 15 meters, and 28.5-29.0 MHz of 10 meters.

Covers 160 meters with accessory crystal. In addition to the ham bands, tunes any fifteen 500 kHz ranges between 1.5 and 30 MHz, 5.0 to 6.0 MHz not recommended. Can be used for MARS, WWV, CB, Marine and Shortwave broadcasts.

Superior selectivity: 2.4 kHz 8-pole filter provided in ssb positions. 8.0 kHz, 6 pole selectivity for a-m. Optional 8-pole filters of .25, .5, 1.5 and 6.0 kHz bandwidths available.

Tunable notch filter attenuates carriers within passband.

Smooth and precise passband tuning.

Transceive capability; may be used to transceive with the T-4X, T-4XB or T-4XC Transmitters. Illuminated dial shows which PTO is in use.

Usb, lsb, a-m and cw on all bands.

Agc with fast attack and two release times for ssb and a-m or fast release for break-in cw. Agc also may be switched off.

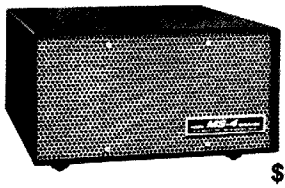
New high efficiency accessory noise blanker that operates in all modes.

Crystal lattice filter in first i-f prevents cross-modulation and desensitization due to strong adjacent channel signals.

Excellent overload and intermodulation characteristics.

25 kHz Calibrator permits working closer to band edges and segments.

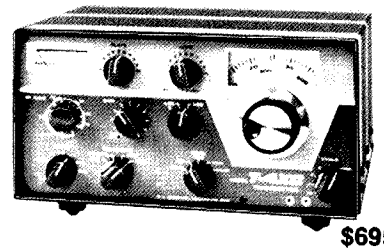
Scratch resistant epoxy paint finish.



$47

Drake MS-4

Drake MS-4 Matching Speaker for use with R-4, R-4A, R-4B and R-4C Receivers. (Has space to house AC-3 and AC-4 Power Supplies).



$695

Drake T-4XC

Solid State Linear permeability-tuned VFO with 1 kHz dial divisions. Gear driven dual circular dials. High mechanical, electrical and temperature stability.

Covers ham bands with crystals furnished. Covers all of 80, 40, 20 and 15 meters, and 28.5-29.0 MHz of 10 meters.

Covers 160 meters with accessory crystal. Four 500 kHz ranges in addition to the ham bands plus one fixed-frequency range can be switch-selected from the front panel.

Two 8-pole crystal lattice filters for sideband selection.

Transceives with the R-4, R-4A, R-4B, R-4C and SPR-4 Receivers. Switch on the T-4XC selects frequency control by receiver or transmitter PTO or independently. Illuminated dial shows which PTO is in use.

Usb, lsb, a-m and cw on all bands.

Controlled-carrier modulation for a-m is compatible with ssb linear amplifiers.

Automatic transmit-receive switching. Separate VOX time-delay adjustments for phone and cw. VOX gain is independent of microphone gain.

Choice of VOX or PTT. VOX can be disabled by front panel switch.

Adjustable pi network output.

Transmitting agc prevents flat-topping.

Meter reads relative output or plate current with switch on load control.

Built-in cw sidetone.

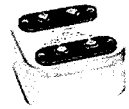
Spotting function for easy zero-beating.

Easily adaptable to RTTY, either fsk or afsk.

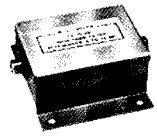
Compact size; rugged construction. Scratch resistant epoxy paint finish.

High Pass Filters for TV Sets

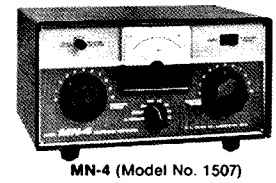
provide more than 40 dB attenuation at 52 MHz and lower. Protect the TV set from amateur transmitters 6-160 meters.



Drake TV-300-HP
For 300 ohm twin lead **$13**

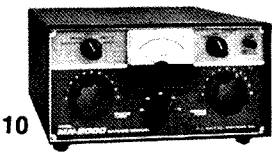


Drake TV-75-HP
For 75 ohm TV coaxial cable; TV type connectors installed **$17**



$165

MN-4 (Model No. 1507)



$310

MN-2000 (Model No. 1509)

Drake MN-4 & MN-2000 Matching Networks

• **Integral Wattmeter** reads forward power in watts and VSWR directly; can be calibrated to read reflected power • **Matches** 50 ohm transmitter output to coax antenna feedline with VSWR of at least 5:1 • **Covers** ham bands 80 thru 10 meters • **Switches** in or out with front panel switch • **Size:** 5½"H, 10¾"W, 8"D (14.0 x 27.3 x 20.3 cm), MN-2000, 14⅜"D (36.5 cm). • **Continuous Duty Output:** MN-4, 200 watts; MN-2000, 1000 watts (2000 watts PEP) • **MN-2000 only:** Up to 3 antenna connectors selected by front panel switch.

T-VI Filters

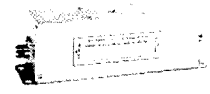
Low Pass Filters for Transmitters

have four pi sections for sharp cut off below channel 2, and to attenuate transmitter harmonics falling in any TV channel and fm band. 52 ohm. SO-239 connectors built in.

Drake TV-3300-LP

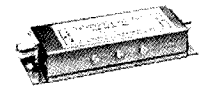
1000 watts max. below 30 MHz. Attenuation better than 80 dB above 41 MHz. Helps TV i-f interference, as well as TV front-end problems. **$32**

Drake TV-5200-LP



200 watts to 52 MHz. Ideal for six meters. For operation below six meters, use TV-3300-LP or TV-42-LR **$32**

Drake TV-42-LP



is a four section filter designed with 43.2 MHz cut-off and extremely high attenuation in all TV channels for transmitters operating at 30 MHz and lower. Rated 100 watts input.

$19

Prices shown include Tax

Write, 'phone or call for technical information.

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Instruments Pty. Ltd.

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Perth: 25-3144.

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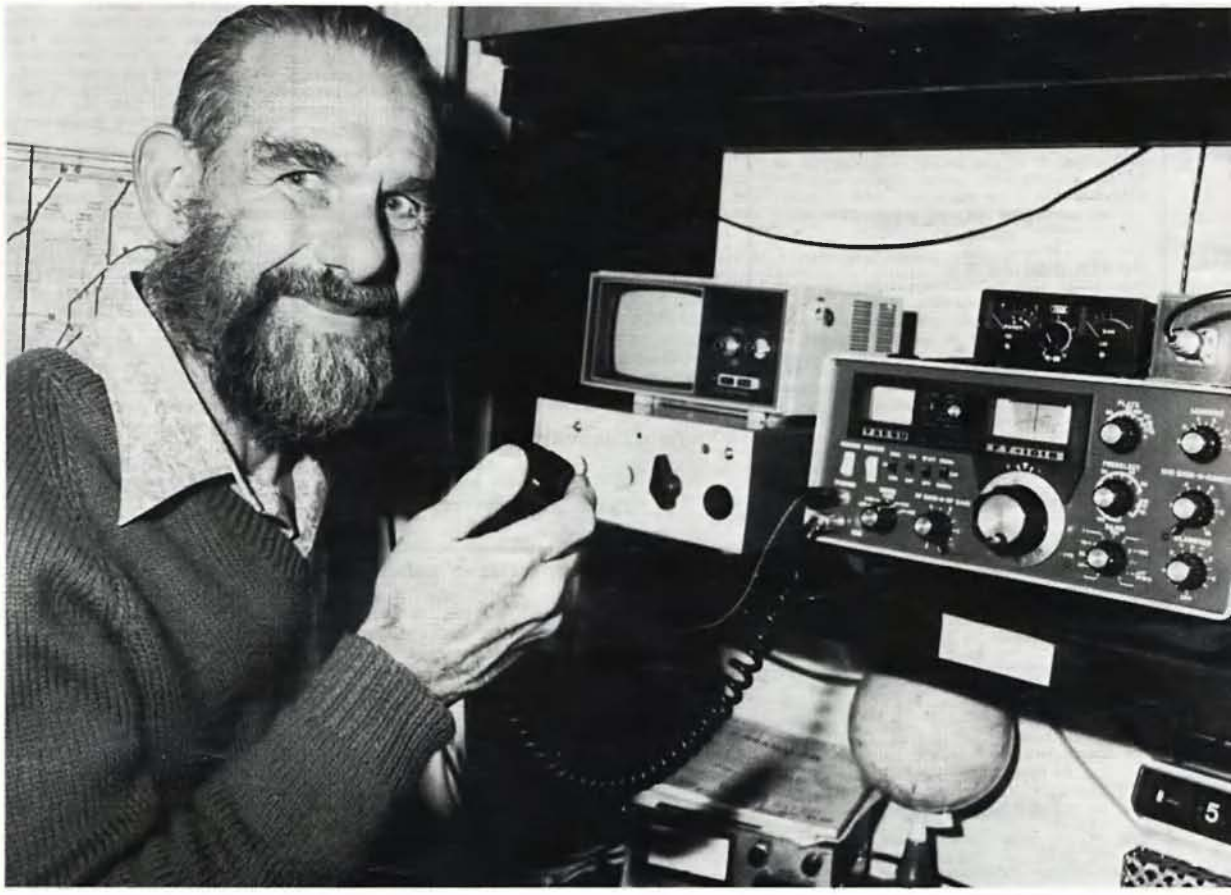

VOL. 46, No. 7 JULY 1978

CONTENTS

COVER PHOTO

Roy Hartkopf VK3AOH shows us part of his shack. Roy is editor of the YRS publication "Zero Beat" and a current VK4 Division Councillor.

See Roy's article "An 80 Channel Synthesiser" on page 7.

Photo by Reg Goudge.

HAM RADIO SUPPLIERS

323 ELIZABETH STREET, MELBOURNE, VIC., 3000

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Our Disposals Store at 104 HIGHETT ST., RICHMOND (Phone 42-8136) is open Mondays to Fridays, 9.00 a.m. to 5.00 p.m., and on Saturdays to midday.

WALKIE TALKIE

SPECIFICATIONS:
TRANSMITTER — Frequency: in 27 MC citizen band, 27240. Final input power: 100 mW (max.). Communication Mod.: (AM) balanced mod. Oscillator: Crystal controlled. Antenna: Vertical type, telescopic antenna, 37" fully extended.
RECEIVER: Receiving System: Crystal controlled superheterodyne system. Sensitivity: S/N 10 dB or better at 10 uV 5 mW output. Selectivity: Thermistor: D-32S. Power Supply: 006p 9V. Dimensions: H — 17.6 cm, W — 6.5 cm, D — 4.4 cm. Weight: 500g.
PMG approved.

PRICE $58.90 PAIR
Postage $2.40

POWER-SWR METER

This is an in-line and SWR meter for ham radio and CB radio. This power meter indicates the output power of your transmitter and SWR meter reads the ratio of travelling power to your antenna and reflected back from antenna. Compact and inclined front design meet any radio operation desk.
SPECIFICATIONS — Range measured: Power meter 0-10, 100 watts, 2 ranges VSWR 1:1 — 1:3. Freq. response: 3-150 MHz. Impedance: 50 ohm. Dimensions: 70 x 98 x 100 mm. Weight: 900g.

PRICE $38.90
Postage $2.40

PL-259 Plug W/Reducer	$1.50
PL-259 Plug W/O Reducer $1.80 (Adaptors 65c)	
SO-239 Chassis Socket	$1 50
Right-Angle Joiner	$2 75
"T" Connection	$3.50
PL-259 to R C.A. Adaptor	$2.75
Coax Joiner, female to female, male to male	$2.75
BNC Plugs	$1 95
BNC Sockets	$1 75
Belling Lee Plugs	75c
Belling Lee Sockets	50c
Belling Lee Joiner	85c
100 Meters Roll Hook-Up Wire	$4.50

All above items plus postage

YAESU FRG-7

THE RADIO FOR WORLD-WIDE LISTENING AT ITS BEST — 0.5-29.9 MHz COVERAGE SYNTHESIZED COMMUNICATION RECEIVER

The model FRG-7 is a precision built high performance communication receiver designed to cover the band from 0.5-29.9 MHz. Its state of the art technology offers an unprecedented level of versatility. The Wad ey Loop System (drift cancellation circuit) coupled with a triple conversion super heterodyne system guarantees an extremely high sensitivity and excellent stability. It provides complete satisfaction to amateurs as well as BCLs with superb performance and many features such as RF attenuator, selectable tone, and automatic noise suppression circuit

$348.00

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SINGLE CORE OUTSIDE SHIELDED CABLE 7/.0076, 100 yard rolls
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OMRON RELAY MK 3 DC 35 volts, 3 amp rating, 3 pole changeover. To operate on 220 volts DC or 110 volts DC Series Resistor 6.83 watts
$5.00 each

NEW MAGNAVOX 53TS SPEAKERS
5" x 3" 8ohm, ideal for small extension speaker for communications equipment.
$1.95 each plus P&P

CRYSTALS FOR CITIZENS RADIO

Channel No.	Freq. MHz	Channel No.	Freq. MHz
1	27.015	11	27.135
2	27.025	12	27.155
3	27.035	13	27.165
4	27.055	14	27.175
5	27.065	15	27.185
6	27.085	16	27.195
7	27.095	17	27.205
8	27.105	18	27.225
9	27.115	19	27.880
10	27.125	20	27.240

$7.50 PAIR — Postage 25c

CRYSTALS MADE TO ORDER
$9.50 — Postage 25c

HANSEN SWR6

POWER METER & FIELD STRENGTH INDICATOR

Handy for checking transmitter operation. Uses bridge method for SWR measurements. Simple and accurate operation. CM method employed for RF power measurement.

PRICE $22.00
Postage $1.80

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2 STN INTERCOM and battery 9V $12.90
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PLUG-IN POWER SUPPLY
Plugs directly into 240 volt mains supply power sockets and provides 12 volt 1 amp smoothed DC for powering low voltage and battery operated equipment — Transceivers, cassette recorders, cartridge players, burglar alarms, electric models and toys, car radios, etc. 12 Volt 1 amp SEC approved, double insulated, overload protected.

PRICE $16.90
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We also have a large range of **ELECTRONIC DISPOSALS EQUIPMENT**, including **TRANSFORMERS, CABLE, TEST EQUIPMENT, TRANSMITTERS, METERS**, etc.

You are invited to call in and inspect. **NO PARKING PROBLEMS A 104 HIGHETT STREET RICHMOND. Phone 42 8136.**

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KEMTRONIC SSB1000

SSB/AM TRANSCEIVER
27 MHz CITIZENS RADIO SERVICE
The SSB 1000 embodies the latest in high frequency transceiver design techniques. It is designed to operate on either AM, USB or LSB. It is capable of transmitting and receiving on a total of 54 channels (18 AM, 18 USB, 18 LSB). The 18 channels are in accordance with the P&T Dept conditions for operation of the Citizens Radio Service.

NETT PRICE $220.00
Registered Post — $4.00

TRADIPER MODEL TE-15

The Model TE-15 Transistorised Grid Dip Meter is a very accurate Instrument operating from a 9 volt battery power supply. Six plug-in coils are supplied with each unit, covering the frequency range of 360 kHz to 240 MHz.
The Model TE-15 can be used for a number of useful purposes. With the most common use as a Grid Dip Meter, can also be employed as a relative field strength meter. It is ruggedly constructed and very light in weight. Because of transistorised circuit employed there is no need for an AC power supply as used in many other models. The Model TE-15 will certainly prove invaluable to radio amateurs.

PRICE $65.00
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ARLEC PLUG-IN BATTERY CHARGER

Delivers 1 amp output at 12 volts. Designed to run continuously over long periods, will maintain a fully charged battery in peak condition or recharge flat battery. Double insulated for max. safety, electrically protected by fully automatic circuit breaker. No mains leads to get tangled, plugs directly into power socket. Comes with 3 metre battery leads fitted with clips. For use on 240V, 50 Hz supply.

PRICE $14.90
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SPECIAL

9" x 6" SPEAKERS — brand new in cartons — 4 ohm impedance — ideal for car cassettes, radios, etc.
PRICE $4 00 EACH — Postage $1.00
10 FOR $3.00 — BULK BUY

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amateur radio

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JUNE 1978
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QSP — RADIO ACTIVITY DOWN UNDER

At one time, the Antipodes was tha end of the earth — a place where only the unwanted were sent — as for the west — well, did it exist? and if it did, it was likely that not much happened there anyway!

Some would argue that a similar situation exists even today. As far as amateur radio is concerned, they are wrong, for things are happening in the Antipodes and the rest of the amateur world is "reading the mail".

The last few years have seen a notable increase in activity in our higher amateur bands, in some cases culminating in a number of world records being smashed.

Out west, on 25th January, 1977, VK6WG and VK5QR exchanged signal reports on 1296 MHz to establish a new world record over a distance of 1855 km. Not resting on their laurels, the same team then proceeded to establish, about 12 months later, yet another world record, this time on 2305 MHz on 17th February, 1978.

Australia is also claiming a world record for the 432 MHz band. The contact between VK6XY and VK3ZQV on 22nd February, 1978, being over a 2593 km path.

The 432 MHz EME contact between VK2AMW and G3LTF on 30th February, 1974, is also claimed as a world 70 cm EME record.

More recently VK8GB worked JH6TEW on 144 MHz, contact for which the JARL is rewarding VK8GB with a suitable memento of this first VK-JA 2m QSO.

News has also reached us (although unconfirmed at this stage) that a substantial distance (over 160 km) has been achieved in VK4 on 10,000 MHz.

Amateur radio is certainly alive and well down under. Activity is generally at an all time high in most of our share of the Spectrum from the Novice Segments of 80m to ATV and SSB on 23 cm.

Peter Wolfenden VK3ZPA/NIB, WIA Federal Vice-President. ■

(Before a contact can be listed as an Australian (or world) record, a claim must be made in writing to the Federal Office of the WIA. All claims are processed by the VHF Advisory Committee in conjunction with an independent invigilator.—Ed.)

QSP

JOTA
In his report on 20th JOTA in October 1977 the Scout Association National Organiser, VK4ZNI, writes: "As has been the case over the past 20 years, the amateur radio operators have been magnificent in their generosity in making available their time and their equipment to help Scouts and Guides enjoy the full pleasure and excitement of this annual international Scouting activity. I sometimes wonder if many Groups realize how deeply indebted we are to the members of this fine organization for thier splendid efforts. Becoming more popular are the Area and District participants with the wonderful assistance of local amateur radio clubs who regard it as a challenge to set up a fully operational amateur radio station in the portable mode and do it to perfection. It is pleasing to see that so many members of these clubs remain to enjoy the week-end camping with the Districts they assist.

WPX 10 METRE RECORD BROKEN
In the recent WPX world-wide contest, Steve VK3OT broke the standing world record on ten metres for a single operator single band station, set by a KH6 in 1970. He was 1.02 million at 230 prefixes and Steve's score in February was 1.5 million at 296 prefixes for the 30 hours. He had 1750 QSOs.

GOLD COAST HAMFEST 1978
Will take place at Mudgeeraba, four miles inland from Surfers Paradise, from 11.00 to 23.00h on 29th July. Check on Gold Coast Repeater Ch. 42 for directions.

RECORDS
"On Saturday, March 4th, George Luxon VK5RX accomapnied by his charming wife were guests of honour at a small dinner attended by Divisional Councillors and wives. George has been QSL manager of the Division for 47 years." — April 1978 SAWA Journal.

CALL SIGN PREFIXES
According to May 1978 Radio Communication the ITU has provisionally allocated J4A-J4Z to Greece and J5A-J5Z to the Republic of Guinea-Bissau.

SPECIAL EVENT STATION
For those who like collecting cards from special events station operations try GB3TCF on 26th-27th August, 1978, on HF bands as well as SSTV and RTTY (by request). It will also be on Monday, 28th August, for a short period. The station will be operated from the National Town and Country Festival in the Royal Showground at Stoneleigh near Coventry. QSL Manager G4GJL, 58 Witherford Croft, Solihull, Wares, UK.

DX RECORDS — RHF
Ham Radio April 1978 reports KP4EOR worked LU8DIN on 2 metres for a distance record of 6300 km (3940 miles). YV5ZZ has heard LU3AAT on 432.1 MHz but no contact resulted. The distance in this case would be about 5000 km. The date would be about mid-February.

PREFIXES — USA PACIFIC AREA
Ham Radio April 1978 reports KH1 to KH0 are the new prefixes for US Pacific Islands but in some places which are not FCC administered, such as KC6 and KX6, there might not be any changes. KP1 to KP0 will identify Caribbean areas.

IMPORTS
"Amateurs are advised that the importation of certain VHF transceivers previously prohibited because of an equivalent set being made in New Zealand no longer applies. The importation of all types of amateur equipment is now available to all licensed amateur operators." — Break-In, March 1976.

GRAPEVINE
Heard P. and T. in VK3 have to fix their morse machine so they can send proper morse in the exam. Are their faces red? ■

WIRELESS INSTITUTE OF AUSTRALIA

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Federal Council:
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Executive Office: P.O. Box 150, Toorak, Vic., 3142. 2/517 Toorak Rd., Toorak, Ph. (03) 24 8652.

Divisional Information (all broadcasts are on Sundays unless otherwise stated):

ACT:
President — Mr. E. W. Howell VK1TH
Secretary — Mr. Ted Radclyffe VK1TR
Broadcasts— 3570 kHz & 146.5 MHz: 10.00Z.

NSW:
President — Mr. T. I. Mills VK2ZTM
Secretary — Mr. I. A. Mackenzie VK2ZIM
Broadcasts— 1825, 3595, 7146 kHz, 28.47, 52.1, 52.525, 144.1, Ch. 8 and other relay stations: 01.00Z. (Also Sunday evenings 09.30Z and Hunter Branch, Mondays 09.30Z on 3570 kHz and ch. 3 and 6).

VIC.:
President — Mr. S. T. Clark VK3ASC
Secretary — Mr. J. A. Adcock VK3ACA
Broadcasts— 1825, 3600, 7135 kHz — also on 6m, 2m SSB and 2m Ch. 2 repeater: 00.30Z.

QLD.:
President — Mr. A. J. Aarse VK4QA
Secretary — Mr. W. L. Gielis VK4ABG
Broadcasts— 1825, 3580, 7146, 14342 kHz: 09.00 EST.

SA:
President — Mr. C. J. Hurst VK5HI
Secretary — Mr. C. M. Pearson VK5PE
Broadcasts— 1820, 3550, 7095, 14175 kHz; 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.

WA:
President — Mr. L. A. Ball VK6AN
Secretary — Mr. P. Savage VK6NCP
Broadcasts— 3600, 7080, 14100, 14175 kHz, 52.656 and 2m (Ch. 2): 01.30Z.

TAS.:
President — Mr. I. Nicholls VK7ZZ
Secretary — Mr. M. Hennessy VK7MC
Broadcasts— 3570, 7130 kHz: 09.30 EST.

NT:
Secretary — Mr. Henry Andersson VK8HA
Broadcasts— Relay of VK5WI on 3.55 MHz and on 146.5 MHz at 2330Z. Slow morse transmission by VK8HA on 3.555 MHz at 1000Z almost every day.

Postal Information:
VK1 — P.O. Box 46, Canberra, 2600.
VK2 — 14 Atchison St., Crows Nest, 2065 (Ph. (02) 43 5795 Tues & Thurs (10.00-14.00h).
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 3535 Sat 10.00-12.00h).
VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton (Ph. (08) 254 7442).
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (Incl. with VK5), Darwin AR Club, P.O. Box 37317, Winnellie, N.T., 5789.

Slow morse transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

VK QSL BUREAUX
The following is the official list of VK QSL Bureaux, all are inwards and outwards unless otherwise stated.

VK1 — QSL Officer, G.P.O. Box 1173, Canberra, A.C.T. 2601.
VK2 — QSL Bureau, C/- Hunter Branch, P.O. Teralba, N.S.W. 2284.
VK3 — Inwards QSL Bureau, Mr. E. Trebilcock, 340 Gillies Street, Thornbury, Vic. 3071.
VK3 — Outwards QSL Bureau, Mr. R. R. Prowse, 83 Brewer Road, Bentleigh, Vic. 3204.
VK4 — QSL Officer, G.P.O. Box 638, Brisbane, Qld., 4001.
VK5 — QSL Bureau, Mr. Geo. Luxon VK5RX, 27 Belair Road, Torrens Park, S.A. 5062.
VK6 — QSL Bureau, Mr. J. Rumble VK6RU, G.P.O. Box F319, Perth, W.A. 6001.
VK7 — QSL Bureau, G.P.O. Box 371D, Hobart, Tas. 7001.
VK8 — QSL Bureau, C/- VK8HA, P.O. Box 37317, Winnellie, N.T., 5789.
VK9, 0 — Federal QSL Bureau, 23 Landale Street, Box Hill, Vic. 3128.

QSP

A SAGA OF ACHIEVEMENT
The book "A Saga of Achievement" written by Bon Hall tells the RAAF Radio story and was released on 2nd April, 1978.

Pictured at the book's launching are, l. to r. standing, Bon Hall (author), Vaughan Marshall, W. T. (Bill) Taylor, Bob Cunningham, Fred Bibby. Seated, l. to r., Clem Blakeley, Arthur Tinkler. Max Hull look the photo.

TVI, BCI — TSI?
Resident of one of Tasmania's smaller cities complained to the appropriate authornty that his telephone service was suffering severe interference — conversations inward and outward had to be conducted against a constant background of music. A technician sent to the premises confirmed that the complaint was genuine.

Knowing that 27 MHz operations sometimes cause various types of interference, the technician then turned his attention to the surrounding skyline lor any indication of a "broadcasting station". Sure enough, a couple of antennas could be seen in the back garden ol a house a few doors away, and were worth investigating. However, the occupier turned out to be an amateur operating strictly within the terms of his licence. The trouble was eventually traced to a "music while you work" establishment who somehow had got their wires crossed and were providing an unwanted programme to an unappreciative "subscriber".

The "broadcasting aerials" were a triband beam and an 80 metre dipole.

— From Dick Goslin VK3SV.

STATISTICS
According to P. and T. Department returns at 31sf March, 1978, the Amateur Radio stations in Australia and Territories (23) totalled 8960, of which 5268 were full calls, 2613 limiteds and 1056 Novices. The greatest number of antennas were in New South Wales (3118), followed by Victoria (2580), Queensland (1035), South Australia (982 plus 85 NT), Western Australia (649), Tasmania (296) and ACT (192). In the same return the number of CB licences was shown as 157,205. ■

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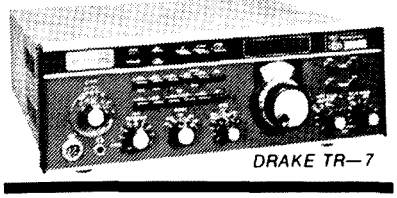

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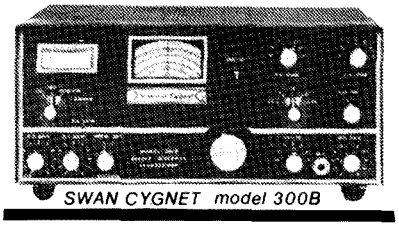

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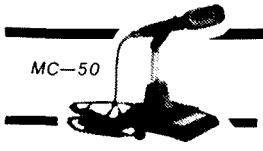

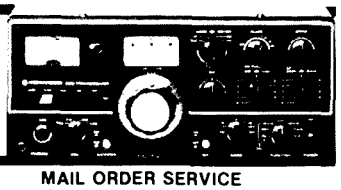

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•
RITTY UNITS
•
S.S.T.V.
•
NOVICE EQUIPMENT
•
ROTATORS
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ACCESSORIES
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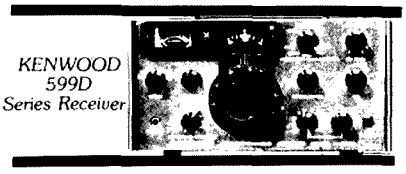

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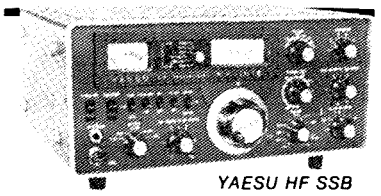

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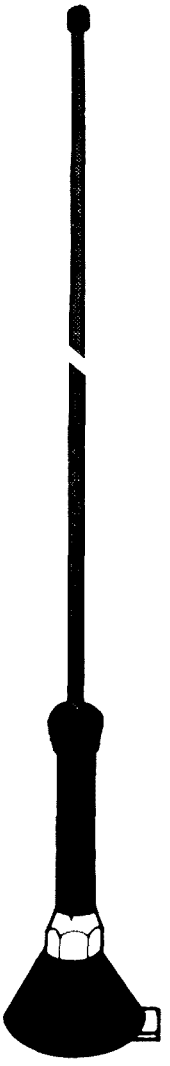

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NSW: 20 The Strand, Penshurst, NSW., 2222. Ph 570 1392

WIANEWS

During May one meeting of the Executive was held and one meeting of the Joint Departmental/WIA Committee.

The artwork for six coloured display posters, each about 600 x 500 cm, has been completed. The biggest problem now is to have 20 or 30 copies of each produced at a reasonable price. This is too small a run for litho and not an economical run for professional screen-printing. Mrs. J. Scott was the artist. Any ideas for producing these posters, perhaps as a school project, would be very welcome.

FEDERAL APPOINTMENTS

The meeting of the Executive, being the first following the Federal Convention, appointed various Federal officers subject to Divisional and individual approvals. Many were unchanged from last year. These were Michael Owen VK3KI as IARU R3 Liaison Officer, Alf Chandler VK3LC as Fed. Intruder Watch Co-ordinator, Ken Seddon VK3ACS as Chairman, Fed. Repeater Sub-Committee, Max Hull VK3ZS as Fed. Historian, Ray Jones VK3RJ as Fed. QSL Manager, Brian Austin VK5CA as Federal Awards Manager, Charles Walker VK2BXX as Chairman Fed. RTTY Committee, but since resigned owing to other pressing commitments, and Peter Woltenden VK3ZPA as Executive Vice-Chairman and also Chairman VHFAC. Keith Roget VK3YQ was appoinetd as Fed. Hon. Treasurer but has since had to resign on transfer overseas tor an extended period.

New appointments were Bob Arnold VK3ZBB for Satellites, Wally Watkins VK2ZNW as Fed. Contest Manager, and Ron Henderson VK1RH as Fed. WICEN Co-ordinator. Once again no name came forward for Fed. EMC Co-ordinator.

ARRL HANDBOOKS

The special price 1977 ARRL Handbooks had sold very rapidly and the Executive were most fortunate in being able to secure a further supply which should arrive about September.

NOVICE BROCHURE

The Novice No. 1 brochure was duplicated and copies are now available. The price is 65 cents each, post paid. The brochure contains a copy of the official Novice syllabus, the WIA officially endorsed study guide and notes on Novice operating conditions. Work on the production of a bank of typical Novice questions is continuing.

CUSTOMS

Work also continues on Customs matters relating to HF beams and 70cm transceivers.

NOVICE

A number of Novice licensing questions were discussed with the Department in the Joint Committee. A letter went to the Department requesting 3625 kHz as the top segment limit for Novise on 80m. The vexed question of Novice examinations in centres distant from capital cities was discussed at length and it appears that this is a problem recognised by the Department and a Press Release on the subject was promised.

The Department categorically stated that RTTY and SSTV modes were not authorised for Novice licensees and were never contemplated. In tact the removal of FM as a mode was not being done. The inclusion of these modes would have necessitated examination questions on them. The WIA also raised the question of the inspection of Novice equipment at Departmental centres. It appears that the promises of reduced licence fees for pensioners is still under examination in relation to the definition of a pensioner. Morse speeds were again discussed and it appears that the Novice morse in future will be done by hand keying which hopefully will resolve the slow ITV standard morse machine-generated. On the question of speed endorsements, the Department regretted inability to cope with this because of the staff situation. The question of reciprocal licensing is to be updated, vide the letter in AR tor August 1972. ■

80 CHANNEL SYNTHESISER

Roy Hartkopf VK3AOH
34 Toolangi Rd., Alphington 3078

This article follows on from one published in AR (March 1976) which outlined the development work being done on an 80 channel synthesiser for the 2 metre band.

The earlier article appealed for someone interested to help with the development. There were no offers although several people wrote expressing interest in the finished product. Due to lack of time the project was put aside. However, recently assistance came from Neville VK3BDW who is working on the multipliers and final. Meantime the synthesiser has been completed. As it stands it gives 80 channels from 5 to 5.66 MHz spaced 8.333 kHz apart. This is heterodyned and the result multiplied by six giving 80 channels spaced 50 kHz apart through the two metre band. The output of the synthesiser is controlled by two thumbwheel switches and the numbers on these indicates the WIA band plan channels on two metres. So if you want channel 42 for instance, you just set the thumbwheel switches to 42 and you are in business. This should be ideal for mobile work. The synthesiser has been tested on air with a mock-up exciter giving about 50 mW on two metres and there is no sign of noise or instability from the VCO.

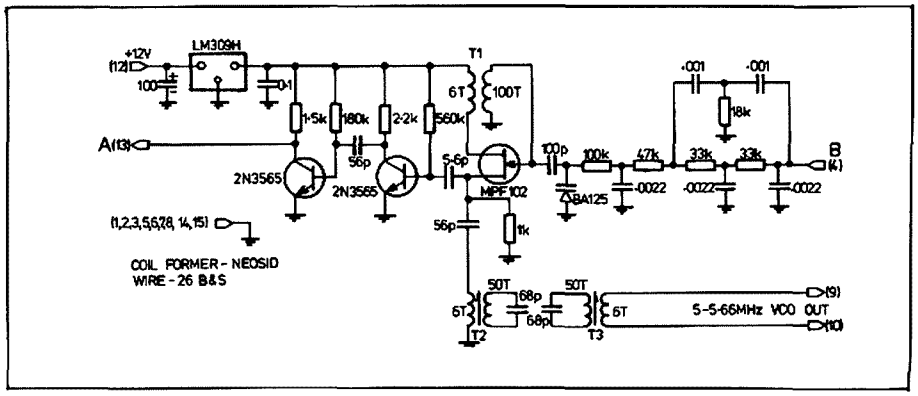


FIGURE 2: VCO Circuit.

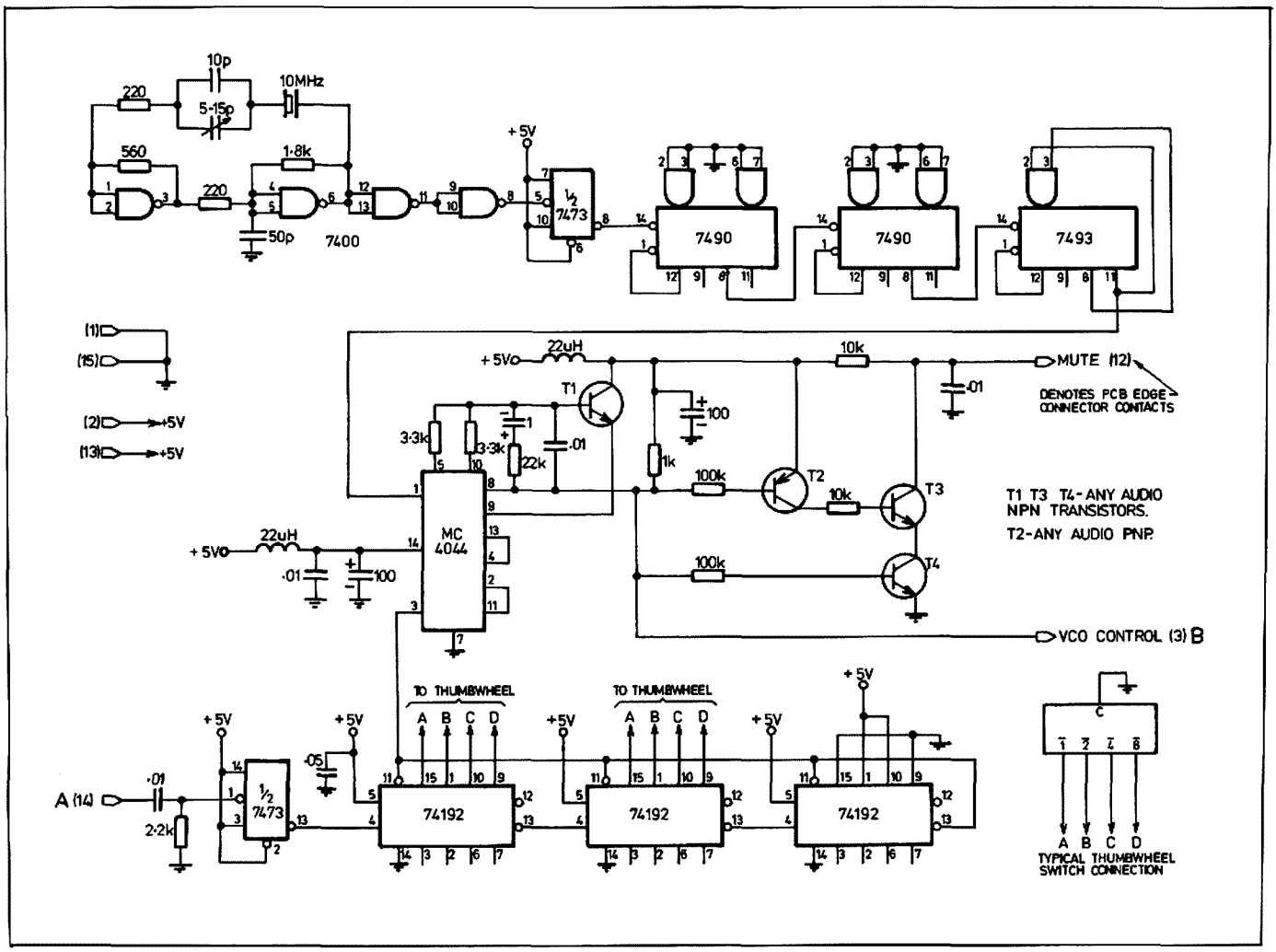
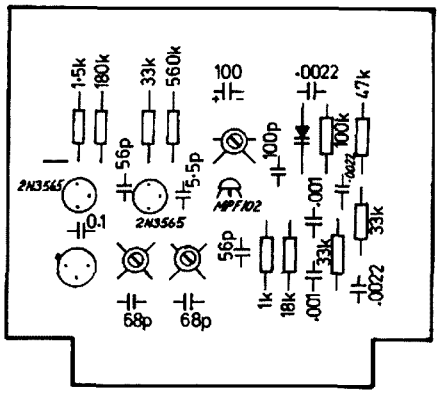
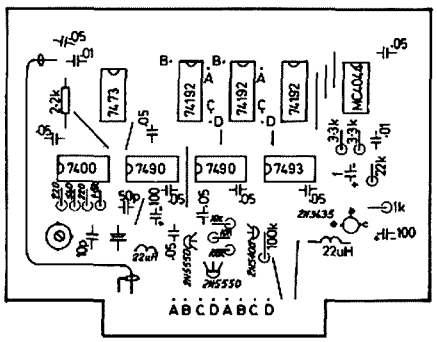


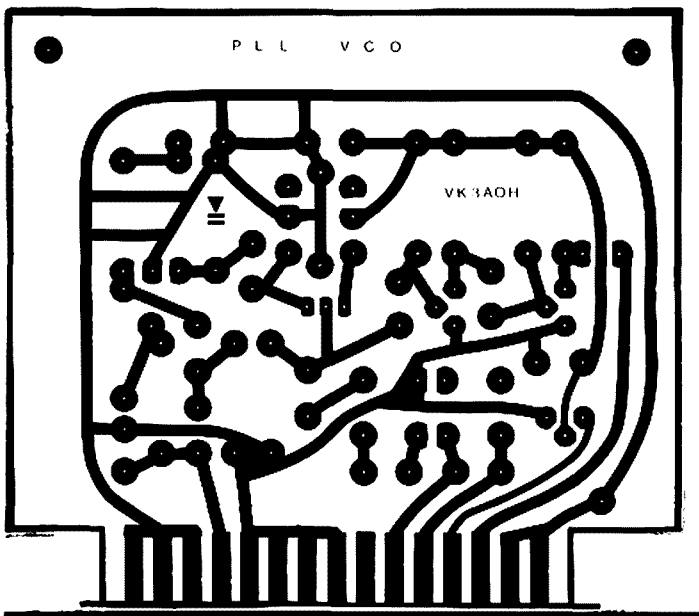
FIGURE 1: Phase Lock Loop Circuit.



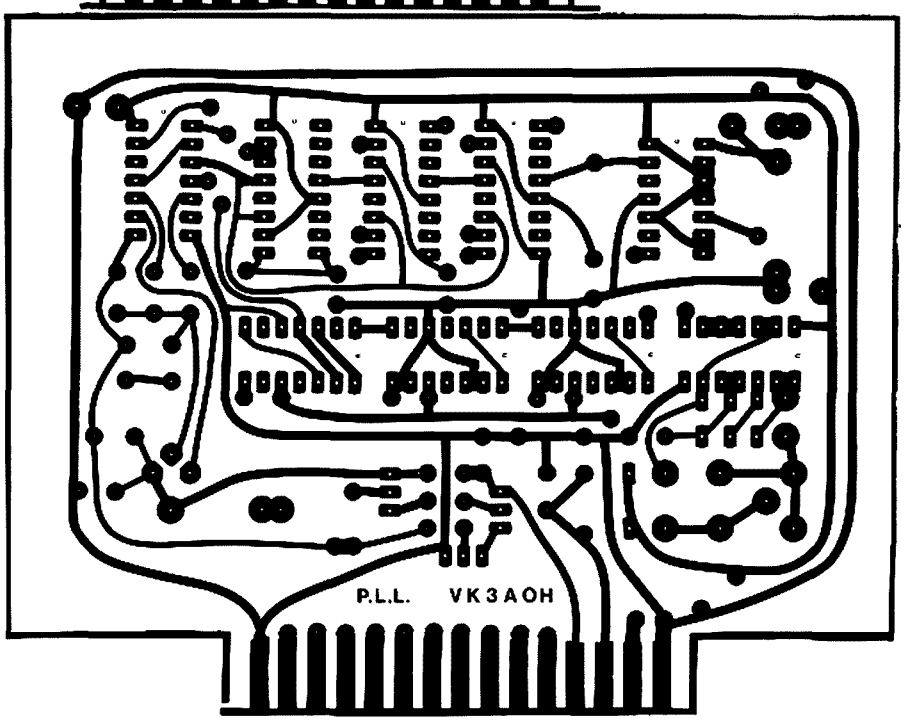
VCO Board Component Layout.



PLL Component Layout.



VCO Board No. 2 Full Size — Copper Side.



PLL Board, Full Size — Copper Side.

BLOCK DIAGRAM

Fig. 1 is the block diagram of the PLL (phase-locked loop) system. The reference frequency is generated by a 10 MHz crystal and a 7400 is used as the oscillator. This is divided by two, ten, and twelve, coming out at 4.1666 kHz. This is fed into a MC4044 comparator. The comparator supplies a control voltage through a filter to a BA125 varicap which controls the frequency of the MPF102 VCO (voltage-controlled oscillator). Part of the VCO output is picked off and fed to a double tuned circuit which gives a broadbanded output to the heterodyne and multiplier sections which Neville VK3BDW is at present developing. The VCO frequency is also amplified through two 2N3565 transistors so that it becomes suitable for driving half of a 7473 on the PLL board. The frequency is divided by two and then divided as desired by two programmable dividers controlled by the thumbwheel switches. The total division in the 74190 divider may be between 600 and 699. The final output of this division must be the same as the reference frequency, namely 4.1666 kHz. If it is not then the comparator changes the voltage on the varicap until the VCO frequency is such that the output does come to 4.1666 kHz after going through the divider chain. The mute line is used to disable the transmitter during the start period when the loop is unlocked as occurs when changing frequency.

POWER SUPPLIES

The main logic on the PLL board is supplied in the usual way from a 5 volt regulated supply (a LM309K is quite suitable) but the VCO board requires a separate regulated supply. LM309H was used, mounted on the board. Even though the main supply is regulated it is not good enough to use this for the VCO since the slightest variation in the supply voltage here causes noise and instability in the VCO output.

Figures 2 and 3 give the layout of the main components on the PLL and VCO boards respectively and Figs. 4 and 5 show the copper side. The crystal used is the small size (K type), **not** the D type and the circuit in which it is to be used should be given to the manufacturer to make sure the crystal can be brought to exactly 10 MHz as the whole accuracy and stability of the system depends on this crystal.

FURTHER DEVELOPMENT

The remainder of the two metre transceiver is being developed along the lines described in the article of March 1976 although it has not been found necessary to tune the multiplier. The transceiver will be for the FM band 146 to 148 MHz.

By altering the division ratio there is no reason why the same arrangement could not be used for other purposes. For instance if the reference frequency was divided down to 5 kHz the system could be used to give 10 kHz spacing through the HF band and so on. ■

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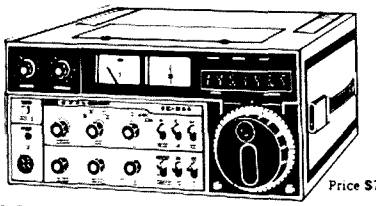
Rubber Ducky antennas for IC215/IC202E	$13.00



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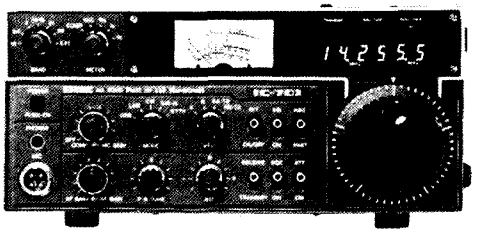

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DIPOLES

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88/70cm, 18, 5d8d gain, 88 elements	$ 99.00
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CONVERSION OF HF TRANSCEIVERS TO THE SIX METRE BAND

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7 Norman Ave., Frankston 3199

During recent years there has been a very noticeable move away from the concept of homebrewing for the 6 Mx band. The reasons for this have been many, the change to SSB as the main mode has imposed greater stability requirements than previously and the cost and scarcity of suitable components have made commercial equipment more attractive.

Regardless of how well a home-made rig may perform it is impossible to produce anything that will have any resale value later on. Despite the variety of excellent commercial 6 Mx units available now most fail badly in one important aspect, lack of realistic output in relation to their cost. With the exception of equipment such as the IC502 in most cases the cost is similar to that of a multiband HF transceiver and yet the power output is almost invariably in the 10 watt PEP range. For most purposes this level of output is inadequate for really serious DX work unless everything is going for you, and this includes your antenna, band conditions, local terrain and the general efficiency of the station at the other end. Probably the only commercial units to run reasonable power levels were the Heathkit SB-110A and the Swan 250 but the numbers of these units in VK could probably be counted on the fingers of both hands (and then have some to spare!).

At the present time there are many good secondhand HF transceivers available which can be very easily converted to operate on 6 Mx with only minimal additional parts and these transceivers will then give a very good account of themselves on 6 Mx up to around the 100 watts PEP level at least. Probably the total outlay would not exceed half the cost of a current model 6 Mx transceiver with a 10 watt PEP output.

A careful look at the circuit of the average HF transceiver will show that the only difference between bands is in the components and crystals used in the transmitter final mixer, driver and receiver RF amplifier and first mixer stages. All other sections use components common to all bands. By changing the above sections the transceiver can virtually be put on any frequency up to 60 MHz or so which is about the limit of reasonable efficiency with the final tubes. If the conversion is done carefully and a record kept of each change made there would be no reason why reconversion couldn't be done later if the need should arise. Figure 1 shows the essential parts of a normal HF transceiver and Figure 2 shows the additional sections required to give 6 Mx operation. As each type of transceiver varies from others to some degree I won't cover the conversion in detail but rather in broad outline only. Anyone contemplating such a project will more than likely be already conversant with VHF techniques and likely pitfalls. There is a wealth of information in the various handbooks to guide anyone as to circuit details, e.g. ARRL Handbook, etc.

Probably the first decision to be made will be which band or bands to use as the tunable IF? This will depend on several factors. Firstly do you require a small range, say 500 kHz, or do you wish to cover the full 50 to 54 MHz? A 500 kHz range will probably mean one extra crystal while to cover 4 MHz will more than likely require eight crystals. Secondly, if say 28 MHz is to be used as the tunable IF, is the transceiver sensitivity sufficiently good enough? These questions will have to be answered before proceeding. Also where additional oscillator frequencies will be used it will pay to do a check of the entire frequency chain to make sure there won't be some unwelcome beat in the middle of your favourite section of the band.

The most simple conversion proceeds as follows: Insert a 6 Mx receiving converter between the antenna relay and the existing receiver input, the receive section of the transceiver is now effectively a 6 Mx receiver, using one or more of the former HF bands as the tunable IF. The output of the final transmit mixer is th removed from the driver stage and an additional mixer stage is added. This stage mixes the tunable IF transmit frequency with the output from the 6 Mx receiving converter oscillator. Here it may be necessary to add a buffer stage following the oscillator if the signal level is low, again this will vary from case to case. This mixer stage is tuned to 6 Mx and then fed to the former driver stage which also must now be tuned to 6 Mx. Existing components could probably be re-arranged to suit here. The final stage is then tuned to 6 Mx and the transmitter retuned for peak output at 6 Mx. It will of course be necessary to watch for any HF components

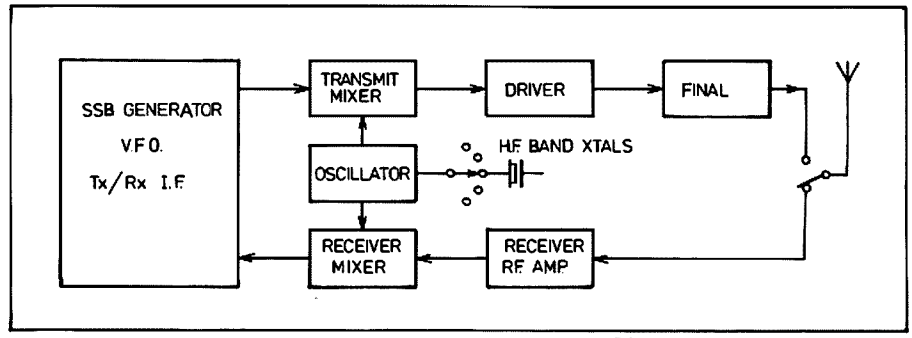


FIGURE 1: Typical HF Transceiver Block Diagram.

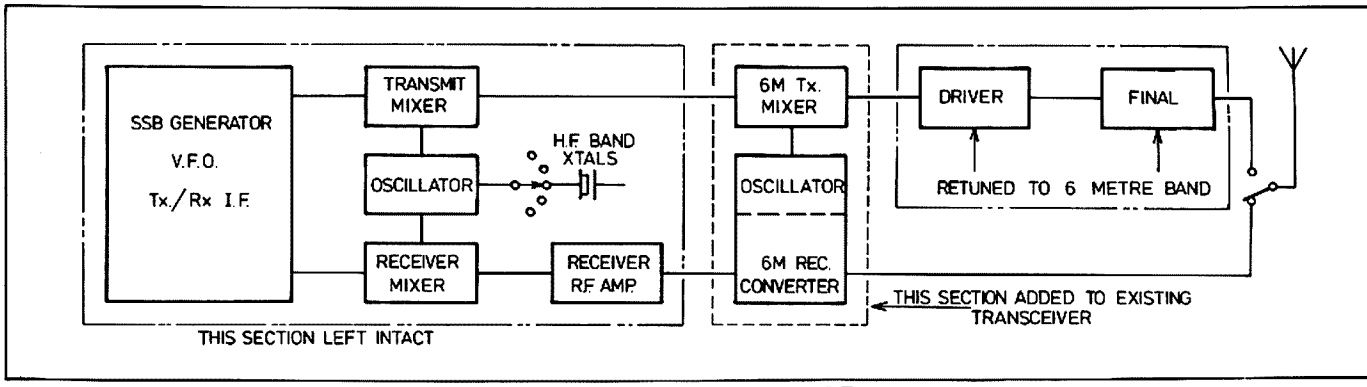


FIGURE 2: Block Diagram of Converted HF Transceiver.

which may affect VHF operation, but these should be few and easily spotted. Pay particular attention to items such as by-passing, chokes, lead inductance, etc., as these sometimes degrade even 10 Mx performance. There would appear to be no reason at all why the new stages shouldn't be solid state when used in older valve type equipment and in fact the smaller size may make this essential. A typical transceiver suitable for conversion would be, say, an FT-200 which today would normally be available secondhand at reasonable prices. ■

VERTICAL — HORIZONTAL ANTENNA ROTATOR

Maurie Batt VK3-L3062
R.S.D. Rokewood Junction 3351

With the ever growing popularity of 2 metre repeaters and activity on the tuneable end of the band, it was decided to make one eflicient antenna serve both modes, thereby reducing the costs by half. The rotator described will do just that and at very littte cost. The original rotator was constructed by the author and has been in use for some considerable time and during that time no problems have arisen.

However, the rotator described has a few desirable modifications added. Constructors not having the necessary equipment available, can get the welding and the bushes machined at a moderate cost. The rest of the work is quite simple.

The antenna used by the author is a KLM 144-148 MHz, 11 elements on a 1 inch boom. All measurements quoted are for an antenna with a 1 inch diameter boom.

PARTS LIST

10" length of aluminium tube — 1⅝" OD not less than 16 SWG.
13" length of aluminium tube 1⅛" OD 17 SWG.
3 — ¼" gutter screws 1" long.
5 — ¼" nuts.
2 plastic or rubber furniture leg caps 1½" diameter.
4" length of 1⅝" graphited impregnated nylon rod.
4' lengtn of steel rod.
28" length of ⅜" steel rod.
2 heavy duty TV antenna clamps or Vee Blocks.
2 — ⅜" nylon stop nuts.
2 cable eyes.
1 special mast — boom clamp. TV antenna vertical mounting bracket or universal clamp.

METHOD

Machine the nylon rod down to a good tight fit into the large tube. Bore out to a working clearance to accommodate the 1⅛" tube. Cut in half to form two bushes 1½" long. Press one into each end of the large tube. Insert the 1⅛" dia. tube through the bushes. It should fit snugly in the bushes but be free enough to turn without any binding. High spots can be removed with a piece of abrasive cloth on a dowel.

Remove the 1⅛" tube. Take the large tube and measure 2" down from one end

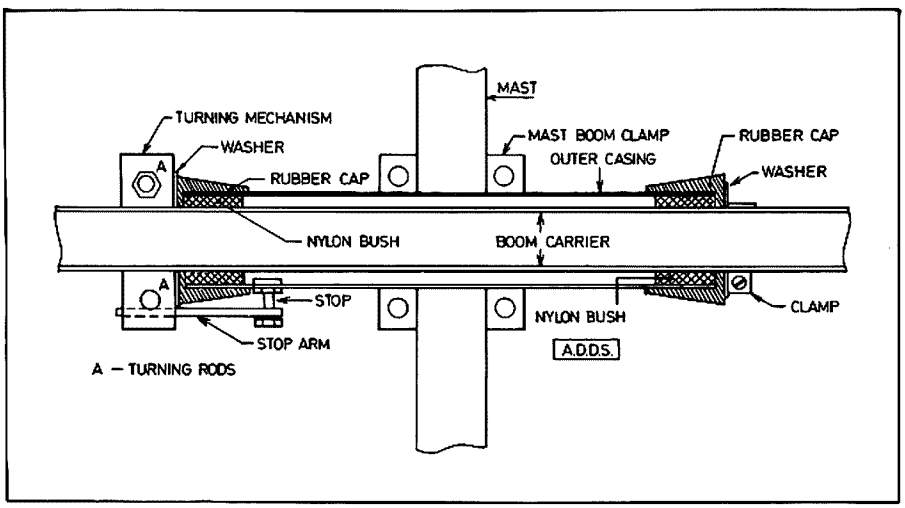
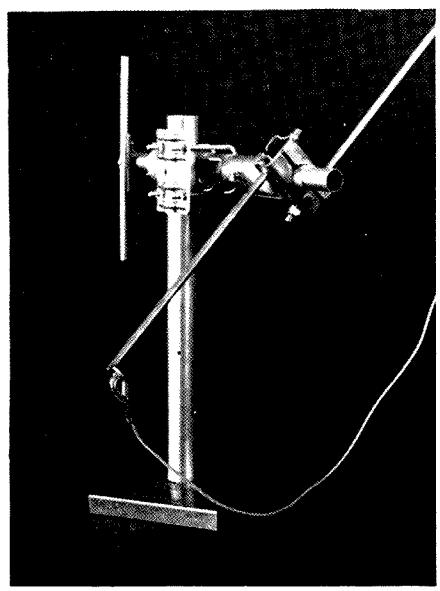


FIGURE 1: Section of Rotator.



Vertical position.

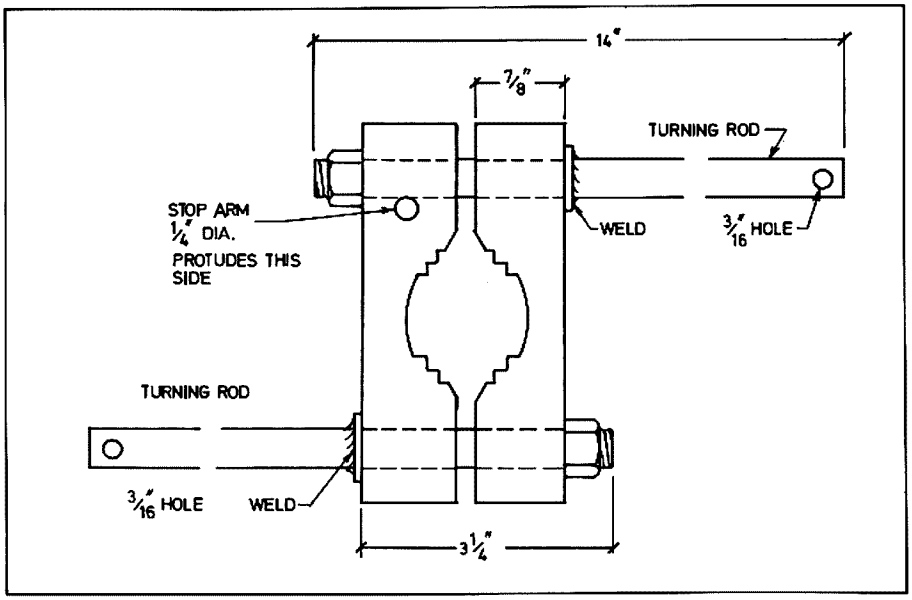
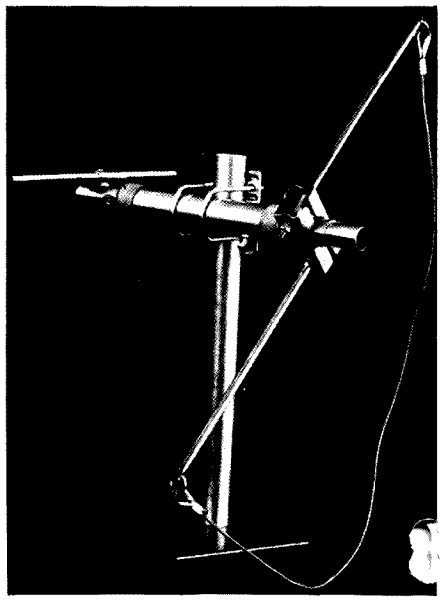


FIGURE 2: Turning Mechanism.



Horizontal position.

and scribe a line around the circumference. On this line mark two stops 1 1/16" apart. Centre pop, and drill out to take a 1/4" screw. Take two of the gutter screws and insert them through the holes from the inside of the tube. Secure each screw with a nut.

From an odd piece of thin tubing, about 5/16" dia., which will slip over the threaded portion of the screws, cut two lengths long enough to leave enough thread to engage a nut. Place one of the pieces over each of the screws and tighten down with a nut. At this point check that the 1 1/8" dia. tube will not foul on the screw heads. If so, remove and file the heads down to clear. When tightening the nuts on the two screws some distortion of the tube may occur and cause high spots in the bushes. These can be removed as stated above.

Now a hole has to be cut in each of the rubber caps to form a weather-proof seal. To cut a hole perfectly concentric to ensure a good weather-seal the best way is to take the 1 1/8" tube and file a chamfer on the inside of one end of the tube to form a cutting edge. Place one of the caps on the end of the large tube and ensure that it fits tight up against the bush. Insert the chamfered end of the tube through the bushes in the large tube and with the end of the rubber cap pressed up against something solid, exert pressure and with a turning motion of the smaller tube proceed to cut the hole. When completed, carry out the same procedure on the other cap. Cut the chamfered end off the tube and clean off any roughness.

From a scrap of aluminium sheet about 16 SWG fabricate two washers 1 3/4" OD with a 1 1/8" hole. A 1 1/8" chassis punch would be ideal to cut the hole and the hole would only need to be filed out slightly to fit onto the tube.

Make up a clamp from the same material about 1/2" wide and 1" dia. Drill the lugs out to clear a 1/4" screw. This completes the work on the barrel section.

Remove the U bolts from the TV antenna clamps as these are not required, leaving the vee blocks. At this stage it might be as well to mention that the TV clamps used by the author were 3" long on the sides and about 3/4" deep and about 1 3/8" across the two flats. Take the 3/8" rod and cut into two equal halves and cut a 3/8" whitworth thread 1" long on one end of each of the rods. Weld or braze a rod into each of the clamps, see detail in Fig. 2. The position of the hole for the stop arm will depend on the maximum diameter of the rubber cap and there could also be a variation in the measurements of the TV clamps made by different manufacturers. Also the placement of the stop arm will determine the range of rotation which should be 90 degrees, but whatever locate the stop arm to clear the circumference of the rubber cap. When marking the position of the hole for the stop arm in the TV clamp take note from Fig. 2. When the constructor has decided the position of the hole run a 1/4" drill through both flats of the clamp. The 1/4" rod is then welded or brazed in position. It is essential that the rod protrudes from the top side of the TV clamp as shown in Fig. 2. Failure to do this will result in incorrect operation of the rotator.

Drill a 3/16" hole in each of the outer ends of the turning rods. A ring is fitted In each of the holes to carry a cable eye. When the turning mechanism is completed, a plating shop will cadmium plate or galvanise it for a moderate cost. This will give it all weather protection, otherwise corrosion will soon set in where the metal has been burnt during the welding process.

Assemble as follows: Ensure that the inside of the large tube is free of filings and other foreign matter. Check the inside and outside of the other tube for high spots, especially the bearing surface. Insert the tube into the larger one and if available smear a liberal coating of rubber lubricant over the outer ends of the bushes. Fit a rubber cap over each end of the tube. With the caps fitted movement of the tube will have stiffened up but should be free to rotate. Locate the inner tube so that an equal length protrudes from each end of the large tube and on the end furthermost from the two stops on the barrel place one of the washers over the small tube. The aluminium clamp is then fitted tight up against the washer and tightened. Place the other washer over the other end of the tube. The turning mechanism is then put on the tube with the stop arm between the two stops where they are nearest to each other. Do not over tighten the nuts on the turning assembly Details of final assembly can be seen in Fig. 1.

When installing rotator on antenna, note the centre of gravity, remove elements to this point and slide the rotator along the boom to the centre of gravity. The antenna is secured to the rotator with a self-tapping screw in each end of the rotator tube. The rotator is turned by means of a length of nylon cord that will reach from the antenna when extended to the maximum height down to near ground level. The nylon cord is taken around the cable eye. The best way to secure the cord on the cable eye is to slip a brass ferrule or a short length of brass tube over the cord, tie a knot in the short end, and pull the long end of the cord so that the ferrule is up tight to the cable eye, then crimp the ferrule In a vice. When the antenna is not being used in the vertical position turn it to the horizontal position. This will reduce strain in high winds on the rest of the antenna installation. Should any constructor experience any difficulty, contact the author. ■

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SUGAR COATED OSCAR

Gil Spencer VK2JK/ex W1ZCH
PO Box 300, Spit Junction 2088

I'm sure there's a plot. It's been contrived by a small band of technically-oriented hams who want to keep OSCAR for their own devious purposes and leave the rest of us stagnating in a pool of confusion.

How else would you explain the mystery that still cloaks OSCAR-7 (**O**rbiting **S**atellite **C**arrying **A**mateur **R**adio — Version **7**)? It's been up there for years now, faithfully spinning around the earth in a highly predictable fashion offering new horizons (literally) to amateurs. Yet we're still getting fed cumbersome information and confusing and incorrect data that makes it all seem just too hard.

Well, here in Spit Junction, there's been a breakthrough! I've managed to cut through the nonsense. Without access to computers, az-el antennas, high-powered transmitters — as a matter of fact, with equipment not much different from yours, I'm working OSCAR-7!

My activity has been confined to Mode A (2 metres up and 10 metres down) so this article will stick with that. This removes a lot of the confusion. Mode B is 70cm up and 2m down and we'll forget Mode B. Here's my equipment line-up:

TRANSMIT:

CW on Kenwood TS-700A fed through 100 feet of RG-8/U to a ⅝ wavelength vertical ground plane. In round numbers, that's 3 dB of feed line attenuation, compensated by 3 dB of antenna gain. At most, my radiated power is 12 watts!

RECEIVE:

CW/SSB on Heathkit SB-102, a 6-year old obsolete ham band transceiver being fed RF by a 20-metre (sic) sloping dipole through 100 feet of RG-58/U.

With this primitive lash-up, I can hear the OSCAR beacon at 29.5 MHz practically all the time it is above my horizon. Not only that, I've heard VK2ZI, VK8ZC, ZL1ANT and others. With practically no trouble I can monitor my own CW signal being transmitted by OSCAR. By the time you read this article, I will have completed a QSO through OSCAR-7 Mode A. It's not hard. Wait 'til you see how I do when I organise a 10-metre dipole!

OSCAR-7 FUNDAMENTALS

Visualise OSCAR orbiting the earth in a fixed polar orbit travelling over the same terrain time after time, its speed and altitude fixed by the earth's gravity. That's what would happen if the earth was not itself revolving on its own axis. OK so far? The only thing wrong with that picture is that our earth of course, **is** revolving. Every QTH in Australia is continuously moving East. It's the earth's rotation, not OSCAR dancing around, that makes the satellite rise and set in different places.

ORBIT NUMBER

Now, let's get "Orbit Number" sorted out. Visualise OSCAR when it's directly above the equator travelling north. That's the beginning of a new orbit and the end of the old one. The orbit number increases by one. For example, old orbit number was 15000; new orbit number is 15001. Orbit 15001 will last one (1) hour and 55 minutes (OK, purists, 1 hours 54.944676 minutes . . . see, that's the sort of thing they say to try and confuse us). In that hour and 55 minutes OSCAR will make a complete trip around the world and will again be over the equator travelling north. NOW GET THIS . . . if the earth had only held still, OSCAR would cross the equator in the same place that it began. Fortunately for those of us who like sunrises, sunsets, etc., the earth is going about its business of revolving on its own axis. In the time it takes for OSCAR to complete its independent orbit, the earth has revolved toward the east. This means that OSCAR crosses the equator further WEST now than last time. Don't give up now. Spend about 3-4 minutes thinking about it. Visualise yourself aboard OSCAR looking down. Then visualise yourself further in space looking down on both OSCAR and earth (both, of course, satellites in their own way). Don't read on until you're comfortable with the concept.

Now the mathematicians know exactly how many degrees (there are 360 of these needed to get around the equator) the earth will have revolved in 1 hour and 55 minutes. If you ask them they might tell you. They will quote 28.73617 degrees; we'll settle for 28.7. This is not all that obscure, really. Let's remember that the earth revolves 360 degrees in 1440 minutes (24 hours). If you work that out you'll see there's a connection.

Don't get confused by the fact that OSCAR really crosses the equator **twice** each orbit. It's the **northbound** crossing that counts. It's also the apparent degrees **west** equatorial movement that we need to remember.

So Table 1 gives two vital constants:

TABLE 1

OSCAR CONSTANTS

115 minutes = 1H 55M = time per orbit
28.7 degrees per orbit.

Try and memorise these Table 1 constants. They're all you need ultimately to remember.

MODE A DAYS

Starting in 1978, Mode A is available 1 day in 3. The other 2 days are Mode B days. The obscurists tend to mutter about this in a confusing fashion. It's not that hard, really. There can only be 3 types of months depending upon which date happens to have the first Mode A pass. They are:

"1" Month — Mode A on 1, 4, 7, 10, 13, 16, 19, 22, 25, 28, 31.

"2" Month — Mode A on 2, 5, 8, 11, 14, 17, 20, 23, 26, 29.

"3" Month — Mode A on 3, 6, 9, 12, 15, 18, 21, 24, 27, 30.

In 1978 we have this Mode A line-up: Jan 3, Feb 2, Mar 1, Apr 3, May 3, Jun 2, Jul 2, Aug 1, Sep 3, Oct 3, Nov 2 and Dec 2. (Watch AR for any changes—Ed.)

OSCAR-7 ORBITAL REFERENCE DATA

There are a number of sources for OSCAR orbital data to help you know when to expect to hear OSCAR at your QTH. The Wireless Institute's journal, AR, is one. A more comprehensive annual calendar is available from W6PAJ. Send Skip $5.00 (U.S.) and a self-addressed label for an air mail copy of the 1978 model.

The method usually adopted to publish orbital data is to give a daily reference orbit. The reference orbit generally selected is the first in each Greenwich day (this is the time the mode changes). The data given are, first the orbit number, then the date, followed by the time when the orbit begins, and finally the point where OSCAR crosses the equator moving north. The time is UTC (UTC = GMT = Zulu . . . it's all the same thing). The equatorial crossing is always given in degrees west of the Prime Meridian (Prime Meridian = 0 degrees = Greenwich meridian). The degrees can go as high as 359. This is actually an easier nomenclature than the one used on maps. There's no need to worry about whether it's east or west.

Here's a couple of things to think about. The time of the first Greenwich pass will always be between 0000 and 0154 UTC. Spend 30 seconds reflection right now and you'll understand why. The degrees west given always seem to be between 50 and 85 degrees. I haven't the faintest idea why. You'll have to ask someone else. (Because the orbit of the parent weather-satellite with which OSCAR was launched, was carefully engineered to be "sun-synchronous, i.e. to pass everywhere at about the same local times each day.—Ed.)

EVENING MODE A PASSES

If you're like me, you have to restrict yourself to the northbound passes because they happen in the evening. There are at least three of them every Mode A evening (see Days of the Year, earlier), wherever you are. For those of you who are home during the day, there are also 3-4 southbound passes you can hear, but this article does not address itself to them.

Before we go into how to figure out when OSCAR is hearable from your QTH, we need to have a bit more background.

A FEW MORE OSCAR-7 FUNDAMENTALS

The data given in Table 2 refers to metropolitan Sydney. The principles remain the same for anywhere in Australia but the figures need adjustment.

In Australia, as we listen to northbound OSCAR passes, we are concerned with the final minutes of the orbit. After all, OSCAR is on its way north to the equator where it will then pick up a new orbit number and continue around. In Sydney, fate places us on the earth in a position where OSCAR is just about setting on our northern horizon when it arrives over the equator. Of the 99 degree passes (more about this later) that are hearable from Sydney, we hear the final (115th) Minute from 30 of them, the 114th minute of 42 and the 110th minute of 69. In Sydney we never hear OSCAR when it's north of the equator. Listeners further north, in Brisbane or Darwin, for example, will hear OSCAR after it passes into the northern hemisphere, but not we Sydneysiders.

TABLE 2

ORBIT USEFULNESS IN SYDNEY
(Based on 350 ft ASL as 33 50 00 S and 151 14 00 E)

Orbit Degrees West Xing	No. of Degrees	Remarks
0 through 48 degrees inclus.	49	OK for Southbound passes only
49 through 146 degrees inclus.	98	Never heard in Sydney
147 through 245 degrees inclus.	99	OK for Northbound passes only
246 through 308 degrees inclus.	63	Never heard in Sydney
309 through 359 degrees inclus.	51	OK for Southbound passes only
	360	

If you want to adjust this table for your location, find your QTH on a map and determine your longitude East of Greenwich. Subtract your longitude from 151 (Sydney). Add the difference to the degrees given in the table. For example, Perth is about 114 degrees east of Greenwich. 151 less 114 = 37. Adding 37 to the degrees given in the table tell us that useful northbound OSCAR passes in Perth would be those with crossings between about 184 and 282. Your distance from the equator also affects this table.

There's nobody close to sea level anywhere in the world who will hear OSCAR for more than 22 minutes during a hearable pass. If you're up in the mountains somewhere you might squeeze an extra minute out because your physical horizons are less restricted.

OK, then if the maximum window is 22 minutes and it's the final 22 minutes of an orbit, the thing to do is work backwards from the reference data rather than forwards. We should listen during the last half hour of life of particular orbits. In other words, let's figure out certain beginnings, subtract a half hour and listen to the end of the previous orbit. I find this is easier than working forwards. Maybe you'll agree.

HOW TO WORK IT OUT

After you get rid of the degree decimal points there are only 360 places where OSCAR can cross the equator. Only about 200 do you any good; the other 160 are useless. Of the 200 only 100 are useful for north-moving passes. See Table 2.

You don't really have to understand Table 2 to work out the passes that you will hear each evening. It's there to show that there is some logic to it all, and to assist hams in other parts of Australia.

Here's all you really need to know in Sydney. First of all, there are usually only three passes to be heard. Second, they are either the 3rd, 4th and 5th or the 4th, 5th and 6th orbits of each Greenwich day. They will be those orbits with a degrees west crossing between 147 and 245 degrees. On the odd occasions when there are four passes, they'll be the 3rd, 4th, 5th and 6th passes.

Once you have the reference data for the first Greenwich crossing of the day (from AR, perhaps), all you need are the factors for orbits +3, +4, +5 and +6 and a piece of scratch paper. Table 3 shows these factors; you'll have to supply the scratch paper.

These table 3 factors are simply an extension of the OSCAR constants given in table 1, (the ones you memorised, remember?).

TABLE 3

FACTORS USED TO ADJUST FIRST GREENWICH PREFERENCE ORBIT

Add to Orbit	Add to UTC Time	Add to Degrees West Crossing
+3	5H 45M	86.2
+4	7H 40M	114.9
+5	9H 35M	143.7
+6	11H 30M	172.4

WHAT'S ON THE SCRATCH PAPER

This article was written on Sunday, 11th December, 1977. OSCAR-7 was in the 2 up, 10 down mode that day. The Sunday morning VK2 WIA broadcast gave these references for the day:

December 11th — Orbit No. 14052 — 1002 UTC — 177 Degrees West.

These references, unfortunately, are confusing. They quote Sydney acquisition time not equator crossing time, which makes it hard to figure subsequent orbits. Furthermore, the broadcast does not explain which figures are given. So the first problem is to know who to believe!

The AR references are usually correct and easier to work with. The December 11th reference from AR was:—

Orbit No. 14048 — 0048 UTC — 67.69 Degrees West.

First of all, when we look at the scratch pad, we discover that December 11th is one of those days when there are four usable orbits, instead of three. Orbits 14051 through orbits 14054, inclusive, all begin with a degrees west crossing between 147 and 245 degrees. When there are four, it means that the first and last are quite shallow. Perhaps Orbit No. 14051 will only peek over the Sydney eastern horizon for a minute or so. Anyhow, the time to listen is in the last half hour just before Orbit No. 14052 begins. This means we'll subtract about 30 minutes from the commencement of Orbit No. 14052:

0828 UTC Orbit No. 14052 begins
—30M

0758 UTC (Which translates into 6.58 p.m. EA daylight savings time)

We won't really expect to hear it just then, but we'll be ready.

I'll cheat a bit now and consult a more accurate reference document (which I'll tell you about later). This document tells us that Orbit No. 14051 (because its degrees west crossing was 154 degrees) is indeed a shallow one. At its closest approach to my antenna, it was over 3500 kilometres away and only slightly above the horizon (10 degrees elevation, for the boffins). Furthermore only six minutes of the orbit would be hearable, from 0810 until 0816 UTC. A real test for a 20 metre dipole. Maybe we should skip it.

The next two passes (No. 14052 and No. 14053) should be pretty good ones. They'll go higher above the horizon and stay up there longer. It's easy to figure out approximately when to listen from the scratch paper, simply the last hour of each orbit. That means:

Orbit No. 14052 — Listen between 0953 and 1023 UTC

Orbit No. 14053 — Listen between 1148 and 1218 UTC

It'll be too late to stay up for No. 14054 probably. It won't turn up until 85 minutes (115-30) after it begins, at the earliest. 1218 UTC + 85 = 1353 UTC and that's almost 1.00 a.m. EA daylight time. Let's see how we're feeling at midnight!

Now, checking the more accurate reference (I'll tell you about it, I promise), here's what actually happens on those orbits:

ORBIT No. 14052

This orbit began with an equator crossing of 182 degrees. It became audible in Sydney at 1002 UTC8 (this is the time given in the VK2 WIA Broadcast) as it rose above the horizon in the Southeast. It climbed as it moved north until it reached an elevation of 55 degrees and a distance of only 1700 kilometres (remember OSCAR is only about 1500 kilometres straight up). Then OSCAR finally set almost due north at 1023 UTC . . . just as it reached the equator to begin its next orbit.

ORBIT No. 14053

OSCAR began this journey with an equator crossing of 211 degrees. It became audible here at 1155 UTC when it rose just a few degrees to the east of due south. On its trip northward it rose to 29 degrees above the horizon at a distance of just under 2400 kilometres. It disappeared in the northwest at 1215 UTC. Another good pass, with 20 minutes available.

ORBIT No. 14054

This 4th pass was, as expected, a really shallow one. With good equipment and good timing these are the passes that give the real OSCAR DX if you can make them work for you. At 1351 it rose in the southwest. Eight minutes later at 1359 UTC it set again, still in the southwest. It never got more than two degrees above my horizon and never came any closer than 4375 kilometres.

Maybe now you'll agree that it's simpler than the buffs hinted to work OSCAR with relatively primitive equipment. There's are other technique that's even easier, if you don't like maths. Here's all there is to it! Pick a Mode A evening, tune your receiver to 29.5 MHz and leave it there all evening. If your receiver and antenna are any good at all you'll pick up the OSCAR beacon with its HI HI about every 75 seconds interspersed with numeric CW telemetry when it's in your range. You'll hear it, I promise you. It'll fade in and out as it spins slowly on its own axis but it'll be there. And you know how one thing leads to another. Listen between 29.5 and 29.4 for the hams. See you there!

If you want a really good reference document, send a letter to Bill Johnston, K5NR at 1808 Pomona Drive, Las Cruces, NM 88001, U.S.A. Tell Bill your longitude and latitude as closely as you can as well as the height of your antenna above sea level in feet. Send him these data along with a cheque for $4.75 in Yankee dollars (get it from your bank). He'll air mail you back a computer printout based on your antenna. It's easy to use, very instructive, and good as long as OSCAR-7 is up there. ■

A quick look at the degrees column of our factors table shows us that the +3 orbit will work on December 11th. Here's why:

Reference degrees given	67.7
+3 degree factor	+86.2
Ref. Orbit +3 crossing	153.9 (rounds to 154 degrees)

154 degrees is between 147 and 245 degrees which are the useful ones in Sydney. We can start with Orbit No. 14051 (14048 + 3 = 14051).

So here is what Is on the scratch paper for our first calculation:

Reference No. 14048	0048 UTC	67.69 Degrees West
Add factor +3	+5H45M	+86.2
	5H93M	
	—60M	
No. 15051	0633 UTC	153.89 Degrees West

After that first one, we'll now do the other sums and then we'll talk about what we've got. Here goes:

Reference No. 14048	0048 UTC	67.69 Degrees West
Add factor +4	+7H40M	+114.9
	7H88M	
	—60M	
No. 14052	0828 UTC	182.59 Degrees West
Reference No. 14048	0048 UTC	67.69 Degrees West
Add factor +5	+9H35M	+143.7
	9H83M	
	—60M	
No. 14053	1023 UTC	211.39 Degrees West
Reference No. 14048	0048 UTC	67.69 Degrees West
Add factor +6	+11H30M	+172.4
	11H78M	
	—60M	
No. 14054	1218 UTC	240.09 Degrees West

QRM ON THE BURGLAR ALARM CIRCUIT

E. Manifold VK3EM
267 Jasper Road, McKinnon 3204

Since building and installing the electronic burglar alrm in 1974, and as described in AR, March 1977, there have been several false alarms in the last few months, fortunately while we have been at home to attend to them.

As they have not been repetitive as to dates or time, it has left a nagging doubt, in case the house were left for long periods, that a false alarm would cause inconvenience to both neighbours and police. What to do?

The only appliance in the house that has ever triggered the alarm to my knowledge is an electric fan on the same circuit as the alarm power supply, when either switched off, or a change of speed was made, although the refrigerator, with a large motor, with frequent switching at all times of the day, has never triggered the alarm.

Tests made on the alarm circuit wiring, which was not earthed, with a CRO and VTVM/RF Probe, then switching the fan on/off, showed transient spikes of approximately 2.5 volts across the wiring resistance of 18 ohms, clearly enough to trigger the control transistor.

But since there were no domestic appliances, including the refrigerator, operating at the times of the false alarms, the voltage spikes must have originated on the power lines, or maybe a high power taxi unit. Again since it has only happened recently, could it be CB units immediately outside the house causing RF pick up to be rectified by the diodes in the control transistor base lead.

Retreating to the shack, tests were then made with the FT101B on 7, 14, 21, 27 and 28 MHz at several frequencies in each band, together with FM units on 52.5-146

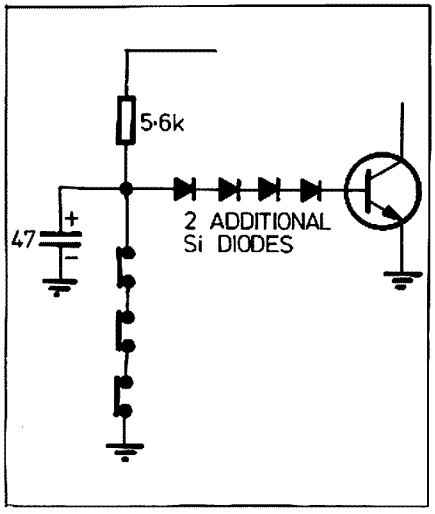


Fig. 1: Modified Control Circuit

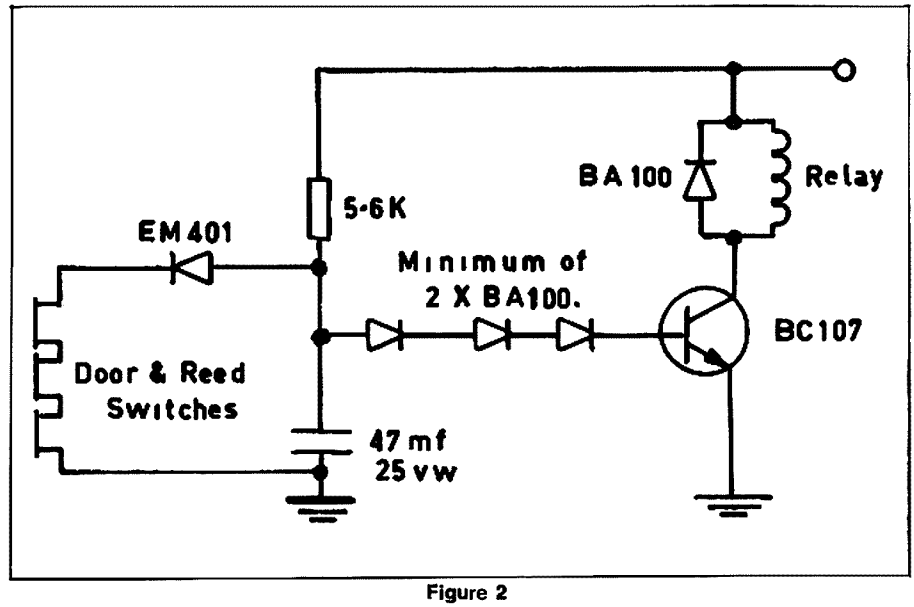


Figure 2

and 438 MHz without triggering the alarm circuit. RF interference was not proven.

Again what to do? Firstly a bypass condenser 47 uF was wired across the alarm circuit wiring at the control transistor. See Fig. 1.

This dropped the transient peak voltage to about 1.2 volts maximum but did not provide enough margin for safety, so two more silicon diodes were wired in series with the existing control transistor base leads, to raise the minimum conduction voltage of the transistor.

Subsequent tests have shown it now takes 4 volts AC across the wiring circuit of 18 ohms to trigger the alarm control transistor.

These mods were then carried out on the second unit, but where the first unit has not given any more trouble, the false alarms have continued at the business premises, due no doubt to the presence and switching of two 35 h.p. 3-phase motors and auxiliary cooling tower and pump motors for the refrigeration plant.

The base diodes to the control transistor were eventually increased to 8 diodes over a period, without avail.

It was originally considered in the first unit to install a series diode in the alarm circuit wiring at the transistor input, but thought that at the cut-off point during the interfering pulse the base voltage could rise sufficiently to trigger the alarm.

Since the 8 diodes in series with the transistor base were not effective in the second unit, a 400 PIV power diode was installed in the alarm circuit wiring as a trial to determine if the interfering pulses were long enough to cut off the series diode, and allow the 47 mF condenser to charge to the point of triggering the control transistor. See Fig. 2.

To date this has not occurred, despite the many temperature controlled switching cycles of the refrigeration plant motors during each night's operation.

It now appears that the time constant of the 5.6K resistor and the 47 mF condenser are long enough to offset the duration of any pulsed interference induced into the alarm circuit wiring, but the number of diodes in the base circuit of the transistor determine the voltage to which the 47 mF condenser can charge before triggering takes place.

While the random nature of the interference has taken a long time to establish and track down the cause of the false alarms in these two installations the remedy could be applicable to other cases.

Since one genuine and two false alarms gave the police a high speed dash of 8 miles each way in the early a.m., and a few alarms investigated and found false, we feel more confident that any future calls will be "for real when the whistle blows next time". ■

DX FROM VITI LEVU — FIJI ISLANDS

Bruce Bathols VK3UV

On a recent cruise around the Fiji Islands, I had the pleasure of meeting Upali Ranasinghe 3D2UP, from Suva.

Suva is the capital city of the Fijian group which consists of approximately 300 islands. Only 80 or so are inhabited (mostly by natives and Indians), and the main island, Viti Levu, is where the action is.

There are 23 licensed amateurs in Fiji, but only eight are active at the present time, and all are located on Viti Levu.

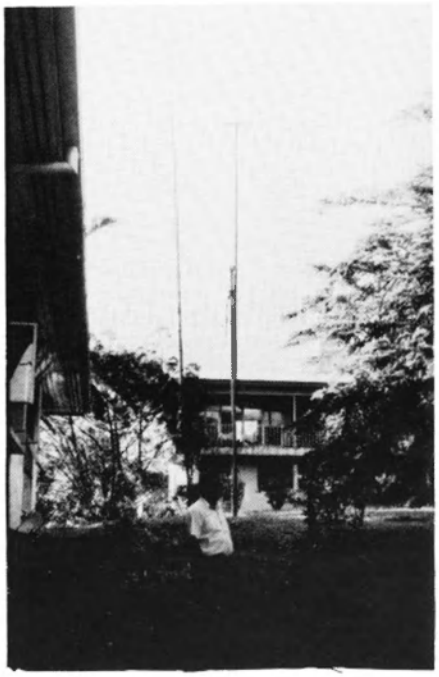
Upali has been in Fiji for 18 months and is an engineer with the Suva City Council.

He originally comes from Sri Lanka and holds the call 4S7UR. Upali hopes to return to his Sri Lankan home in about two years.

I first worked Upali in February 1978 and he is usually active most evenings between 0600Z-1200Z on 20 Mx between 14.200 and 14.250 MHz.

His excellent QTH is situated about 400 ft. a.s.l. with a south-easterly aspect and overlooks Suva harbour.

At the moment he is using an FT101E and G5RV. However, the day we had our eyeball QSO, he had just finished building a 2 element 20 Mx spider quad at 30 ft. which was yet to be tested.



Upali with his new Spider Quad.

Upali and son Darshaka.

While I was there Upali fired the FT101E into the new quad and, using his Armstrong rotator, turned the quad toward VK.

It appeared to be working perfectly, 1.3 to 1 SWR over the entire band, with a good F/B ratio.

We worked VK2, VK5 mobile and ZL, all signals received were 20 dB over S9.

Upali hadn't possessed a beam previously and he was delighted by its performance.

I asked him about the performance of his G5RV and the report he gave was amazing.

Because of the tropical latitude of Fiji and the excellent QTH, Upali has been able to obtain global communication almost at will with his G5RV.

There is a local Radio Club on the island, but it is inactive momentarily.

The British Government has given the Fiji Institute of Technology (FIT) complete equipment to establish an amateur station, and it is hoped that the Radio Club will once again become active with the acquisition of this gear.

Strange as it may seem, with the 100s of duty free establishments, there is no commercial amateur radio equipment available in Fiji — probably due to the lack of demand.

There is the usual assortment of CB hand held transceivers in the duty free shops, but I did not see any of the units displayed which would be suitable for installation in a vehicle (only a matter of time, I guess!!).

Apparently CB is legalised in Fiji on a restricted basis, but I was unable to find out further details. I did not see any evidence of CB proliferation like it has occurred in VK.

There are no TV stations in Fiji, and I was therefore intrigued by some large TV arrays situated on houses on the hilltops.

Yes, CH0 TV Brisbane, Melbourne and New Zealand is available to those who have a high enough location for the ducting, etc., that occurs — most times with noise free reception all year round.

Upali and his charming wife, Shreeni, have four children — one boy and three girls.

The girls don't appear to be interested in amateur radio, but Upali's 15-year-old son Darshaka is showing a keen interest and he hopes to go the whole way and study for his licence very soon.

Upali requested me to inform other amateurs via AR that he would be very happy to have an eyeball QSO as you pass through the area, after arranging preliminaries on 20 Mx. ■

AUSTRALIAN DRAFT PROPOSALS FOR WARC RELEASED

On the 28th May, the Minister for Post and Telecommunications released the draft Australian proposals for the World Administrative Radio Conference in 1979. These proposals do not necessarily represent Australia's final position, but have been released to enable community discussion prior to the adoption of a final position.

A number of proposals from the Amateur Service have not been included, for example, a new band at 160 to 190 kHz, but other proposals have been adopted in this draft. Of particular interest to the amateur Service is the Australian proposal for a new band at 10.1 to 10.2 MHz, a new band that is also proposed in the eighth Notice of Enquiry released by the Federal Communications Commission (USA) on the 5th May, 1978. New bands (each 200 kHz wide) are also proposed at 18.1 and 24.150 MHz. The specific proposals of the Australian draft affecting the Amateur Service are as follows:—

1800-1900 kHz
Amateur Secondary shared with radio navigation and radio location. This is an increase of 40 kHz for actual Australian allocation, but a Regional reduction of 100 kHz.

3500-3900 kHz
Amateur, shared with Fixed and Mobile is proposed for Region 3. At this stage, Committee 8 considers the present arrangement in Australia preferable, i.e. Footnote RR206 that in Australia, the Band 3500-3700 kHz is allocated to the Amateur Service; the Band 3700-3900 kHz is allocated to the Fixed and Mobile services. It is also proposed that 3950-4000 kHz in all Regions be allocated to the Broadcasting service.

6900-7000 kHz
Amateur and Fixed shared all Regions.

7000-7100 kHz
Amateur, Amateur Satellite, exclusive all Regions.

7100-7500 kHz
Broadcasting exclusive all Regions.

10100-10200 kHz
Amateur exclusive. A new band.

14000-14250 kHz
Amateur, Amateur Satellite, exclusive. No change.

14250-14350 kHz
Amateur.

18100-18300 kHz
Amateur, Amateur Satellite, exclusive. A new band.

21000-21450 kHz
Amateur, Amateur Satellite, exclusive.

24150-24350 kHz
Amateur, Amateur Satellite, exclusive. A new band.

28.000-29.700 MHz
Amateur, Amateur Satellite, exclusive. No change.
Footnote 226 — that in Region 2, Australia and New Zealand, the Amateur Service may operate between the frequencies of 26960 and 27230 kHz.

47-68 MHz
Fixed, Mobile and Broadcasting in Region 3. In Region 1 Broadcasting. In Region 2 Amateur 50-54 MHz.
Footnote 246A — In Australia, the band 52-54 MHz is allocated to the Amateur Service on a secondary basis.

144-146 MHz
Amateur, Amateur Satellite, all Regions.

148-148 MHz
Amateur, Regions 2 and 3.

420-450 MHz
Radio location shared Amateur secondary. No change.
Footnote 320A — Maintained in the band 435-438 MHz. The Amateur Satellite Service may be authorised on condition that no harmful interferences shall be caused to other services, operations in accordance with the Table. Administrations authorising such use shall ensure that any harmful interference caused by emissions from any Amateur Satellite is Immediately eliminated in accordance with the provisions of No. 1567A.

1215-1240 MHz
Radio navigation Satellite. Radio location shared Amateur secondary.

1240-1300 MHz
Radio location shared Amateur secondary.

2300-2310 MHz
Amateur, Amateur Satellite exclusive. A new exclusive band.

2310-2450 MHz
Radio location shared Amateur, Fixed and Mobile secondary.

3300-3400 MHz
Radio location shared Amateur secondary.

3400-3410 MHz
Fixed Satellite, radio location shared Amateur, Amateur Satellite secondary. A new Amateur Satellite band.

3410-3500 MHz
Fixed Satellite, radio location shared Amateur secondary.

5650-5670 MHz
Radio location shared Amateur, Amateur Satellite secondary. A new Amateur Satellite band.

5670-5725 MHz
Radio location shared Amateur, Space Research (Deep Space) secondary.

5725-5850 MHz
Radio location shared Amateur secondary.

10000-10475 MHz
Radio location shared Amateur secondary.

10475-10500 MHz
Radio location shared Amateur, Amateur Satellite secondary. A new Amateur Satellite band.

24-24.05 GHz
Amateur, Amateur Satellite, exclusive.

24.05-24.25 GHz
Radio location shared, Amateur secondary.

49.5-50 GHz
Fixed, Mobile, Amateur, Amateur Satellite, shared. A new allocation.

71-72 GHz
Earth exploration Satellite. Space Research. Radio location shared, Amateur, Amateur Satellite secondary. New allocation.

72-76 GHz
Radio location shared Amateur, Amateur Satellite secondary. New allocation.

165-170 GHz
Radio location shared Amateur, Amateur Satellite, secondary. New allocation.

240-250 GHz
Fixed radio location. Mobile shared, Amateur, Amateur Satellite, secondary. On the shared bands above 3400 MHz, a new Footnote 376A is proposed that no harmful interference shall be caused by the Amateur Satellite Service to other Services. Administration shall ensure that harmful interference caused by emission from an Amateur Satellite is immediately eliminated in accordance with RR1567A.

THE BACKGROUND TO THE AUSTRALIAN DRAFT PROPOSALS

David A. Wardlaw, VK3ADW,
Federal President,
Wireless Institute of Australia.

Michael J. Owen VK3KI,
IARU Liaison Officer.

When a World Administrative Radio Conference was first proposed, the Institute recognised that a general review of

Article 5 (the frequency table) was of vital importance to the Amateur Service. The Institute immediately made representations to the Australian Post Office, the Department then responsible for frequency management, to ensure the Amateur Service was adequately represented in the preparation of the Australian position.

At that time the WARC was only a general proposal and no date had been set. In fact, some were questioning whether such a conference was practicable. Despite these reservations, the Secretary of the Department gave assurance that the Australian Amateurs would be consulted fully through the WIA.

Early in 1976 the Institute received an invitation to send its reoresentative to the initial meeting of the Australian Preparatory Group (APG). This group was to accept responsibility for the Australian preparation for WARC. By this time a significant change had occurred in frequency management as the Australian Postal Commission and the Australian Telecommunications Commission had become independent statutory commissions. Whereas in the past the old Postmaster-General's Department had been both a frequency user and a frequency manager, the new Postal and Telecommunications Department had been formed and was responsible for frequency management without being a frequency user itself. The first meeting of the APG was chaired by the Assistant Secretary, Postal and Telecommunications Department, and included representatives of all the services that were involved in the use of the radio frequency spectrum. Approximately 25 people, including representatives of the Postal and Telecommunications Department, were present at this initial meeting. At this meeting seven committees representing the services using the radio frequency spectrum were established. It was decided that the chairman of each of these committees would be a continuing member of the APG. In addition, a number of others were invited to join the APG to ensure that all frequency users were properly represented.

David Wardlaw, President of the Wireless Institute of Australia, represented the Amateur Service at this meeting and he was appointed Chairman of Committee 2 which was given the responsibility to report on the Amateur and Amateur Satellite Service. Each committee was requested to prepare a paper specifying the requirements of each Service through the year 2000.

Committee 2, the Amateur Service and Amateur Satellite Service, based its scenario on the position adopted by the International Amateur Radio Union. It relied heavily on the material prepared by the IARU President's Advisory Committee but modified the arguments to suit the Australian situation. The Institute believes that the role of the IARU to be essential to the co-ordination of the presentation of the Amateur Service case globally.

A further committee was formed to assess the conflicting requirements of each Service and to produce a provisional proposal which was the subject of further discussions by the APG.

From these studies a first Draft of the Australian proposals was prepared and each committee was asked to study this draft. The second Draft was prepared on the basis of the additional comments made by the committees in respect of the first Draft.

The comments included in the draft proposal stress the desirability of the allocation of a family of frequency bands to allow the propagation characteristics of the HF band to be adequately exploited. ■

Have you checked your Call-Sign on the Address Label?

TV CHANNEL 5A — (137-144 MHz)

Suggestions had been noted that TV Channel 5A should be used for Ethnic broadcasting. Inevitably this would result in the use of this channel in capital cities.

As this is of great concern to all amateurs, a letter, copied hereunder, was written to the Minister for Post and Telecommunications.

Copies of this letter had been sent at once to each Divisional Federal Councillor with the recommendation that members be encouraged urgently to protest individually or as groups to Parliamentarians.

This is the letter:—

The Wireless Institute of Australia,
Federal Executive,
P.O. Box 150,
Toorak, Vic. 3142
26th May, 1978

The Hon. A. A. Staley,
Minister for Post and Telecommunications,
Parliament House,
Canberra, A.C.T. 2601.

Dear Sir,

The Wireless Institute of Australia representing radio amateurs in this country desires to record its great concern at the continuing, let alone increased, use of Channel 5A for television transmissions. An increased use is, at least according to a report in the Melbourne "Age", suggested for ethnic broadcasting stations.

May we respectfully remind you that this television channel is unique to Australia and not in accord with the international agreements covering the use of radio frequency (that is, Article 5 of the Radio Regulations of the International Telecommunications Union). Why should we be concerned with the non-conformity of this country to that international agreement.

The allocation of radio frequency by the ITU has had regard to the "neighbourhood" in which a particular use is placed. The Amateur Service involves the use of radio frequency by licensed radio amateurs throughout this country. In fact, one person in every 1,500 in Australia is a licensed amateur. Channel 5A is 137 to 144 MHz. The Amateur Service is allocated in Australia and throughout Region 3 the band is 144 to 148 MHz.

It is inevitable that the use of Channel 5A for television purposes results in interference from amateur stations operating in one of their most used bands to receivers tuned to Channel 5A. Likewise, the television transmitters using Channel 5A cause interference to amateurs. If the suggestion reported in the "Age" is adopted, then Channel 5A use will occur in capital cities. Already the allocation of Channel O, particularly in Melbourne and Brisbane, precludes or severely curtails the use by amateurs of the 6 metre amateur band allocated to the Amateur Service because of the same interference problems that will arise with the use of Channel 5A. Allocation of Channel 5A in areas where Channel O already operates will detrimentally affect the amateur use of the two most used amateur VHF bands. In fact, these two bands are the lowest bands allowed to limited licensees (that is, amateur licensees without a morse code qualification).

To take the "neighbourhood" analogy further, really an analogy based on town planning principles, one does not put a glue factory or tanning works in a residential area. In short, it is a principle of town planning that the adjacent use of land for different purposes should be compatible. It is a principle of frequency management that the adjacent use of radio frequency must be compatible.

That is recognised by the ITU, but has been disregarded by the Australian regulatory authorities.

In fact, the Institute has understood (even if it has not accepted) the pressures that led to the allocation of Channel 5A. Those pressures no longer exist; it is fanciful to suggest that the introduction of UHF channels would today impose any real burden on our community. The Minister's own experience should make him completely aware of the general distribution throughout the community of television receivers capable of receiving UHF channels.

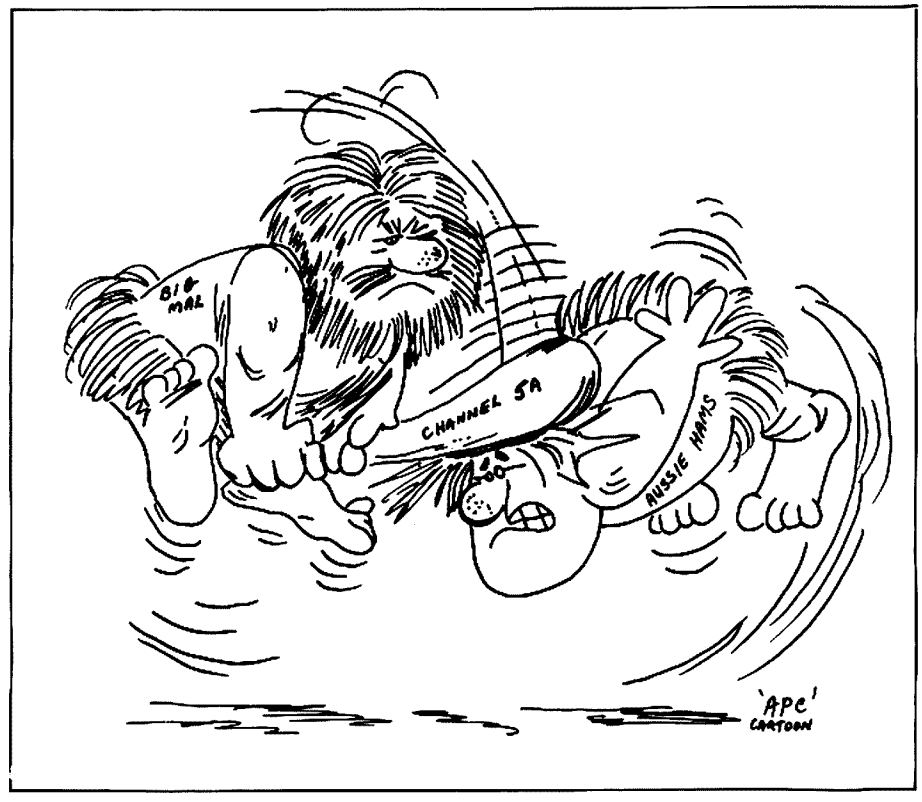
The Institute is, of course, concerned that radio amateurs can live in their community without conflict with their neighbours or without restriction on the legitimate use of bands allocated to them.

We would, however, be surprised if other frequency users (whose adjacent use is compatible with our use) did not share our concern. The Minister's advisers are, no doubt, fully aware of the use of the band 137 to 138 MHz by meteorological satellites, for space research, and space operations (with Channel 5A not an adjacent use, but a use in common).

May we respectfully suggest that the Minister should enquire of his advisers how many satellites have been launched using these frequencies in the past five years?

Likewise, the Minister is no doubt aware of the International Telecommunications World Administrative Conference to be held in 1979. This Conference raises the possibility of a majority of nations agreeing to a use of that part of the radio spectrum covered by Channel 5A that is totally incompatible with television broadcasting.

This matter is drawn to your attention because of the extraordinary concern expressed by so many amateurs and because



we are firmly convinced that Australia has today, in realistic terms, the option of introducing UHF television and thus preserving harmony with the rest of the world and avoid a conflict arising from incompatible use, a conflict that we see as being totally unnecessary.

It is no longer necessary to site the tanning works in a residential area. The introduction of UHF channels provides a solution. To do otherwise is only to enlarge the problem that is already real at a time when the appropriate course in technical and community terms seems to us to be clear.

I am instructed to seek your urgent assurance that allocation of Channel 5A for further television broadcasting services is not contemplated.

Yours sincerely,

D. A. Wardlaw, President. ■

SIMPLIFIED INTRUDER WATCHING

Please read the following, it applies to all amateur bands and all intruders (including "pirates"), in conjunction with the insert in this issue.

At the Federal Convention in Melbourne during Anzac week-end I was given an excellent hearing on intruder matters. I stressed the fact that, in the WIA, members are very loathe to act as I.W. Observers, and one suggestion was put forward that I am following up. It amounts to this — instead of members taking on "official observer" status, they be more tree and not obligated by that status. The idea is that members keep alongside them on their operating desk a copy of the insert form, which is designated "Observers' Log Sheet".

In listening around the bands, or in normal operating, when an intruder is heard an appropriate entry would be made on the form, and at the end of each month the sheet/s would be forwarded to your Divisional Co-ordinator (as listed below).

From your standpoint this would take the onus of being "official" off your shoulders, and I urge all members to start now to stimulate more activity in intruder watching to make it the success that it should be.

The Intruder Watch Service works in this way. Say, for instance, that on some occasions your favourite net or frequency is subject to harmful interference from a non-amateur transmission, and you want to do something about it. You note the occurrence on the Observers' log sheet, making as many observations as you can on different days, then at the end of the month you forward the sheet to your Co-ordinator. Many reports will bring results, but not just an isolated report, so get all the participants on the net also to send in their findings. Thus, after a while, you'll be used to doing this, and many reports will be received, and some action taken. Identifications are essential to get action, but what you hear without ident could be most useful to tie in with somebody else's reports. When compared these often build up a dossier on the station concerned.

Observers' Log Sheets are available from your Co-ordinator, or you may prefer to rule your own. By being alert to intruders when operating, I am sure will make your listening much more interesting and, Short Wave Listeners, so long as their equipment is accurate, can participate. Be enthusiastic, note all infringements that you hear, and send your sheets in monthly. They'll be much appreciated, and at WARC 79 will be used to condemn those countries who allow stations to intrude into our Amateur bands. You'll be doing a great service to Amateur Radio as a whole, and it will pay dividends next year.

Your Co-ordinator is as hereunder:—

VK1AOP — Ted Pearce, 45 Carnegie Cres., Narrabundah 2604.

VK2AFG — Les Weldon, 11 Raymond Ave., Northmead 2152.

VK3XB — Ivor Stafford, 16 Byron St., Box Hill South 3128.

VK4KX — Murray McGregor, 6 Murray St., Red Hill 4059.

VK5LG — Leith Cotton, 64 Weroona Ave., Parkholme 5043.

VK6WT — David Couch, 9 The Grove, Wembley 6014.

VK7MX — Max Ives, P.O. Box 12, Devonport 7310.

VK8HA — Henry Andersson, P.O. Box 1418, Darwin 5794.

Alf Chandler VK3LC,
I.W. Co-ordinator.

PLEASE KEEP LOG SHEETS BESIDE YOU AT ALL TIMES. ■

TECHNICAL CORRESPONDENCE

22 May, 1978

The Editor,

Dear Sir,

In reference to an article in your publication of April 1978, page 18, "A scanner for the 2m Kyokuto", by Martins Willems VK4ZIL:—I have constructed this item and found two errors in the circuit diagram. The 47 uF capacitor at pins 10 and 11 of the IC A should be approximately 0.25 to 0.33 uF and the 0.025 uF at the pins of IC B should be 47 uF.

These values are subject to user's choice, depending on how fast the scanning is to take place in the first instance and how long the delay is after detecting a busy channel in the case of IC B.

In the last paragraph, mention is made of one "round trip" taking 14 seconds, which is much too fast. With the 0.22 uF it takes about 40 seconds. This sounds slow, but not when one watches the 10 kHz LED flashing along. It actually is so fast that after the stopping of the scanner takes place it is on the next step from the "busy" channel (as mentioned by the author in the next-to-last paragraph). Any faster a scan rate seems to be too fast.

I hope this note will save others from the difficulty of sorting it out the hard way as I did; otherwise it is a good project and I use the device quite often.

Sincerely,

Brian Field VK2MK,
4 Kapyong Street, Belrose 2086.

An errata has been received from the author concerning one of the capacitor values and this was published in June issue.—Ed. ■

NOVICE NOTES

TVI

For your convenience and guideline, some of the more useful steps to be taken in elimination of interference are listed below:

(1) Completely shield your transmitter.

(2) Install a well-shielded low-pass filter.

(3) Reduce transfer of harmonics between stages by means such as loosely coupled grounded link coupling between stages and electrostatic shielding in RF coupling transfers.

(4) Install a high "Q" series inserted parallel tuned harmonic trap in the plate circuit of each stage, as well as grounded absorption trap circuits tuned to the interfering harmonic and closely coupled to the far end of the plate tank circuit of all transmitter circuits. These trap circuits have been found to be particularly effective on the reduction of harmonic radiation.

(5) Make sure there is sufficient capacity in the final stage plate circuit to provide a high circuit "Q".

(6) Operate the final stage of your transmitter with the lowest grid bias consistent with reasonable efficiency, and do not overdrive it.

(7) Install stubs at output of the transmitter cut to appropriate length for troublesome harmonics.

(8) Filter and shield all exposed power leads between the transmitter and the transmitter power supply and between the power supply and the AC line.

(9) Avoid using a directly excited voltage fed antenna.

(10) Install a current fed single band antenna that will not readily radiate harmonics of the operating frequency.

(11) If necessary, replace your antenna feeder with a coaxial cable to reduce coupling between the antenna feeder and conductors in the vicinity, particularly the power wires inside the building in which the transmitter is located. (Other wires in addition to the transmitting antenna can radiate, especially nearby wires or conductors of critical length. This can in effect cause a rise in radiation of harmonics.)

(12) Reduce standing waves to a minimum on your antenna feeder line.

(13) Try re-orienting your antenna with respect to the television receiver to see if a null in your radiated pattern will reduce or eliminate the interference, or try to locate your antenna further from the TV antenna.

—From World Radio News March 1978. ■

REMEMBER!!

It cannot be stressed too often that much worry and frustration over projects which don't work can be avoided by paying attention to those points which should be simple and obvious but are often overlooked. Are the transistors, for instance, inserted the right way around? Have you the top and bottom views mixed up? Have you got badly soldered joints? Normal eyesight is just not good enough to find dry joints and faults in circuit boards, and it is essential to get hold of a watchmaker's eyeglass and use it whenever checking for these faults. Then there are dry joints which are badly soldered or perhaps not soldered at all, and the other extreme where blobs of solder are bridging a couple of connections. This can very easily happen with dual in-line integrated circuits where the pin spacing is only 1/10 of an inch apart. Open circuit or wrong value resistors and capacitors can be another source of trouble as can electrolytic capacitors which have a high leakage. Make a list of all these possibilities starting with badly soldered joints and work through the list systematically and the chances are about twenty to one that you will find the trouble is due to one of these faults — simple and obvious after you find it, but very frustrating and puzzling until you do!

— From Zero Beat April 1977. ■

TOWER INSTALLATION HINTS

Evan Rolek K9SQG

Here are some hints for tower installation which might be of interest.

1. Mount tower away from the house, if possible, to avoid lightning flash-over.

2. Use connectors for all coax lines and rotor control where lines leave the tower. Disconnect when not in use or when storms are in the area.

3. Install ground rods in bottom of hole for base before concrete is poured. This will allow a deeper, more effective ground than a rod next to the concrete base.

4. Run ground radials away from the tower in case one decides to shunt feed the tower on 75 or 160 metres at a later date.

5. Contact a reputable ready-mix concrete firm to discuss the load rating and slump for your particular application.

6. Build a frame so that the base will be sloping to enable rain and snow run-off.

7. Seal tower joints on the outside with silicon sealer.

8. Crumble window screen and insert in bottom section of tower to prevent spiders from entering the tower and causing frost build-up.

9. Use a thrust bearing at the top of the tower.

10. Mount rotor as low as possible in the tower. This will enable easy maintenance and allow excess mast to act as a torsion bar, rather than the tower.

11. Use at least some cable clamps for the coax and not just electrical tape.

12. Seal all coax connectors with silicon seal where they enter the antenna.

13. If the antenna must be over a patio, use an owl decoy from a sporting goods shop atop the antenna to scare away birds which are not toilet trained.

14. Seal or fill the mount which is mounted in concrete in order to prevent "freezing expansion".

15. Even if the tower is aluminium, use several coats of spray paint on all steel hardware such as nuts and bolts.

16. For "self-supporting towers" have some storm guy wires handy to attach to the house or anchors in case severe storms are heading your way.

17. Devise a maintenance bracket of some sort to prevent antenna rotation in case the rotor is removed for maintenance.

—From World Radio News March 1978. ■

QSP

TOWNSVILLE BOOKS DONATION

To help foster interest in amateur radio, the Townsville Amateur Radio Club recently decided to make an annual donation of relevant books to the two municipal libraries in Townsville. At the same time, the libraries agreed to subscribe to AR. The photo shows the Club President, Peter Renton VK4PV, presenting the first of these books to the Librarian, Mrs. Joycelyn Brent.

ONE HUNDRED AND SIXTY METRE NET

Peter Brown, VK4PJ, and John Aarsse VK4QA, have for the last few months attempted to create interest in the top band in S.-E. Qld. by regularly activating one point eight two four on single side band.

The scheduled times do vary, usually from 09.45 GMT to 10.00 GMT each Sunday. Although the band at times seems to be very noisy, it is very surprising what can come through. Some weeks ago, VK2BVS/P, Blue Mountains, came in with 5 and 9 signals.

Static noise nine plus plus does not stop Ipswich coming in at Redcliffe with good signals.

Roy VK4ZQ managed to work on SSB into the U.S. West Coast in November last year. Others worked into the Solomons and Kermedec.

With the winter season coming up in a few months, the southern States will be romping in again, 5 and 9 plus into VK5 and so on.

Why don't you get ready for top band and join the Queensland net on Sundays, if only to find out if you have a strong second harmonic radiation. ■

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18-AVT 10-80M vertical 23' tall no guys
TH6-DXX 10-15-20M senior 6 el. Yagi 24' boom
TH3-MK3 10-15-20M senior 3 el. Yagi 14' boom
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Also 2M Yagis will be available.

Large quantities available July/August direct from factory. Price will be competitive and will depend upon import duty requirements. Parts for damaged HY-GAIN antenna available on indent order basis until stocks of parts available.

AMATEUR EQUIPMENT:

KENWOOD TS-520S 10-160M SSB/CW transceiver 240V AC	POA
KENWOOD TS-820S 10-160M SSB/CW transceiver w/Digital readout	$1,000
KENWOOD DG-5 Digital display for TS-520S	$175
KENWOOD TV-506 6M transverter	$175
KENWOOD AT-200 Antenna matchbox	$165
YAESU MUSEN FT-101E 10-160M AC/DC transceiver w/Speech processor	POA
YAESU MUSEN FT-901D Deluxe AC/DC 10-160M Digital transceiver	POA
YAESU MUSEN FT-7 Mobile 10-80M 20W 12V DC transceiver	POA
YAESU MUSEN FL-2100B 10-80M 1200W Linear Amplifier	POA
YAESU MUSEN FRG-7 .5-30MHz General coverage receiver	POA
YAESU MUSEN SP-101B Extension speaker	$30
ATLAS 210X 10-80M Mobile transceiver c/with HD cable	$825
FDK MULTI-800D 800 channel (5KHz) 2M FM transceiver 1-25W adjustable output slow/med/fast up/down tuning free split VFOs Memory	$325
FDK DD-800 Bright Remote display for the 800D for mobile use	$40
FDK MULTI QUARTZ-16 24 ch. 10W 12V DC 2M transceiver w/crystals for repeaters 1-8 and channels 40 & 50	Still only $175
ICOM IC-202 2M SSB portable transceiver — a few only —	Still only $175
KEN KR-400 Azimuth antenna rotator w/28V AC control/indicator box	$100
KEN KR-500 Elevation antenna rotator w/28W AC control/indicator box	$125

COAX CONNECTORS:

PL-259 suit RG-8U & RG-58U, Solderless PL-259 suit RG-8U & RG-58U, In-line splices suit RG-8U & RG-58U	Each .75¢
SO-239 with 2 hole or single hole w/lock nut mounting	Each .75¢
Double male connectors	.85¢
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2'6" coloured jumper leads w/crocodile clips — bundle of 5 —	$3.00

ACCESSORIES:

FERRIS SWR/Field Strength meters	$15.00
SWR-50A Twin Meter 3.5-150 MHz 1 KW SWR/Power meter	$20.00
BUMPER MOUNTS — fit any bumper — with 3/8" 24 thread antenna mount	$7.00
GUTTER MOUNTS — with 3/8" 24 thread antenna mount	$4.50
5 metre lengths RG-58U w/PL-259 connector one end	$3.00
3' lengths RG-58U w/PL-259 connector each end	$2.50
M-ring body mount	$3.00
GLP right angle connector RG-58U to SO-239 w/lock nut & weatherproof cap	$3.50
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Arie Bles (VK2AVA) — Proprietor
Roy Lopez (VK2BRL) — Manager

ATV NEWS

PETER COSSINS VK3BFG

In the January edition of AR we published a circuit of a cathode modulator being developed by Ian VK3ALZ. Since then Ian has been busy with modifications and improvements, including a circuit for Intercarrier sound. The following information should enable constructors to achieve a correctly adjusted modulator which will produce very good fast scan pictures.

VK3ALZ VIDEO MODULATOR Mk. 2

General Constructional

Q8 and Q9 should be adequately cooled with heat sinks mounted on polystyrene blocks to reduce the capacitance to chassis. The collector of Q10 is a virtual earth and therefore Q10 can be heat sinked to chassis in the normal manner. Q6 and Q7 are provided with TQ5 heat sinks. DC balance is important otherwise overheating of Q8 or Q9 will occur. When sound is not required the sound input is shorted to earth.

ADJUSTMENT PROCEDURE

(a) Video Modulator

1. Replace the 6/40 cathode connection with a 250 ohm resistor between the collector of Q9 and the 110V rail.
2. Adjust VR2 for VBE = 0.7V. Repeat adjustment for Q10 using VR3.
3. Adjust VR4 to its earthy end.
4. Connect a sine or square wave voltage source of approximately 0.5V to the video Input. Connect a CRO to TP1 and adjust VR2 for best gain and linearity.
5. Remove the signal from the video Input and balance Q1 and Q2 by selecting 22 K resistors.
6. Re-connect the signal and re-adjust VR2.
7. Connect a CRO to TP2 and adjust VR3 for best gain and linearity.
8. Check that the temperature of Q8 and Q9 is the same (approximately 70°C).
9. Check the bandwidth of the system with a suitable signal generator (the 3dB point should be approximately 4.5 MHz).
10. Check the voltage gain of the system (approximately 140).
11. Remove the 250 ohm resistor in the collector of Q9 and connect the collector of Q9 to the cathode of the 6/40. (Refer to Fig. 2 AR January 1978.)

(b) RF Section

Before the modulator is switched on the grid and plate tank circuits should be resonated at the operating frequency.

1. With no power on the modulator place a jumper between TP2 and earth.
2. Open circuit the screen of the 6/40 and tune the grid tank circuit for maximum grid drive.
3. Re-connect the screen circuit and tune the plate circuit for maximum RF reading on a line reflectometer.
4. Turn the supply off and remove the jumper from TP2.
5. Switch on the modulator and transmitter supplies.
6. Connect a video camera to the modulator and observe composite video from a line DC modulator on a CRO or monitor.

NOTES

1. There should be no white clipping or sync. tip compression up to 75 per cent of maximum setting of input potentiometer.
2. The grid drive reading vanishes when video modulation is applied.
3. If there is hum present additional filtering of the RF H7 supply is required, or there may be earth loops between the supplies, camera, etc.
4. RF power output should decrease with modulation.

(c) Sound Modulator

If you have achieved about 300 lines resolution you are ready to test the inter-

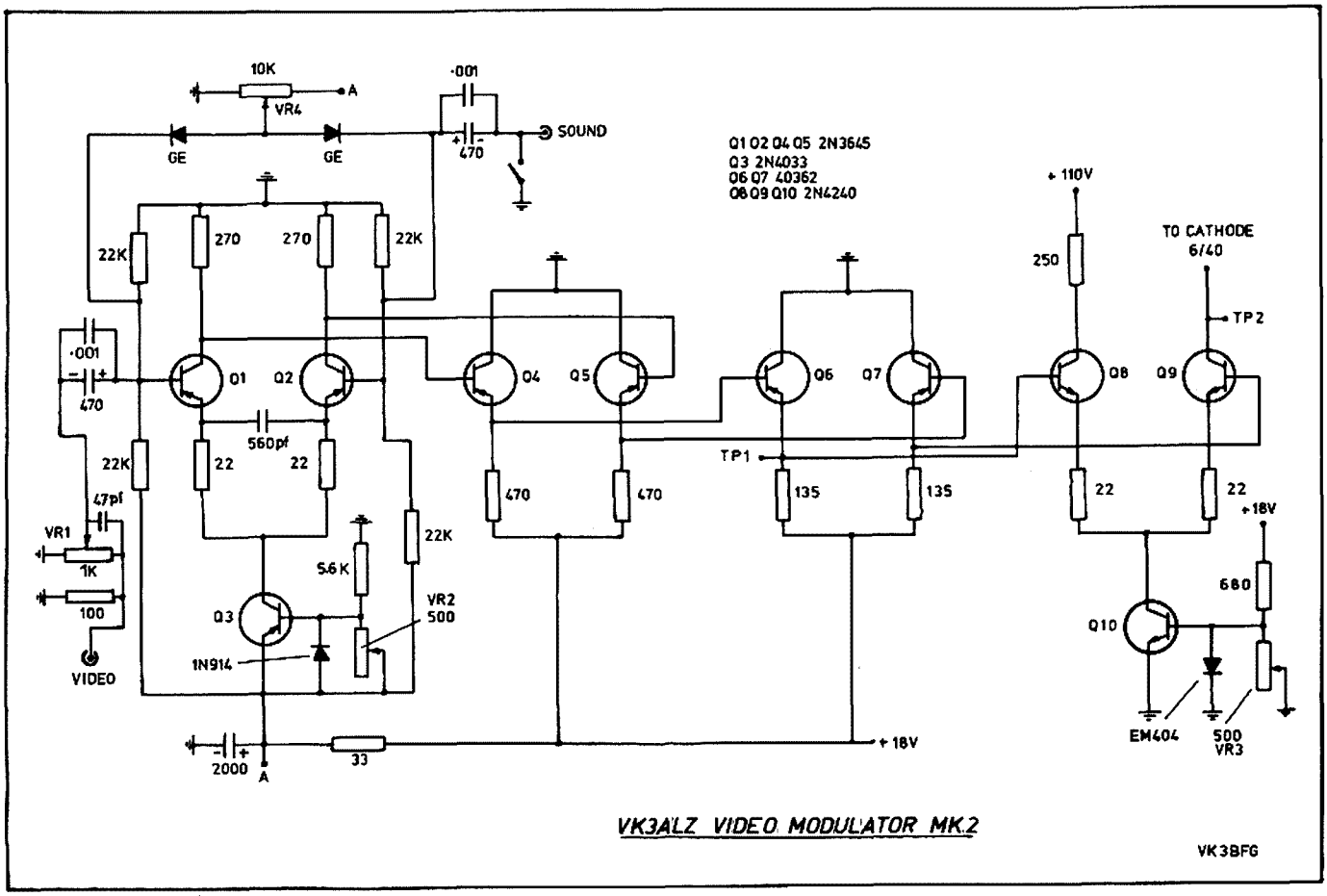

FIGURE 1

carrier sound system.

1. Adjust the sound oscillator to 5.5 MHz.
2. Adjust the series resonant trap for minimum frame buzz. Adjust the output potentiometer VR7 for a suitable level. If this potentiometer is set too high degradation of the picture quality will result.
3. The input and bias potentiometers VR5 and VR6 should be adjusted for correct gain and best deviation linearity. ■

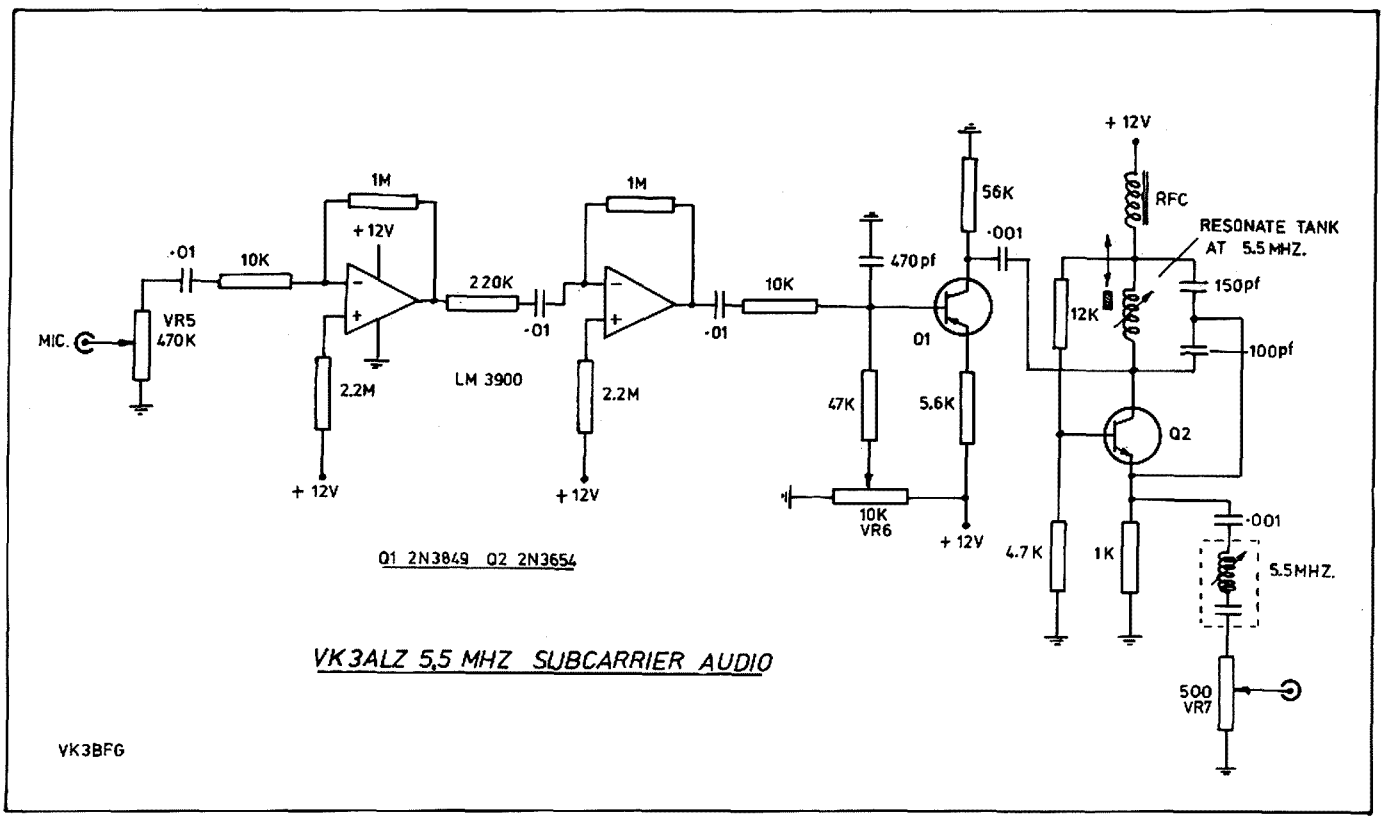

FIGURE 2

AMATEUR RADIO ON NATIONAL TV

AMATEUR RADIO ON NATIONAL TV

During May and June, the 7 National Network showed a half hour segment depicting amateur radio in their program "This week has seven days". The WIA and amateur radio received much needed publicity, and many enquiries were received as a result.

Excerpts from an ARRL film were shown and several Victorian amateurs were interviewed by David Johnston and Deane Blackman VK3TX.

PHOTOGRAPHS

No. 1. Deane Blackman VK3TX (l.) and David Johnston discuss homebrew equipment with Paul Taylor VK3BLY.

No. 2. Bob Arnold VK3ZBB (centre) explains Amateur Satellites.

No. 3. Doug McArthur VK3UM (r.) gave an SSTV demonstration.

No. 4. Ron Fisher VK3OM showed viewers a TS820 and gave details of Amateur Radio and the WIA in general.

Photos "off air" by VK3UV. ■

Photo No. 1

Photo No. 2

Photo No. 3

Photo No. 4

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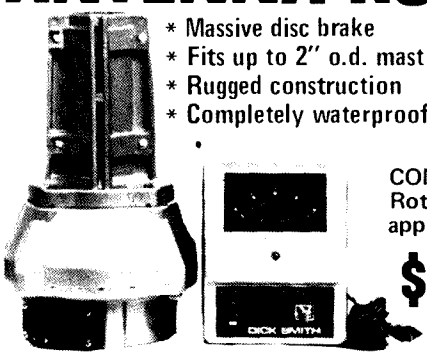

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Additional mast clamps of required .. .. Cat D-5001 .. $12.50

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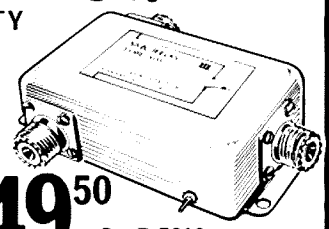

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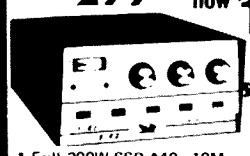

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Nye Viking

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4 PAGE LIFT-OUT

REMOVE NOW FOR FUTURE REFERENCE — SEE INSIDE FOR YAESU EQUIPMENT.

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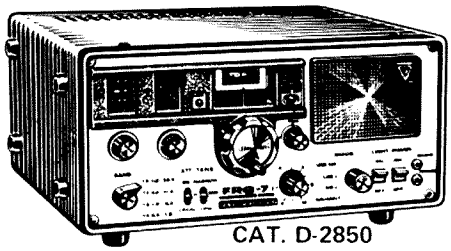

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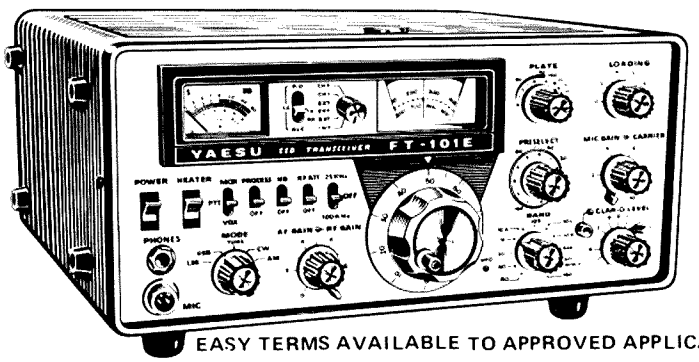

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These units are so popular, we probably don't have to tell you about all their fabulous features – but call into D. S. store and we'll be happy to anyway!
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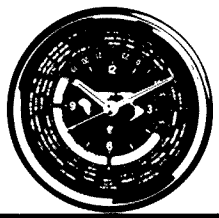

(Left) The QTR24 world clock. Work out at a glance what the time is in all time zones. Every ham should have one.
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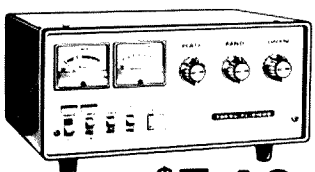
(Right) YD-844A desk microphone. 500 ohm/50k switch makes this ideal for all Yaesu transceivers. Complete YOUR base station with a Yaesu microphone.
Cat C-1116 . . . . . **$44.50**

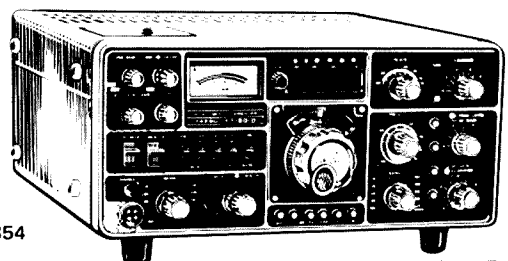
HOW'S THIS FOR THE ULTIMATE STATION?



FL-2100B HF LINEAR AMP $540

Time proven reliability! The 2100B is world famous for it's GUTS! 1.2kW of muscle – the ideal match for the FT-901D or the FT-101E. Best value linear amp available today!
Cat D-2546

Easy terms available on all Yaesu transceivers to approved applicants. Ask at your store!



Cat D-2854

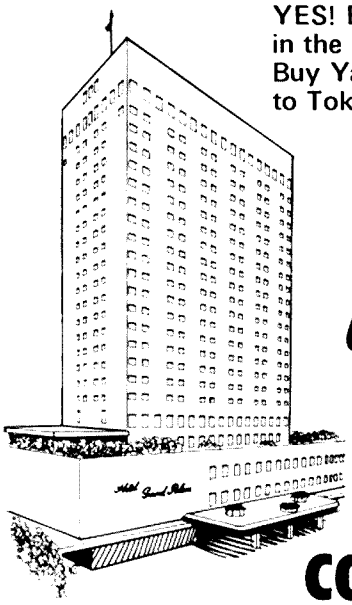
FT-901 D – ALL MODE ALL HF BAND TRANSCEIVER $1275

Tomorrow's transceiver today . . . All mode operation – yes, even FM! This beautiful Yaesu has to be seen (and heard) to be believed. It's got features others just dream of!
Basic unit: $1275 . . . Add the optional memory unit (Cat D-2858 @ $149.50) and the DC-DC converter (Cat D-2856 @ $75.00) and still pay less than $1500.00 . . .
The acc plug features switchable 12V coupled to the band switch. Use our co-ax relay (Cat D-5210) to automatically switch antennas. WHY PAY MORE?

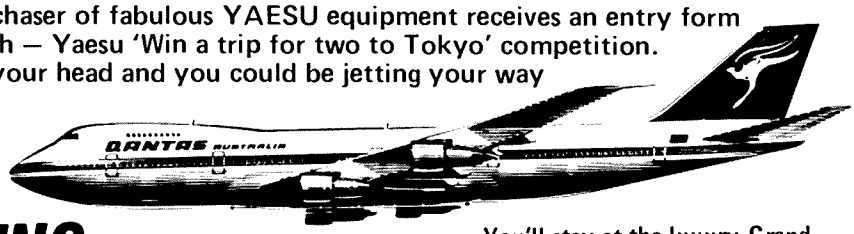
FTV-250 – 2 M. TRANSVERTER $329

FULL 2M operation when used with the FT-901D. SSB & CW for DX & OSCAR enthusiasts – FM for local work – even FM repeaters when memory unit fitted to FT-901D. Covers 144–148MHz, all solid state. Also suits FT-101E.
Cat D-2894

WIN A TRIP FOR TWO TO TOKYO



YES! Every purchaser of fabulous YAESU equipment receives an entry form in the Dick Smith – Yaesu 'Win a trip for two to Tokyo' competition. Buy Yaesu, use your head and you could be jetting your way to Tokyo . . .



FLYING QANTAS and staying at the luxury Hotel Grand Palace

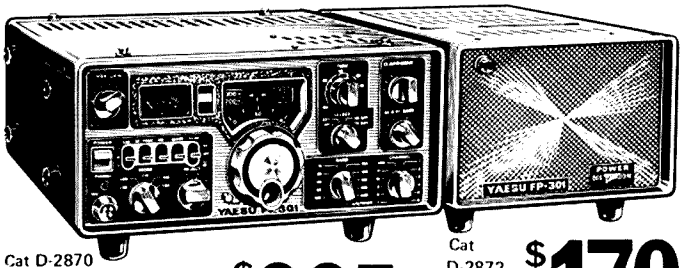
You'll stay at the luxury Grand Palace Hotel, and visit the amateurs paradise – Akihabara – a complete city block of electronics shops! You'll be taken on a guided tour of the incredible Yaesu-Musen factory – the home of Yaesu.
It's the amateur's dream of a lifetime – and it could come true for YOU!

Full details including conditions of entry are available at your nearest Dick Smith store or participating dealer. So to be eligible buy any Yaesu item, fill in the entry form and you could be on your way to Tokyo!

CONTEST CLOSES JULY 28

Now, more than ever, it pays to buy Yaesu from Dick!

FT301 SERIES — THE SOLID STATE SYSTEM



Cat D-2870
FT-301 – 200W PEP ALL SOLID STATE $995

160 – 10M, 200 W PEP, SSB, AM, CW, FSK . . . And it's completely solid state. Fantastic reject control varies crystal filter resonance to remove adjacent channel interference. Special protection circuit to drop power if SWR rises too high . . . Many other features too! Just add 12V and an antenna!

Cat D-2872
FP-301 – POWER SUPPLY $170

Matching power supply for the FT301, 301S, FT7, etc. 13.5V fully regulated at 25 amps! Makes an ideal bench supply, too.

Calling all NOVICES:

Why waste money on a full-power rig you aren't allowed to use? The FT-301S is the novice version of the 301. 20W out, 80–10m. And nearly $300 cheaper!

Cat D-2880 **$710**

Dick has an enormous range of accessories for amateur use – and the list is growing daily! Call in and discuss your requirements today.

FULLY APPROVED 13.8V MAINS SUPPLY
4 AMPS PEAK (2A CONT)

$39.50

Operate the FT-7, FT-227R, etc from our FULLY APPROVED power supply. Why take chances with un-approved supplies?
Cat M-9545

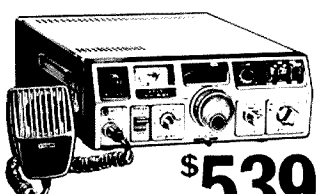
EASY TERMS AVAILABLE TO APPROVED APPLICANTS ON ALL ITEMS PRICED $111 OR MORE.

FT-227R – FULL 2M RIG $335

As reviewed in the March issue of Electronics Australia. Full 2 metre, synthesised FM unit with memory. Ideal for repeaters and duplex operation. Best value rig available today!
Cat D-2890

YC-500S – 500MHz COUNTER $380

Fabulous professional quality – 500MHz counter. As reviewed in April E.A. 240V or 12V operation. And it's even cheaper if you have a sales tax exemption!
Cat D-2892



FT-7 – NEW HF MOBILE RIG $539

Here it is! The new HF solid state 80 – 10 metre mobile transceiver. It's ideal for novice use, too. The best mobile unit going!
Cat D-2866

FL-110 – 200W LINEAR $210

Use the FT-7 or FT-301S as a full-power unit with the 200W linear amplifier. One knob band switching, no tuning required.
Cat D-2884

STOP PRESS: NEW FRG-7000 DIGITAL RECEIVER/CLOCK NOW IN. CALL IN TO STORES FOR DETAILS. (Cat D-2848)

BEAM BUILDERS

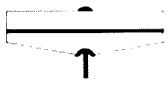
Dick now has stocks of two sizes of aluminium tubing plus suitable antenna brackets for you to build your own beams. Call in and pick up your free leaflet on building 2m beams. So simple: you'll wonder why you didn't build one before!

ALUMINIUM TUBING

20mm o.d. x 1.6mm x 2m length (for booms) Cat D-4656 .. .. $4.00
10mm o.d. x 1.2mm x 2m length (for elements) Cat D-4654 .. .. .. $2.00

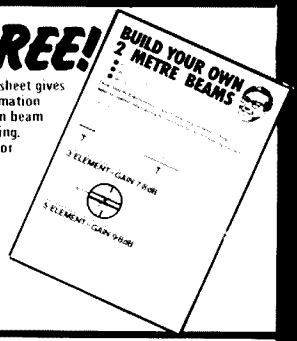
BRACKETS

Element to boom mount. Low cost Nylon bracket. Cat D-4650 .. .. .. $0.55



Element to boom mount, heavy duty all metal. Cat D-4652 .. .. $1.00

FREE! Data sheet gives information on 2m beam building. Ask for it!



VHF POWER AMP

Can't work that repeater? Need a little more oomph? Build an amplifier. 45 watts out on 2m. Very simple, highly reliable transistor circuit. Full RF switching, ideal for mobile use (12V). Build the basic PCB, or put in a case as pictured. ($27.50 price applies to PCB and electronics only – case & heatsink extra) Cat K-3132.

27.50

As shown above with all extras: $39.95

Extras (as shown in picture)
Heatsink (Cat H-3460) $4.75
Box (Cat H-2743) Undrilled, plain panels $4.20
PL-259 connectors (Cat P-2340) 2 required .. $1.45 ea

Converters & Preamps

Extend the range of your HF transceiver to VHF. Copy 6m DX or OSCAR on 2m. Neat little units complete with xtal – 28 to 30MHz output. 30dB gain, too.
6 metre version .. .. Cat D-3836 .. .. $29.50
2 metre version .. .. Cat D-3832 .. .. $29.50
REDUCED $10 FROM LAST YEARS PRICES!

NEED A LITTLE MORE GAIN?
These low noise pre-amps give you 20 to 30dB more. You can even mount them right at the antenna for lowest possible noise figure.
10 metre version .. .. Cat D-3827 .. .. .. $25.90
6 metre version .. .. Cat D-3806 .. .. .. $25.90
2 metre version .. .. Cat D-3802 .. .. .. $25.90
SAVE $13.10 – WERE $39.00 EACH!

SAVE!

4A, 13·8V under $30

Complete kit – ideal for the FT-7 and FT-227R, etc. Complete kit, including case and instructions, Save real money building your own! Cat K-3448.

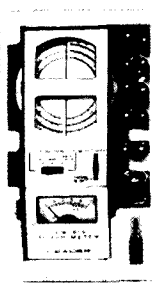
2A cont. **$29.50**

Heavy duty version – 5A continuous. Electronics only, case and heatsink extra. Cat K-3449. **$32.00**

DO IT YOURSELF

What does every amateur need?

A dipper, of course – the most essential piece of test gear in the shack! Tunes circuits, checks radiation, use as a signal generator . . . the uses of a dipper are almost endless! This Leader transistor dipper is a fully portable, professional quality unit. Incredible value for money.



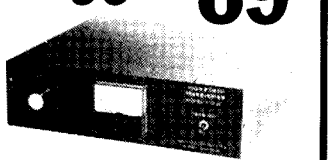
Cat Q-1322 **$99.50**

NOVICES. . .

Here's the ideal way to get on 80 metres: Build this transverter. Converts any 27MHz transceiver to work on 80 – produces a full 30 watts PEP of SSB. And it's incredibly simple to build. Was $99.50 – save $10.00.

Cat K-3134

~~$99.50~~ **$89.50**



Banish TVI FOREVER!

The ULTIMATE in low-pass filters!

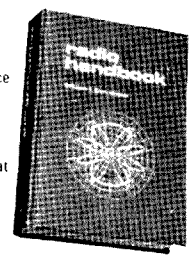
Precision built, 4 section filter. Massive power rating – 5000 W PEP on SSB. Maximum attenuation is on TV channel 2 – 75dB. Insertion loss is less than 0.5dB. 52 ohms impedance. Has SO-239 connectors.

Cat D-7086 **$37.50**

Books

Dick has an ENORMOUS range of books for amateurs, hobbyists, beginners, professionals . . .
The titles here are only a small sample: call in to a store today and see the rest!

ARRL HANDBOOK
The standard reference manual for amateurs the world over. New 1978 edition is updated . Isn't it about time you replaced that 1969 edition?
Cat B-2218 .. $12.75



RADIO HANDBOOK
By William Orr. An incredibly comprehensive book on amateur radio communications, dealing with basic theory, design, testing & construction. Over 30 chapters packed with information. THE essential reference.
Cat B-1106 .. .. $23.95

OSCAR
Do you know OSCAR? You should. He's the friendliest amateur going – and he'll talk to you if you know how. All you need to know about this exciting facet of amateur communications.
Cat B-2220 .. .$5.50
P.S. OSCAR is an amateur satellite.

DICK SMITH ELECTRONICS

bankcard welcome here

SHOPS OPEN 9AM to 5.30PM (Saturday 9AM – 12 noon) BRISBANE 1/2 Hour earlier

- ANY TERMS OFFERED ARE TO APPROVED APPLICANTS ONLY

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Tirilogy Elect. Supplies	52 Princes Hwy, Wollongong NSW. Ph 83-1219	Premier Sound	239 Musgrave St, Rockhampton QLD. Ph 27-4004
Sound Components	178 Brisbane St, Tamworth, NSW. Ph 66-1363	Sumner Electronics	97 Mitchell St, Bendigo, VIC. Ph 43-1977
Hitel Hi Fi	145 Queen St, St Marys. NSW. Ph 623-4442	Aero Electronics	123A Bathurst St, Hobart TAS. Ph 34-8232
Don House Electronics	2 Merriwa St, Gordon NSW. Ph 498-1398	Tasmanian Hi Fi	87A Brisbane St, Launceston. TAS. Ph 31-5815
DGE Sales	44 Brown St, Newcastle NSW. Ph 69-1222	Devon Electronics	45 Ashburner St, Devonport TAS. Ph 24-4216.
M&W Electronics	48 McNamara St, Orange NSW. Ph 62-6491	A.E.Cooling	Town Centre, Peoples St Bldg, Elizabeth SA. Ph 255-9196
Double Diamond	18 Russel St, Goulburn NSW. Ph 21-5440	Hutchesson's Communic.	5 Elizabeth St, Mt Gambier, SA. Ph 25-6404
Greg McCartney	99 Fitzmaurice St, Wagga NSW. Ph 21-3044	Altronics	105 Stirling St, Perth WA. Ph 328-1599
Rivercom	9 Copeland St, Wagga NSW. Ph 21-2125	BP Electronics	11 Duke St, Albany WA. Ph 41-2681.
GCG Communications	385 Mulgrave Rd, Cairns QLD. Ph 54-1035		

REPORT ON 1978 FEDERAL CONVENTION

What is a Federal Convention?

You are a member of a Division. If you want to keep in touch you go to meetings, especially the Annual General Meeting.

But how about Divisions? Well, they meet together once a year in the Annual General Meeting which is called the Federal Convention.

And what goes on at this annual Convention? Call in on Ch. 4, registration, fox hunts, displays of goodies, prizes?

Sorry, the only prizes are what the WIA can extract out of the Government in the form of better operating conditions. And it is at the Federal Convention that these things are discussed and firmed up from ideas brought up by the Divisional delegates. In turn these ideas come from you, the member.

You see, all the Divisions agreed long ago that one big strong voice is better for amateur radio in Australia than a lot of little voices. And that is what the Federal WIA is all about.

Anyway, this year as in 41 previous years, the divisions were all represented. Each by its Federal Councillor and all but one, by Alternate Councillors, and by other technical experts too.

For the 1978 Federal Convention dealt with a number of electrical questions and the need to have Australia-wide standardisation. Also dealt with were many Novice licensing matters and such things as encouraging members, recruiting, public relations and many others.

The Convention ran through from the Friday evening preparations, Saturday, Sunday, to Monday, 24th April, with many late night working parties trying to resolve many questions for final discussions in the formal part of the Convention. Around 45 hours of good solid work without any relaxation.

The Federal Councillors were Rex Roseblade VK1QS, Tim Mills VK2ZTM, John Payne VK3AED, Norm Wilson VK4NP, Ian Hunt VK5QX, Neil Penfold VK6NE, and Peter Frith VK7PF. The Alternate Councillors were Ted Howell VK1TH and Andrew Davis VK1DA, Phil Card VK2ZBX, and Ian Mackenzie VK2ZIM, John Adcock VK3ACA, Alex McDonald VK4TE, Colin Hurst VK5HI and Reg Emmett VK7KK for their respective Divisions, assisted by Ken Hargreaves VK2AKH, John Ingham VK5KG and Eric Buggee VK3ZZN.

The Executive members were there in force — David Wardlaw VK3ADW, the Federal President, Peter Wolfenden VK3ZPA, the Executive Vice-chairman, Keith Roget VK3YQ, Hon. Fed. Treasurer, Ken Seddon VK3ACS, Graeme Scott VK3ZR and Jim Lloyd VK3CDR, assisted by several Federal officers present for various items, including Michael Owen VK3KI on IARU, Bob Arnold VK3ZBB on Satellites, Alt Chandler VK3LC on Intruders, and Bruce Bathols VK3UV, Managing Editor of AR. Guest on Saturday was Mr. Jim Wilkinson of the Postal and Telecommunications Department. Several other amateurs dropped in from time to time to find out what was going on.

The Federal Councillors are of course elected by respective Divisions and when acting jointly they are known as the Federal Council. In between Conventions the Executive carries on the work of the Institute, but only in line with the rules laid down by the Federal Council. The Executive is elected at each Federal Convention. This year the members were elected en bloc except that Jim Lloyd had to drop out because of his transfer to Canberra and John Bennett VK3ZA came in to replace him.

The Executive is assisted by many Federal Committees all of which render annual reports at the Federal Convention. These Committees and Co-ordinators deal with IARU affairs, Satellites, Intruder Watching, Repeaters, Publications, Education, Historical material, Contests, QSL Bureau, Awards, VHF/UHF, RTTY and WICEN.

Outside the formal hours of the Convention eight different working groups got down to work on individual groups of questions. As far as practicable one member of each Divisional delegation was appointed to each working group thus enabling everyone to contribute his own expertise.

There is seldom more than one or two outstanding questions to be resolved at a Convention but this year was an exception. Firstly there was of course IARU and WARC 79 preparations. Then there were a group of items on Novice licensing and examinations, another group of items dealing with recruiting, publicity and public relations. Another one concerned "Amateur Radio" and publications. And finally numerous individual items, budget and organisational matters.

Mr. Jim Wilkinson brought with him the final syllabus for NAOCP and approval for a joint WIA Departmental Standing Committee to resolve amateur radio affairs. In addressing the Convention and answering questions for nearly two hours he covered a vast range of interesting subjects from new proposed legislation to CBers, from Ch. 0 and 5A to morse speeds, from WARC 79 to greater self-regulation and from examination procedures to reciprocal licensing.

The audited accounts for 1977, having been precirculated in accordance with the requirements of the Companies Act, were tabled and are reproduced in this issue of AR. The Budget for 1979 was debated but no final decisions on this will be reached until 31st August. A budget covering the various expenses for WARC 79 representations was debated and passed. Additional WARC 79 funds would be most welcome since the amounts budgeted could only be related to the funds (and interest) actually in hand. The preliminary budget for 1979 showed that with a continuing influx of new members there should not be any need to ask for an increase in the Federal dues ($15 last year and this year also).

The costs of AR must be expected to increase by reason of inflation and many other factors too numerous to list here. AR was one item discussed in depth by a working party.

The many annual reports were debated and votes of thanks expressed to the authors. The Executive Report is printed elsewhere in this issue. A great amount of time was devoted to IARU and WARC 79 affairs since these are of prime importance to the future of the Amateur Service everywhere, including Australia.

On current affairs the Novice licensing conditions, examinations and allied matters received careful attention in a working group as well as in formal debate. Almost as much discussion ensued on the question of recruitment, services to members, publicity and publicity material. One outcome of this Convention will be the availability of video tapes in colour for the use of Divisions, possibly on a rotational basis.

Looking very very briefly at the fate of Agenda Items —

VK4 will prepare for Executive a set of guidelines to aid the implementation of a dynamic membership recruiting drive by all Divisions.

Ways and means to be examined by an Executive Working Group to suggest the provision of benefits and services for WIA members.

Solicit further funds for WARC 79 from sources outside WIA.

Continue present work on posters as display material, assistance from Divisions and members most welcome.

Leave aside temporarily any logo or badge redesign.

Uniform policy for handling outwards QSL cards not approved.

Majority in favour of seeking Novice segment extension on 80m from 3525 to 3625 kHz, also or alternatively approval for Novices to use WICEN 80m net frequencies to join in WICEN exercises.

Not approved were: Novices on 2m, common band for all licensees, increase in power for Novices, 10m band repeaters.

Expansion of 2m FM activity by the use of 25 kHz channels — Fed. Repeater Sub-Committee to propose the guidelines.

No recommendation was made about adopting a uniform numbering system for the 2m band at present because of the use of different systems already.

Fed. Repeater Sub-Committee to propose suitable national repeater and simplex channels on 2m for ATV liaison.

Seek approval in principle for 6m band repeaters.

VHFAC to work on 10m beacon licensing conditions.

Existing 70cm bandplan is satisfactory as far as repeater and simplex operation is concerned. Encourage greater use of 70cm band.

Approval be sought for linking of amateur repeaters.

Seek approval for increased power for ATV as a low density signal.

Proposal to move the upper ATV channel down by 2 MHz was not approved.

Seek a permanent allocation in TV Band 4 or 5 for an ATV experimental segment, also to seek an amateur band at about 40cm in the event of losing the 50cm band or part of the 70cm band.

Seek approval for one licence fee for multi-mode facility.

Keep on pressing for no TV Channels 0 and 5A in same geographical area and no further allocations of these be made. Pressures still to continue for the return of 50 to 52 MHz segment to amateurs.

Seek licence endorsements for higher CW speeds.

Standard formula for life membership proposal was withdrawn.

Negotiate no AOCP multi-choice exams until agreed syllabus is adopted.

Executive to report later upon compensation for loss of 27 MHz band.

Repeater Sub-Committee to continue work on repeater conditions.

Negotiate for issuance of postage stamp promoting amateur radio.

PR agency or service engagement as a long term objective.

Recommended that for standardisation 18 channel CB equipment conversion to 28 MHz is on the basis of a frequency shift of 1.385 MHz.

Seek international agreement for RTTY frequencies on HF.

Expenses of Alternate Councillors attending future Federal Conventions be met by Executive.

The Federal President and Mr. P. A. Wolfenden were selected as WIA delegate and assistant respectively at the IARU R3 Conference in Bangkok in October.

The Fed. President and Mr. Owen attend the NZART June Conference.

These include most of the Agenda Items discussed but others were withdrawn because work on them was completed or was satisfactorily in progress at the time.

One of the more pleasant ceremonies to form part of future Federal Conferences is the handing over of the RD Trophy to the winning Division (if a change occurs). At this Convention Ian Hunt formally handed over the splendidly refurbished trophy to Ted Howell, the President of the ACT Division.

Omitting the usual declarations the following is the 1977 year Statement of Income and Expenditure and Balance Sheet as at 31-12-1977 and the Report of the Executive for the year. The Auditor's Report is also reproduced.

THE WIRELESS INSTITUTE OF AUSTRALIA
A COMPANY LIMITED BY GUARANTEE
INCORPORATED IN VICTORIA UNDER
THE COMPANIES ACT 1961

In accordance with the Companies Act, 1961, the Executive state the following:—

(a) The names of the Executives in office at the date of this report are:—

Dr. D. A. Wardlaw	VK3ADW
Mr. P. A. Wolfenden	VK3ZPA
Surg. Rear Adm. S. J. Lloyd	VK3CDR
Mr. K. V. Roget	VK3YQ
Mr. K. C. Seddon	VK3ACS
Mr. G. F. Scott	VK3ZR

(b) The principal activity of the Wireless Institute of Australia is to:—

1. Represent generally the views of persons connected with amateur radio in the Commonwealth of Australia, its territories and dependencies.

2. Promote the co-operation between the Divisions in the encouragement and development of amateur radio.

3. Safeguard the interests of the Divisions and the members in relation to frequency allocations, rights and privileges.

4. Promote the development, progress and advancement of amateur radio in all matters in relation to amateur radio in general.

(c) The surplus of income over expenditure for the year ended 31st December, 1977, was $10,857.00, compared with $8,728.00 for 1976. There is no provision for income tax required as the Company is exempt under Section 103A(2) of the Income Tax Assessment Act.

(d) During the year transfers from and to reserves and provisions were:—

1. Transfer of $627.00 from Reserve Fund to General Funds.

2. Provision for Amateur Satellites. The provision formerly called Project Oscar and contributions to Project Australis ($13.00) have been consolidated to a new Provision and an amount of $1,000.00 provided for the year, to total $1,613.00.

3. Provision for Superannuation has been increased to $2,250.00 ($1,250.00).

(e) The Executive have taken reasonable steps, before the Statement of Income and Expenditure and Balance Sheet were made out, to ascertain that action had been taken in relation to the writing off of bad debts and making of provision for doubtful debts and to cause all known bad debts to be written off and adequate provision to be made for doubtful debts.

(f) At the date of this report the Executive are 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.

(g) At the date of this report the Executive are not aware of any circumstances which would render the values attributed to current assets in the accounts misleading.

(h) At the date of this report no charges exist on the assets of the Institute which has arisen since the end of the financial year and does not secure the liabilities of any other person.

(i) There does not exist any contingent liability which has arisen since the end of the financial year.

(j) No contingent liability or any other liability has become enforceable within the period of twelve months after the end of the financial year which in the opinion of the Executive will or may affect the ability of the Institute to meet its obligations when they fall due.

(k) Since the end of the previous financial year the Executive have not received or become entitled to receive a benefit by reason of a contract made by the Institute or a related corporation with the Executive or with firms of which they are members or with companies in which they have substantial financial interests.

(l) The results of the Institute's operations during the financial year were in the opinion of the Executive not substantially affected by any item, transaction or event of a material and unusual nature. There has not arisen in the interval between the end of the financial year and the date of the report any item, transaction or event of a material and unusual nature likely in the opinion of the Executive, to affect substantially the results of the Institute's operations for the next succeeding financial year.

Members of he Executive
(Sgd.) D. A. WARDLAW
(Sgd.) G. SCOTT

STATEMENT OF INCOME AND EXPENDITURE FOR YEAR ENDED 31st DECEMBER, 1977

		1977	1976
Income:			
Members' Subscription		$62,841	$60,005
Interest Received		2,697	976
Surplus — Log Books		53	—
Call Books		3,038	—
Magpubs		4,230	2,599
		72,859	63,580
Expenditure:			
Amateur Radio (Note 1)	$20,455		12,929
Audit Fees	492		210
Bank Charges	658		738
Convention Expenses	2,438		2,096
Catering and Entertainment	251		—
Committee Expenses	95		204
Depreciation	600		393
EDP Expenses	2,090		1,400
Electricity and Power	267		—
General Expenses	643		654
Insurances	495		691
Membership Recruiting	1,249		1,404
Postage and Freight	2,025		1,614
Provision for Amateur Satellites	1,000		—
Project Australis	—		997
Rent and Rates	2,137		2,084
Repairs and Maintenance	464		357
Superannuation	1,000		1,000
Stationery and Printing	1,778		2,838
Salaries and Secretarial	21,647		22,201
Travelling Expenses	1,610		2,225
Telephone	608		617
		62,002	54,852
Nel Surplus:			
Accumulated Funds Brought Forward		14,795	6,067
Add Transfer from Reserve Fund		627	—
Accumulated Funds Carried Forward		$26,279	$14,795

NOTES TO AND FORMING PART OF THE ACCOUNTS

AMATEUR RADIO (Note 1)

		1977	1976
Income:			
Advertising		$25,860	$21,707
Subscriptions		2,274	2,105
AR Sales		1,139	—
Inserts and Sundries		1,257	1,348
		30,530	25,160
Expenditure:			
Awards	$90		$90
Bad Debts	280		—
Honorariums	3,810		3,340
Postage	6,827		6,062
Publishing, Printing and Distribution Costs	35,287		24,475
Salaries	3,666		3,105
Travelling Expenses	1,025		1,018
		50,985	38,091
Excess Expenditure Transferred to General Account Representing Cost of AR to Members		$20,455	$12,931

BALANCE SHEET AS AT 31st DECEMBER, 1977

		1977	1976
Members' Funds:			
Accumulated Funds		$26,279	$14,795
Reserve Fund		—	627
Special Funds — ITU		9,521	8,653
WARC		9,604	—
Ron Wilkinson Achievement Award		1,100	—
IARU		4,663	3,985
		$51,167	$28,060
Represented by:			
Current Assets:			
Commonwealth Bank — General Account		$—	$9,597
Commonwealth Savings Investments		22,685	11,038
Australian Savings Bonds		23,100	6,000
Australian Resources Development Bank		2,200	2,200
Sundry Debtors — Less Provision for Doubtful Debts		(2,000)	(2,000)
Stock on Hand — at Cost		6,254	4,060
		78,603	46,099
Non-Current Assets:			
Furniture and Fittings — at Cost		1,697	1,5
Less Provision for Depreciation			
		80,300	47,671
Deduct:			
Current Liabilitiee:			
Commonwealth Bank — General Account	$5,182		—
Sundry Creditors	4,526		1,053
Subscriptions in Advance	11,325		12,645
Provision for Superannuation	3,424		2,250
Provision for Amateur Satellites	1,613		600
Provision for Holidays and Long Service Leave	2,763		2,763
Deposit VK4	300		300
		29,133	19,611
		$51,167	$28,060

AUDITORS' REPORT TO THE MEMBERS OF THE WIRELESS INSTITUTE OF AUSTRALIA

1. In our opinion the attached accounts give a true and fair view of the state of the Institute's affairs at 31st December, 1977, and of its surplus for the year ended on that date.

2. As required by the Companies Act 1961, the report as follows:

In our opinion:

(a) The attached accounts are properly drawn up
  (1) ao as to give a true and fair view of the matters required by Section 162 to be dealt with in the Accounts; and
  (2) in accordance with provisions of that Act.

(b) The accounting records and other records, and the registers, required by the Act to be kept by the Company have been properly kept in accordance with the provisions of that Act.

HEBARD & GUNNING, Chartered Accountants.
Melbourne (Sgd.) P. W. HEBARD
15th February, 1976 Partner

WIRELESS INSTITUTE OF AUSTRALIA

1. Once again this year the Executive has continued to provide members with Federal news by means of WIANEWS and the Federal News Broadcast tapes.

2. This of course means a continuous report on WIA Federal activities.

3. However I will attempt to consolidate most of the more important items in this Annual Report.

4. The Executive as elected at the last Federal Convention were as follows:

Myself, David Wardlaw VK3ADW, as President and Chairman.

Peter Wolfenden VK3ZPA as Executive Vice-Chairman and Chairman VHF/UHF Advisory Committee.

Keith Roget VK3YO, who is Hon. Treasurer and Chairman of Finance Sub-Committee.

Ken Seddon VK3ACS, who is Chairman of the Federal Repeater Sub-Committee.

Graeme Scott VK3ZR, who is the Federal Education Co-ordinator.

Bill Roper VK3ARZ — Early in the year Bill Roper found it necessary to resign as business was frequently taking him out of Melbourne.

Fortunately, the transfer of Jim Lloyd VK3CDR to Canberra was postponed for another year and he was persuaded to re-join the Executive.

6. I would like to commend my fellow Executive members on all the time and effort they put into the WIA.

7. Bruce Bathols VK3UV as Managing Editor of Amateur Radio and Chairman of the Publications Committee has attended as many Executive meetings as possible as it is essential there be close liaison between the magazine and the Executive.

8. At this stage I would like to pay tribute to our Secretary/Manager, Peter Dodd VK3CIF, for his loyal and valuable assistance throughout the year. He is a tireless worker for the WIA.

9. Again we were able to make use of valuable advice from various experts who were able to attend Executive meetings.

10. Attendances at Executive metings:

Dr. D. Wardlaw	11
Mr. P. A. Wolfenden	12
Mr. K. V. Rogel	10
Surg. Rear-Admiral S. Lloyd	6
Mr. K. C. Seddon	12
Mr. G. F. Scott	9
Mr. W. E. J. Roper	1
Mr. B. Bathols	10
Total number of meetings:	12

11. The other Federal Officers were:
IARU R3 Liaison Officer: Mr. M. J. Owen VK3KI.
Chairman WIA Project Australis Gp.: In abeyance.
Federal Intruder Watch Co-ordinator: Mr. A. W. Chandler VK3LC.
Historical Officer: Mr. G. M. Hull VK3ZS.
Federal Contest Manager: Mr. K. Phillips VK3AUO.
Federal QSL Manager: Mr. R. E. Jones VK3RJ.
Federal Awards Manager: Mr. B. W. Austin VK5CA.
Chairman, Fed. RTTY Committee: Mr. C. M. Walker VK2BXX.
Fed. WICEN Co-ordinator: Brig. R. Roseblade VK1QJ.
Fed. EMC Co-ordinator: In abeyance.

VISITS

12. During August I was able to spend a week in West Australia. As this is such a long trip I made a point of trying to see as many members as possible. In addition to meetings in Perth I was able to get to Albany, travailing via Wagin, and back to Perth via Busselton and Bunbury.

13. Whilst in Albany I attended a meeting of the Southern Electronic Group. It was interesting to see the western end of the UHF world records.

14. On my visits interstate I appreciated the keen interest shown by members in amateur affairs, particularly WARC.

15. In October I attended the 25th Annual SW Zone Convention of the NSW Division held in Griffith. The hospitality of the Zone was very much appreciated and the organisers are to be congratulated. Again the opportunity to have person to person contact with many members was of great value to me.

16. During November I opened a seminar on Antennas presented by the Frankston and Mornington Peninsula Amateur Radio Club in Melbourne. The attendance showed that this activity filled a well needed want and it is pleasing to see the idea has caught on in NSW.

NEW ZEALAND

17. As the time since the last IARU Region 3 Conference grew longer and the preparation for WARC grew more intense it was increasingly apparent that close consultation between the WIA and the NZART was necessary.

18. On the week-end of the 26th November, accompanied by IARU Region 3 Director Michael Owen VK3KI, I visited Wellington, NZ, where we conferred with the President of the NZART, Arthur Godfrey ZL3HZ, GPO Liaison Officer Doug Gorman ZL2CD, IARU Region 3 Director and IARU Liaison Officer for NZART Tom Clarkson ZL2AZ, his deputy Fred Johnson ZL2AMJ, and other councillors of the NZART. Naturally WARC was discussed. The sum total of the New Zealand preparations for WARC 79 had not reached as advanced a stage as in Australia. However there was a fruitful exchange of ideas. Extensive discussion took place on the IARU in particular with reference to its role in the preparation for WARC 79. Also discussion took place as to the value of IARU representation on a national delegation. The NZART has inaugurated the collection of funds for sending a delegate to WARC 79.

19. In a lengthy discussion on domestic matters of common concern it was interesting although not comforting to find that so many of our own problem areas are not unique.

20. Since returning I have passed on a great deal of detailed information on the New Zealand amateur exams to our Education Co-ordinator.

21. Tight import restrictions for financial reasons prevented the development of the CB piracy problem in New Zealand that occurred in this country.

WARC 79 PREPARATIONS

22. Since the last annual report a preliminary draft of the frequency table was presented to the APG for consideration. As this was a preliminary draft its publication was restricted by the APG Chairman. However, the second draft will be available for publication shortly.

23. A lot has been made of the FCC Notices of Inquiry. However, it must be realised that the FCC is only dealing with the private user side of the preparation and the office of Telecommunications' policy is preparing plans on behalf of the Government users and that the two preparatory documents have to be combined to make up the Draft USA proposals.

24. However more weight can be put, for instance, on the draft proposals published by the Canadian DOC. It is interesting to see that Canada has supported the new bands at 10 MHz and 24 MHz and also the proposal to start the 7 MHz band at 6.900 MHz.

THE AMATEUR SERVICE AND THE CCIR

25. The draft question on the Amateur Radio Service has been submitted to Study Group 8 of the CCIR.

INTERNATIONAL

26. During the past year the President of the IARU, Noel Eaton VE3CJ, invited me to attend a meeting of his advisory group, sometimes known as the International Working Group. This group was to meet in Geneva at the same time as the Aeronautical WARC. As far as I was concerned there were three very good reasons for attending this meeting —

(a) It would enable me to participate in planning IARU policy and tactics for the period immediately leading up to WARC 79;

(b) it would enable me to observe a WARC in operation; also I would be able to investigate the accommodation and cost of living situation in Geneva; and

(c) it would give me the opportunity of meeting delegates who will also be in Geneva in 1979 on behalf of other countries.

27. I was not disappointed as personal discussions enabled the clarification of many complex issues with the exchange of ideas. The role of the IARU teams was discussed at length and also the importance of National amateur delegates.

28. A seminar conducted by Merle Glunt VK0KN on ITU Conference procedure was invaluable as was sitting in the IARU Chair at committee meetings as an official observer.

29. The complexity of the ITU system is enormous and as this was only a small conference the congestion and activity at WARC 79 is mind-boggling. One thing that stands out in Geneva, however, is the high cost of living.

30. I found it of great value to have the opportunity of meeting delegates from many countries from all regions. There was a sprinkling of amateurs amongst the delegates as also in the ITU HQ itself. I was honoured to have an informal meeting with the Deputy Secretary-General of ITU, Mr. Dick Butler.

31. The direct information I gained on the running of a WARC and contacts with the delegates from so many countries alone made the trip worthwhile.

32. Whilst in London the RSGB was visited. Many ideas were gleaned which will be useful in WIA operations.

33. On the return journey a visit was made to Japan where I was interested to find how much progress has been made in their preparation for WARC 79. They hope to have an amateur representative on the WARC delegation. In Korea I also found a great awareness of WARC 79 and again the hope to have an amateur representative on the delegation.

34. Ten large parcels of technical magazines have been sent to the Indonesian Society ORARI and an informal discussion was held in Melbourne between one of their Vice-Presidents, Kaklum Lumenta YB0BY, and Peter Wolfenden.

EXAMINATIONS

35. There are many areas of concern to the WIA on this general subject. The frequency of the examinations, particularly in relationship to the Novice part is one. We feel that two a year is insufficient and have made representations to this effect. To date our suggestion has been rejected. However, in view of the recent announcements in the daily press with regard to staff increases, the matter will be pressed with increased vigour.

36. Another area of grave concern is the lack of provincial examination centres, particularly in WA. Again it is the potential Novices who suffer the greatest disadvantage. The WIA has suggested several ways in which the problem could be overcome but with no results.

37. Since the introduction of the Novice level the importance of establishing a syllabus has become very important. Important because it is essential that, firstly, the candidates and, secondly, the instructors know to what level the various topics will be examined and, thirdly, for the examiner himself not to stray far from established standards. A vague syllabus is probably satisfactory when the lecturer is also the examiner but not so when there are candidates spread throughout the country all tutored by different instructors.

38. In this area during the preceding year there has been extensive activity by the WIA Education Co-ordinator and his group not only in Victoria but but also in NSW and Queensland.

39. A study guide based on the P. and T. Department's syllabus has been prepared and awaits authorisation by the P. and T. Department. Also a question bank has been prepared of questions at a Novice level.

40. Another problem is the use of the Department of the strict ITU morse character constitution and spacing of the five words per minute Novice exam. It seems logical that the Novice should be aiming towards the highest AOCP speed level and hence characters sent at 10 w.p.m. speed with accentuated letter and word spacing would be the correct thing to do.

CB (CRS)

41. As expected, the introduction of CB eventuated with the subsequent withdrawal of the 11 metre amateur band. Despite the many promises made prior to the introduction of CB that the Amateur Service would be compensated for the loss of 11 metres, nothing has eventuated except for a very minor concession that Novices would be able to pay for a combined CB and Novice licence at just the CB licence fee of $25.00.

42. This lack of compensation is very unsatisfactory as the amateurs through the WIA acted in good faith.

Rest assured the Executive has not lost sight of this slight and will not let the matter rest. There are still many areas in which the Government could compensate us for our loss without causing any conflict with other radio services and it is hard to understand why no action has taken place.

43. Submission was presented to the P. and T. Department on behalf of the WIA on matters concerning the new Act which, on present indications, appear to be no nearer to enactment than it was a year ago.

The submission took into account the nature of the Amateur Service and analysed the use of both receivers and transmitters. The use of receivers

is also governed under the Broadcasting and Television Act. The point was made that we hoped that in structuring new legislation care is taken to ensure that a prohibition is sufficiently realistic to avoid unreasonable constraints on legitimate possession.

VISIT TO MINISTER

44. Last April the then Minister for P. and T., Mr. E. Robinson, received a deputation from the WIA which included the Federal President, NSW Divisional President and the present President of the ACT Division.

The main reason for this meeting was to put the WIA's position with regard to the impending introduction of CB. The point was strongly made that the proposed CB service and the Amateur Radio Service are very different in a number of vital ways. The opportunity was taken to raise the matter of representation on the Australian delegation to WARC 79. The proposal received a favourable hearing.

45. Over the last year a backlog had developed of matters raised with the P. & T. Department by the WIA on behalf of the Amateur Service. Amateurs were urged to contact their MPs and complain about the apparent lack of action. One area of particular concern is the unlawful use of transmitters (easily and apparently "lawfully" obtained) on amateur bands. We also note that the amateur bands are not the only areas of intrusion.

JOINT COMMITTEE

46. It has been proposed that a committee of Federal WIA and Central Office RFMD be set up to liaise on amateur matters and that this committee could start by trying to straighten out some of the unresolved questions posed over the last several years.

HANDBOOK

47. The P. and T. Department has indicated that they again wish to proceed with the revision of the Handbook for Amateur Operators. On a previous occasion some years ago when the Department proposed a revision a great deal of material was prepared and forwarded to them; unfortunately, nothing further was heard. In the meantime, the Novice licence had been introduced. This of course requires many alterations in the Handbook.

Geoff Taylor VK5TY has produced a working draft of suggested alterations.

48. There are of course two major factors which must not be lost sight of when a revision of the Handbook is considered —

(a) the new Act may easily require the alteration of some of the regulations governing the Amateur Service, and

(b) the general WARC of the ITU to be held in 1979 may alter some of the radio regulations of the ITU which would have to be reflected in the Australian regulations.

49. In studying the Australian Radio Regulations under the WT Act it is apparent that they are out of date. At the very core of the situation is the definition of Amateur Radio being much narrower than that given in ITU RR178 which is a "Service of self-trained intercommunication and technical investigations carried on by Amateurs, that is, duly authorised persons interested in radio techniques solely with a personal aim without pecuniary interest".

50. The Australian regulations are planned with considerable emphasis on the experimental side whereas the ITU has a separate definition for an experimental station and specifically states this definition does not include amateur stations. It is also in the best interests of all to have the minimum of restrictive regulations consistent with good housekeeping relying on the self-regulatory ability of the service.

CALL BOOK

51. The 1977 Call Book, the first of the new contract, was printed from WIA EDP records. Call sign information is now on computer file which can easily be updated. As far as WIA members are concerned this information is as up to date as the membership records; however, with non-members we are dependent on the departmental records with which we are provided and which contain numerous errors and omissions.

Frankly, the Call Book was a little disappointing but we must concede that it was a first time for the method of production. Alterations have been made to the EDP programme already which will improve the format.

OUR MAGAZINE "AMATEUR RADIO"

52. Again the Managing Editor, Bruce Bathols VK3UV, and the Publications Committee are to be congratulated on the high standard they have maintained. Despite the problems caused by the Victorian power strike they produced the bumper December issue "Amateur Radio" — Australia's Window on the World". The production of this issue was the result of discussions at the 1977 Federal Convention and the decision to investigate the production of a Year Book of Amateur Radio. On assessment of our resources it was decided that a separate publication would be too much to be undertaken by the Publications Committee. An enlarged December issue was printed with extra copies for sale to the public.

LOG BOOK

53. The Victorian Division found itself unable to go ahead with further printing of the WIA Log Book. This was a facet of WIA publishing left with them at the time the Federal body took over the publishing of "Amateur Radio" and the Call Book. The decision was made to undertake this work and *1000* were printed for distribution through "MAGPUBS".

54. "Magpubs" continues to be a service to the members, while providing a small profit for both the Federal Office and the Divisions. In view of the savings provided it is a wonder that more members do not make use of this service. Possibly the absence of specific advertising may have something to do with this.

TABLE 1 (Previous year in brackets)

	Total Licensees		WIA licenced members and 2nd call signs		% members to total licensees		Other WIA members		Total WIA members	
VK1	187	(144)	103	(79)	55	(66)	37	(31)	140	(110)
VK2	2935	(2383)	1199	(978)	41	(48)	241	(287)	1440	(1245)
VK3	2407	(2219)	1200	(1078)	50	(49)	414	(324)	1614	(1411)
VK4	1018	(851)	606	(503)	60	(59)	150	(154)	756	(657)
VK5/8	999	(907)	560	(499)	56	(55)	213	(180)	773	(679)
VK6	642	(581)	342	(288)	53	(50)	94	(80)	436	(368)
VK7	275	(246)	181	(154)	59	(63)	67	(67)	228	(221)
Other	20	(10)	—	—	—	—	—	—	—	—
	8483	(6919)	4171	(3588)	49	(50)	1216	(1103)	5387	(4691)
							= 23% of all members			

TABLE 2. Distribution of Grades of Licensees — Full Calls (= 60% of all calls)

	Total Licensed		% of total	Members of WIA		Percentages of total Div. Full calls	Percentages of total Full call Licensees
VK1	138	(114)	(3)	75		54	1
VK2	1785	(1653)	(35)	810		45	16
VK3	1421	(1378)	(28)	817		57	16
VK4	585	(553)	(11)	402		69	8
VK5/8	597	(586)	(12)	377		63	7
VK6	423	(414)	(8)	256		61	5
VK7	168	(164)	(3)	98		58	2
	5117	(4862)		2835	55%		

TABLE 3. Distribution of Grades of Licensees — Limited Calls (= 30% of all calls)

	Total Licensed		Members of WIA	Percentages of total Div. limited calls	Percentages of total limited licensees
VK1	33	(27)	21	64	1
VK2	755	(663)	273	36	11
VK3	831	(788)	314	38	13
VK4	317	(285)	140	44	6
VK5/8	297	(285)	137	46	8
VK6	162	(139)	52	32	2
VK7	85	(80)	49	58	2
	2480	(2267)	986	=40	

TABLE 4. Distribution of Grades of Licensees — Novice Calls (= 10% of all calls)

	Total Licensed		Members of WIA	Percentages of total Div. Novice calls	Percentages of total Novice licensees
VK1	16	(3)	7	44	1
VK2	395	(65)	116	29	13
VK3	155	(53)	69	45	8
VK4	116	(13)	64	55	6
VK5/8	105	(36)	46	44	5
VK6	57	(25)	34	60	4
VK7	22	(2)	14	64	2
	866	(197)	350	=40	

EDP

55. During the year Monash University informed us that it would be advisable for us to change our program from the computer we were presently using for a number of very valid reasons. In view of this the Executive took the opportunity of investigating alterations. It seemed that we may have been able to use the computer of a mailing service — Data Mail. However, at the last moment the Company indicated that they were no longer interested. Because of this it was decided to convert to the Monash University's new computer and during this conversion steps have been taken to tidy up the programme in many areas. As yet the accounting package has not been implemented.

56. While in London I had the opportunity of watching the RSGB's in-house computer in action. On close questioning it was obvious that due to the smallness of our membership the ownership or leasing of our own computer would increase our EDP costs excessively. Further investigations proved this but it is certainly worth keeping an eye on future developments in the small computer field.

THE MAILING SERVICE

57. There have been some problems in this area mainly concerned with the insertion of material into "AR" destined for specific Divisions. Much needed improvements have taken place but alternatives are being investigated.

RECRUITING AND PUBLICITY

58. IARU Region 3 has received from the ARRL three colour films on Amateur Radio. The WIA has copied these films on to videotapes and already very good use of them has been made in NSW and Victoria.

59. As a result of the NSW Division's request for publicity material it was apparent to the Executive that in addition to hand-outs some colourful posters depicting various aspects of amateur radio would be very desirable. Several very suitable designs have been prepared for Executive and Institute approval and it is hoped to have a selection available in the near future. This would be the first step in preparing "Packaged displays" for loan to exhibitors.

60. An advertisement was placed in "CB Action" and it is obvious that there are many CBers who wish to know more about Amateur Radio. I anticipate that this Convention will spend some time in discussing this aspect of the WIA's activity.

61. Just prior to writing this report members of the Executive were involved in presenting a segment on Amateur Radio for the Channel 7 show "The week has seven days".

REPEATERS

62. A number of developments have taken place during the last year, all of which have been covered by the Federal Repeater Sub-Committee. One matter finalised was the additional channels for 2 metre FM Repeaters. Another matter which now appears to be nearing finalisation after protracted negotiations is the repeater licensing condition imposed by the Radio Frequency Management Division.

AMATEUR SATELLITES

63. During the year Bob Arnold VK3ZBB took over as Publicity Officer for the Project Australis Group to enable David Hull VK3ZDH to concentrate on his job of Satellite control.

The launching of Amsat Oscar D, AO8, in March has provided a satisfactory replacement for AO6 which exceeded its design life by many times.

HQ BUILDING IN CANBERRA

64. The proposal as outlined at the last Convention was thought by a majority of Divisions to be premature particularly coming at a time when our major efforts have been centred on WARC 79. We were informed that the other National Organisations interested in the site were able to make a firm offer and thus that particular site was no longer available. However, it does not mean all the work has been wasted as the NCDC will no doubt make further sites available in the future.

65. Earlier this month I had the opportunity of discussing some amateur matters with the present Minister, Mr. Staley. He invited me to have further discussions with him in the near future.

RON WILKINSON AWARD

66. Our thanks to Mrs. Mary Wilkinson for her magnificent donation which has made this award possible. The conditions of the award were drawn up in close co-operation with her after Peter Wolfenden and I visited her in Geelong.

MORE WORLD RECORDS

67. It is pleasing to see that Australia now hold the world records for the 70, 23 and 13 cm bands.

MEMBERSHIP STATISTICS

68. These are compiled, with adjustments, from the EDP data input from mid-December 1977 and P. and T. Department statistics as at 31/12/1977.

69. In conclusion I must mention the enormous volume of work handled during the year. There was scarcely any facet of amateur activity not thoroughly investigated and discussed during the course of the year fed by much useful information direct from interested members. Thank you.

D. A. WARDLAW, Federal President. ■

REMEMBRANCE DAY CONTEST 1978—RULES

A perpetual trophy is awarded annually for competition between Divisions of the Wireless Institute of Australia. It is inscribed with the names of those who made the supreme sacrifice and so perpetuates 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 suitably inscribed certificate.

OBJECTS

Amateurs in each VK call area will endeavour to ontact other amateurs:—

1. In other VK call areas, P29, and ZL on all bands 1.8 through 30 MHz.
2. In any VK call area (including their own), P29, and ZL on authorised bands above 52 MHz and as is indicated in rule 5.

CONTEST DATE

0800 hours GMT on Saturday, 12th August, 1978, to 0759 hours GMT on Sunday, 13th August, 1978.

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 to the Contest —
   (a) Transmitting Phone.
   (b) Transmitting CW.
   (c) Transmitting Open.
   (d) Receiving Open.
2. All Australian Amateurs (VK call signs) 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 awards.
3. Amateurs may use these modes:—
   (a) Phone.
   (b) CW.
   (c) RTTY.
   (d) TV (fast and slow scan).

   However, only one entry may be submitted for sections (a) to (c) in rule 1. An open log is one where points are claimed for more than one mode. AM, SSB and FM are grouped as one mode, i.e. Phone.
4. Cross mode operation is permitted but both stations may only claim points as for a phone/phone contact. Cross band operation is not permitted excepting via a satellite repeater.
5. SCORING Contacts:
   (a) On the 3.5, 7 and 14 MHz 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) On the 1.8, 21 and 28 MHz bands, a station in another call area may be contacted twice on each band using each mode provided that not less than 12 hours has elapsed since the previous contact on that band using that mode.
   (c) Between 1600 hours GMT and 2100 hours GMT on Saturday, intra-call area contacts may be made on the 1.8, 7, 21 and 28 MHz bands once for each mode on each band.
   (d) Between 0300 hours GMT and 0759 hours GMT on Sunday, intra-call area contacts may be made on 1.8, 21 and 28 MHz bands, once for each mode on each band.
   (e) 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 two 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.
   (f) All CW/CW, SSTV/SSTV and RTTY/RTTY contacts count double. Note rule 4 re cross mode contacts.
6. 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 call sign. 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 own call sign.
7. Club stations may be operated by more than one operator, but only one operator may operate at any one time, i.e. no multi-transmissions. All operators must sign the declaration.
8. Entrants must operate within the terms of their licences.
9. CYPHERS. Before points may be claimed for a contact, serial numbers must be exchanged and acknowledged. The serial number of 5 or 6 figures will be made up of the RS (phone) or RST (CW) reports plus 3 figures that will be incremented by one for each successive contact. If any contestant reaches 999, he will start again with 001.
10. ENTRIES: Must be set out as shown in the example, using one side of the paper only, and standard WIA log sheets if possible. Entries

must be clearly marked "Remembrance Day Contest" on the envelope, and must reach the Federal Contest Manager, WIA, c/o Orange and District Amateur Radio Society, Box 1065, Orange, N.S.W., 2800, in time for opening on Friday, 15th September, 1978. Early submission of logs will be appreciated.

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 operation takes place, e.g. 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:—
    Name
    Address
    Section
    Call sign
    Claimed score
    Number of contacts
    Modes used
    Declaration: "I hereby certify that I have operated in accordance with the rules and spirit of the contest."
    Signed
    Date.
    All contacts made during the contest must be shown in the log submitted. If an invalid contact is made, it must be shown, but no score claimed. Entrants in the "Open" section must show the various mode contacts in numerical, i.e. chronological order.
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, b, c)

Certificates will be awarded to the top scoring stations in sections (a) to (c) of rule 1, in each call area, and will include the top scorer in each section of each call area operating exclusively on 52 MHz and above. Each VK, ZL and P29 call area will count as separate areas for awards. There will not be an outright winner. Further certificates may be issued at the discretion of the Federal Contest Manager.

The Division to which the Remembrance Day Trophy will be awarded shall be determined by the following formula:—

Average of top 6 logs plus (1000 times total points score from all entrants from call area in sections a, b and c of rule 1, divided by the total call area licences).

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 P29 stations are not included in the scores of any VK call area.

Acceptable logs for all sections shall show at least 5 valid contacts. The Trophy shall be forwarded to the winning Division in its container and will be held by that Division for the specified period.

RECEIVING SECTION (Section d)

1. This section is open to all Short Wave 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 (Section d)

Certificates will be awarded to the highest scorers in each call area. Further certificates may be awarded at the discretion of the Federal Contest Manager.

EXAMPLE OF TRANSMITTING LOG

Date/time GMT	Band	Mode	Callsign worked	RS(T) sent	RS(T) rec'd	Points

EXAMPLE OF RECEIVING LOG, VICTORIAN SWL

Date/time GMT 12/8/78	Band MHz	Mode	Callsign heard	RS(T) sent	Station called	Points
0612	7	P	VK5PS	58002	VK6RU	2
0615	7	CW	ZL2AZ	559004	VK4KI	6
0618	14	P	VK0ZZ	57006	VK6FI	6
1620	28	P	VK3NAA	59077	VK3NZZ	1

SCORING TABLE FOR PHONE CONTACTS — ALL CW/CW, SSTV and RTTY CONTACTS COUNT DOUBLE

From (VK)	To 0	1	2	3	4	5	6	7	8	9	P29	ZL
VK0	—	6	6	6	6	6	6	6	6	6	6	6
VK1	6	—	2	3	3	3	4	3	4	5	5	3
VK2	6	2	—	2	2	3	4	3	4	5	5	3
VK3	6	3	2	—	3	2	4	2	5	5	5	3
VK4	6	3	2	3	—	3	5	5	2	4	2	4
VK5	6	3	3	2	3	—	2	3	3	5	5	4
VK6	6	4	4	4	5	2	—	3	2	5	5	5
VK7	6	3	3	2	5	3	3	—	5	5	5	3
VK8	6	4	4	5	2	3	2	5	—	2	2	4
VK9	6	5	5	5	4	5	5	5	2	—	5	4
P29	6	5	5	5	2	5	5	5	2	5	—	4
ZL	6	3	3	3	4	4	5	3	4	4	4	—

All inlra-call area contacts on 52 MHz and above, or as indicated in Rules 5 (c), (d) and (e), are worth one point.

GFS electronic imports

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GREG WHITER
VK3CA

ANNOUNCING AN ALL BAND HF WADLEY LOOP COMMUNICATION RECEIVER FROM STANDARD RADIO, THE COMPANY WHOSE NAME HAS BEEN ASSOCIATED WITH HIGH QUALITY VHF AND UHF COMMUNICATION EQUIPMENT FOR YEARS.

A true state-of-the-art communication receiver covering a continuous 0.5 to 30 MHz frequency range.

Triple-super-heterodyne circuit with unique Wadley Loop System ensuring highly sensitive reception with exceptional stability over the entire frequency range.

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Two independent detectors separately provided for AM and SSB/CW reception. The automatic selectivity-switching function offers low interference operations – 7 kHz (–6 dB) band width for AM, and 4 kHz (–6 dB) band width for SSB/CW.

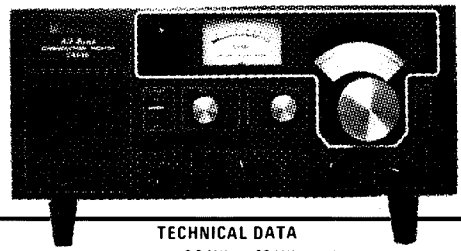
Main dial with the large tuning knob covering 0 to 1,000 kHz; each one rotation of the knob covers 200 kHz.

Antenna attenuator switch allowing prevention of overload by strong local transmissions.

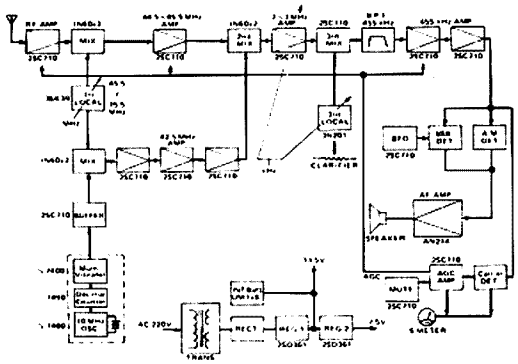
Preselector for improved image rejection.

Large illuminated S-meter.

ALL FOR JUST $299.00 AT GFS.



C-6500 BLOCKDIAGRAM



TECHNICAL DATA

Frequency range	:	0.5 MHz to 30 MHz continuous		
Reception mode	:	AM, SSB, and CW (USB or LSB)		
Sensitivity	:	10 dB S + N/N		
		SSB	0.5 – 1.5 MHz	1.0 uV
			1.5 – 30 MHz	0.5 uV
		AM	0.5 – 1.5 MHz	5 uV
			1.5 – 30 MHz	1.0 uV
		(AM : 1000 Hz 30% modulation)		
Selectivity	:		–6 dB	–30 DB
		SSB	4 kHz	8 kHz
		AM	7 kHz	13 KHz
Stability	:	Within 500 Hz after warming-up		
Output power	:	1.5W (with 10% disturtion)		
Antenna	:	Attached whip antenna (11 and an external Antenna terminal		
Power sources	:	8-dry batteries, external DC 12V, or AC 220V		
Dimensions	:	W290 mm x H156 mm x L340 mm		
Weight	:	6.4 kg		
Semiconductors	:	16 transistors, 3 ICs, and 30 diodes, 2 F.E.T.		
Accessories	:	A whip antenna, 3 auxiliary RCA-plugs, a phone plug and 2 extention legs.		

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FT-7	80-10m x 2[illegible]	$548
TS 520S	160-10m [illegible] Tcvr	$699
FL 2100B	80-10 [illegible] ear Amp	$539
FL 110	160-[illegible] Linear Amp	$235
FRG 7	[illegible]MHz Comm Rx	$325
YO 301	[illegible]eries Monitorscope	$375
YO 100	[illegible]01 series Monitorscope	$263
YP 150	Dummy Load/Wattmeter	$ 97
FP 301	301 series 20Amp PS	$163
FT 901DM	160-10mx Tcvr	$1475

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A-248D 80/40/20 metre Trapped Dipole Antenna. Complete with Wire, Insulators, and Traps. 18 metres long. 2 KW PEP rating.
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0.4 to 30 MHz generator
600Hz tone oscillator
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Switchable KHz and MHz

A MUST FOR EVERY HAM SHACK.
$213

OX-555 same as OX 555D but with 30MHz counter.
Only $175

Where do you get an 80 to 10 metre trapped vertical antenna complete with guy ropes and radial traps for only $113? At GFS of course. ✳
KB-105 – $113.

FS-302 – $58
50-170MHz

Sick of yelling your head off at those rare DX stations while others are getting 5/9 reports from them? Then get with it!! The manufacturers state 14dB forward gain and 26dB front to back ratio.

SQ-20	20 metre Swiss Quad	$255
SQ-15	15 metre Swiss Quad	$137
SQ-10	10 metre Swiss Quad	$128

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FS-302 VHF In-line power and SWR meter, 50-170MHz – $58
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SWR-200 Osker Block SWR POWER meter – $69
OTR-24 24 Hour World Clock – $31.
50-FB low loss double shielded foam dielectric Co-ax, 2 dB loss per 100 ft. at 100MHz. $1.20 per metre.
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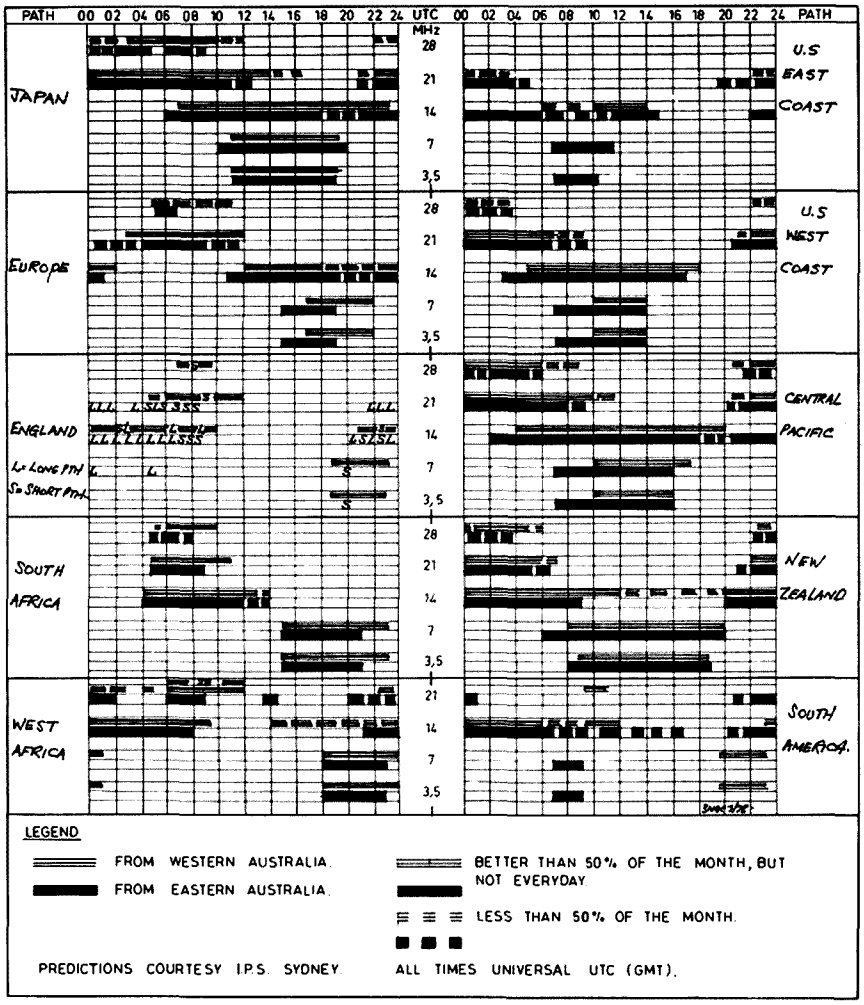
IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



The good news — if you haven't already heard — is that the new cycle, cycle 21, will peak considerably higher than previously anticipated. The latest figures from Zurich suggest that August 1979 will see the smooth running number reach around 150, this being somewhat midway between the peak of 1958 (201) and 1968 (110.6).

Those who have been using the various HF bands will have noted the effects long before you have read this. Indeed those on 28 and 21 MHz have been having a ball and the 14 MHz band is often bursting at its seams. 28 MHz has virtually reached the levels of the early 1960s with world-wide DX being available for long periods predominantly over weekends.

Corresponding solar flux levels have peaked close to the 200 mark in April and May. The May mean setting around the 145, much higher than earlier predicted.

Sunspot numbers have risen considerably since August 1977 and in this year have shown 1/78 = 49.3, 2/78 = 89.8 (1-7th all over 100, 138 on 4th), 3/78 = 73.5 (103 on 4th). 4/78 = 94.7 (8-12 100 plus, 18-26 100 plus).

The running smoothed means for 7/77 = 28.8, 8/77 = 33.00, 9/77 = 38.5, 10/77 = 44.6.

Forward predictions at May 1, 1978, from Dr. Waldmeier are July 84, August 89, September 94, October 99, equating approximately the period 1967-68. Anyone remember?

Solar flare activity has been moderate but the event on April 30th was the largest observed for some four years and produced some interesting effects. I gather 6m produced some interesting DX about that time. We are now in the winter period and of course the band conditions assume different attitudes. As we approach August-September some interesting conditions should start to show.

Commencing in August the 6m enthusiasts should begin to take notice of 10m predictions for it will be along the periods of probable 10m openings that there are distinct possibilities of long haul 6m openings taking place. When I receive notice of the possibility I will make special note in the charts.

However, some detailed recording of solar terrestrial events should be attempted to anticipate periods of higher than normal conditions. I still maintain that the Solar Flux A indices given on WWV at the hour plus 18 minutes should be charted to observe relationships. A watchful ear on rising MUFs between 30-50 MHz could lead to the more observant types taking advantage of abnormal conditions leading to trans-Pacific DX on 50 MHz. Who will be the first in Southern Australia to make it to W/VE or even South America.

At this late time I would like to make reference to a report that I mentioned some time back, of a theory for predicting the peak of the oncoming cycle, based on the "regression of recurrent geomagnetic activity recorded from the prior cycle to predict the sunspot maximum of the forthcoming cycle"

The method was devised by A. I. Ohl, a Soviet scientist. H. H. Sargent III, Space Environment Services Centre, Boulder, Colorado, modified the Ohl theory, thus enhancing the accuracy of the basic method devised by Ohl. Sargent modified Ohl's theory by taking into account finer time resolution and more accurate data than was available to Ohl. As modified, the theory provided accuracies of maximum sunspot level to within 1 per cent in some cases.

Compared to any prior known methods, the new method would be by far a major breakthrough in predicting sunspot maximum levels, when accuracy and other advantages are considered.

The exact mechanism between the prior cycle recurrent geomagnetic behaviour and the succeeding cycle sunspot maximum is not clear. However, it is likely that one is directly related to the other in solar physics, whereby it is even possible that a new definition of a solar cycle may have to be established. Conjecture may place some possible validity in the theory the coronal holes that relate to recurrent geomagnetic disturbances may be the birthplaces of the succeeding cycle sunspot regions.

Monthly smoothed predicted numbers using the modified Ohl system for cycle 21:

	Jan.	Feb.	Mar.	Apr.	May	June
1978	58.6	64.4	69.6	75.0	80.6	85.1
1979	110.8	114.6	116.8	120.3	124.5	127.8
1980	151.5	153.4	151.4	152.0	153.6	152.2
1981	139.0	135.8	133.7	134.8	127.8	126.2

	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1978	89.5	93.6	97.6	99.7	103.3	107.1
1979	131.1	136.1	138.2	140.8	145.0	148.1
1980	150.9	149.8	146.2	145.4	143.7	141.2
1981	126.2	125.6	123.4	122.3	121.2	120.6

If these predictions hold true, cycle 21 will be a beaut and will likely parallel cycle 18 and have an impact almost as severe as cycle 19. During periods of high solar activity many services will be affected from Satellite down to AF. Probably sheer havoc in some areas. Now there is new evidence to support the theory that the weather is directly affected by solar sunspot behaviour and geomagnetic disturbances previously thought to be unrelated.

Specific features of the Ohl/Sargent work:

Predicted smoothed SS max. for cycle 21—153.6.

Date of arrival — early 1980.

Prediction of smooth SS level maximum by method ratios — 158.0.

(This method takes the averaged smoothed odd cycle peaks divided by the average smoothed even cycle peaks times the peak of cycle 20.)

Accuracy of the Ohl/Sargent method as tested with observed data from cycle 20 and compared to cycle 20 sunspot peak level equals nearly 95 per cent.

Twelve hour periods with geomagnetic "A" indices of 100 or more expected in the next 10 years equals 81 periods (an "A" index of over 50 indicates a major geomagnetic storm).

Well, there's food for thought. The original writer of the article felt that the amateur community should be made aware of a highly accurate prediction that may well affect our use of the radio spectrum and also our daily lives and destiny.

I guess we can only observe these possible effects and perhaps enjoy what promises to be bumper crops of DX. Particularly the VHF fraternity.

Good luck, good DX.

VK3ZGP/NAC.

Acknowledgements: Swiss Federal Observatory, Zurich, M. Waldmeier, Radio Communication, May 1958, viz., O. Okleshen W9RX (RH Report). ■

HEARD ANY GOOD "RUMOURS" LATELY?
TELL A.R. ABOUT THEM

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 publishers.

12/5/78

The Editor,

Dear Sir,

With reference to the gentleman in AR (May 1978) from the electronics company.

"Sir", you are not the cheapest nor do you appear to be, in the very issue you get stuck into me.

Your FRG7 receiver is almost the dearest and in the issue the receiver varies in price from $300 to $350.

A phone call to the $300 man will tell you he makes a comfortable profit at that price.

Turn off a few of your lights, mate, and pass it along to your customers. There is one letter in print supporting me and 38 here at home if you'd like to see them. And they are the ones who took the time to write. Your FL2100Bs were advertised at the $578 price after you got the agency and then mysteriously dropped. Maybe you didn't sell any?

The tone of the letters to me suggests that, whilst a man is free to make an honest profit, competition should force prices down if you wish to survive.

As for our prices being as low as the U.S. What can you buy a U.S. dollar for or for that matter what price the Japanese Yen?

I might suggest that when an FL2100B was $400 to buy here it was $325 air-freighted from Hong Kong, and you could buy Y160,000 for $A400. Now the linear is $578 and you buy Y100,000 for $A400. So the poor hapless Ham pays 150,000 Yen for a linear which costs you less than 100,000 landed.

I challenge you to supply details of your landed cost and suggest that if you are paying what you say you are then you'd better buy from Hong Kong, because they are cheaper there than Japan.

How long are you going to accept the load of wallop that's being fed to you on the subject?

This is my final say. Let the buyer beware, you've only got yourself to blame if you get taken.

To those who wrote me, thanks, I hope I was of some help but I find even one of the recommended businesses is a rip-off merchant, so watch out.

Yours faithfully,

Steve Gregory VK3OT ■

The Editor,

Dear Sir,

According to my calculations the G5RV with 100 feet top and 32.5 feet of open wire feeder has the following resonances — 2.83, 8.51, 14.17, 19.83 and 25.43 MHz. To be resonant on the present bands the feeders should be 16, 49, 32.5, 27 and 22 feet respectively. Perhaps the WARC 79 conference could go for some set of bands related according to the odd half wave lengths. If the feeders are made 49 feet long the antenna is resonant on 2.36, 7.09, 11.81, 16.53 and 21.27 MHz. The G5RV would be a most acceptable device if the bands were related this way.

Yours sincerely.

J. Kitchin VK6TU ■

H. R. Miller VK3AYO,
27 Medina Road,
Glen Waverley,
Victoria 3150.

The Editor,

Dear Sir,

I refer to your letter on page 37 of April 1978 AR headed DX column. I have read the letter several times and have come to the conclusion it would have been more correctly titled "Anti-DX column". Whereas I defend the right of the writer to do what he enjoys most on the bands, please don't decry those of us who enjoy the satisfaction of getting a call and card from a rare DX station (near or distant) from the middle of a "dogpile" with 150W input using only a vertical or dipole on CW or SSB. I for one find great satisfaction in knowing that my operating technique, and sometimes patience, has won through over the 79 ft. beams and 1 kW linear amplifiers.

Some of the so-called "hullo/goodbye" QSOs are necessarily short for the very reason that the station is rare DX and many stations wish to work him. The distant station may not speak much, or any, English, this also makes a relatively short contact necessary. I enjoy a chat myself and quite often "Ragchew", but on the other hand, I also would find it a "Crashing Bore" if I was using Phone instead of CW.

Lastly, I quote from the letter "I never, or only very rarely, say that I will QSL", but how often does he say he won't QSL? There must be a lot of disappointed "Certificate Hunters" waiting for a card. Printed on a QSL card I received from K6XR are these words "The final courtesy of a QSO is a QSL"; that, I think, sums up my feelings exactly and if I have pricked anyone's conscience re QSLs — good — I intended to.

73 and "good DX".

Dusty. ■

45 Lahona Avenue,
East Bentleigh 3165
25-5-78.

The Editor,

Dear Sir,

I am a regular listener to the slow morse transmission put out by VK2BWI and VK5BWI but it has been getting harder and harder to copy it because of local (VK3) amateurs transmitting close to the frequency of the slow morse transmission and as one of the amateurs said that the people who listen on very broad receivers find it very hard to copy the morse, and the only way I can get practice is by listening to tapes which have been used over and over before.

Yours faithfully,

Warren Brown. ■

Box 40441,
Casuarina 5792
22-5-78

The Editor,

Dear Sir,

I enclose a copy of a letter sent to Senator Robertson, Kilgariff, and Mr. Calder, M.H.R.

Several letters of protest were given to Senator Robertson, who, I believe, will pursue the matter in Canberra this week.

T. J. Connell VK8CO

19th May, 1978

Senator E. A. Robertson,
41 Mitchell Street,
Darwin, N.T. 5790.

Dear Sir,

As a licensed amateur, I am writing concerning a situation which I consider to be preposterous. I am referring to the advertising and sale of amateur equipment to unlicensed persons, the majority of which are CB operators.

The two instances which prompt me to write are, firstly, the incident in Darwin this year of the sale of 15 Kenwood TS-820 transceivers to unlicensed persons. It is obvious that the majority of businessmen selling transmitting equipment are concerned more with the quick quid and not of the consequences. This I can understand. What is deplorable is that the situation exists where they can do it. Surely a simple solution is to limit the sale to licensed people capable of producing that licence and also to have the seller supply the name and address of the purchaser to the Radio Branch. This method is by no means perfect but is far better than nothing.

The second incident is the advertising of illegal equipment and the blatant advocacy to piracy The contraventions are:

1. Beams are not legal nor is working DX.
2. Linear amplifiers to boost signals.

Both these items are obviously intended for use with CB.

In this letter I shall restrict my concern to Amateur Radio and not deal with the possible consequences to commercial services. I am concerned with the Citizens' Band because as this frequency is rendered unuseable CBers inevitably turn to the next easiest thing which is amateur equipment (easily available) and amateur frequencies. It would be naive to suggest that this will not occur or is occurring.

Radio Inspectors appear to have their hands full with maintaining a clear commercial service and eliminating the worst of the CBers. Who will look after our frequencies? We have no power to.

The advertising of the 10 metre (28 MHz Amateur f.) transceiver as having "lots of channels!" inferring that this would be better than the crowded 27 MHz is absolutely astounding. Why not advertise skeleton keys for burglars or that X brand of explosive has been tested on Y brand of safe and found to be effective. I feel it amounts to the same thing.

It is blatantly obvious to the outsider that some gentlemen, whether they be in P. and T. or the Government, care nothing about the whole situation or its consequences. It appears to me that next elections whatever, different portfolios will be handed out and it will become someone else's problem. I sincerely hope that someone else sees the light soon.

Yours faithfully,

T. J. Connell VK8CO

18th May, 1978

The Editor,

Dear Sir,

One of the important functions of the Amateur Service SHOULD BE to present its image to the general public. One method could be to arrange displays of equipment used in Amateur Radio communications, publicity material such as pictures of Amateur activities, etc. It is quite difficult — and expensive — to obtain photographs for display purposes. Even in "Amateur Radio" we find cover photographs that appeal to the informed Amateur Operator but would hardly attract attention from the "outsider".

I suggest, therefore, that special thought should be given to the PR aspects. We need, I submit, photographs of Novice Stations and operators — NOT of the expensive, sophisticated types that have appeared as "typical" Novice stations, but simple, preferably HOME-MADE stations that will not frighten the possible devotee by their obviously high price tags. What about some gear fabricated from old TV chassis and components? There are still SOME radio enthusiasts who are severely limited by financial considerations and will have to improvise and construct.

Also, would it be possible to introduce a PR series of photographs that could be bought in sets by Radio Clubs and by individuals for display purposes? Even large wall charts of PR material could have considerable value in our efforts to achieve "Amateur Radio for the Masses"! Anyway, I presume that the Federal WIA has some PR Officer who could advise on the best types of material to prepare. However, I think that Radio Clubs might make good use of prepared PR "kits" for display in Club premises and in PR situations "in the outside world".

Yours faithfully,

Rex C. Black VK2YA,
Education Officer,
WIA NSW Education Service.

(This was one of a series of questions discussed at the 1978 Federal Convention in considerable detail. Executive even now are preparing display kits. Additional poster designs would be very welcome.—Ed.) ■

The Editor,

Dear Sir,

At the recent Federal Convention I learned that an earlier proposal to obtain an Amateur Low Frequency Band is now almost dead. Such a band would presumably be between 160 kHz and 190 kHz. Many amateurs may not appreciate the interesting technology and challenging communications paths that would result from the use of such a band.

In America, from where the main impetus for such a proposal must come, the objections to amateurs using such a band have been that it could interfere with the European LF broadcast

band, and the possibility of interference to various carriers used on high voltage lines by power supply authorities.

Both of these objections are probably unjustified, however I would like to suggest another approach to the problem.

I believe the band that was asked for was far too large. You might say the band asked for was only a few tens of kilohertz wide but, in a part of the spectrum the number of frequencies are few, it represents a very large slice. Obviously there is 1/100th the spectrum space in the LF sector, i.e. between 30 and 300 kHz than there is in the HF sector between 3 and 30 MHz. In the LF part of the spectrum narrow band systems must be used.

Some say you should ask for more spectrum than you need, at least you might get some. Rubbish! If you ask for something you can't justify officials are bound to say "no".

The band that should have been asked for would be only a few kHz wide. What could one do with such a band? Plenty, narrow band systems are easy to achieve at such frequencies even with a crystal set. With CW or NBFSK telegraphic systems you could fit at least four stations into each kHz. Such a size band would be much easier to fit in between some existing service. Even the power authorities could keep their protection pilot carriers clear of the band until they were satisfied it would not cause interference.

Since the possibility of obtaining an LF band particularly appeals to myself I would be interested in hearing from anyone who may be interested in forming a lobby to obtain such a band.

J. A. Adcock VK3ACA. ■

QSP

21st JOTA

Have you completed your arrangements yet to help the Scouts and Guides for the 21st Jamboree on the Air? The dates are 21st and 22nd October, 1978.

AMATEUR RADIO WEEKEND

The WIA Education Service (incorporating the YRS) is organising a big amateur radio weekend at Katoomba in the Blue Mountains on July 28, 29 and 30 and October 20, 21 and 22.

If you are an amateur and you always wanted to meet that fellow in Broken Hill then why not invite him and his family to the big weekend and bring your family along, too. If you are studying for the August exam then why not come along for a two day brush up in morse, theory and regs.

If you have just found out about this strange thing called amateur radio — then why not coma along to the weekend — operate equipment, speak over the air waves under licensed supervision and find out more about it.

Amateurs, students, newcomers will all be helping each other and enjoying a great weekend.

The YRS hopes to organise further weekends one month prior to each exam.

The fun commences at 8 p.m. on Friday and concludes at 4 p.m. on Sunday at the St. Mary's Education Centre just near Katoomba railway station (a few hundred yards on the Sydney side of the Great Western Highway).

At the first weekend get together people from 8 to 70 years of age had a great time.

Bring along your Satellite gear, radio teletype stations, SSTV, etc., and encourage the new generation.

All accommodation and food for the weekend is available for just $15. If you are bringing your family along then it's just $15 for dad, $10 for mum, and $5 per kid.

All you do is phone Bill or Mildred Newton and tell them you are coming and they will reserve food and rooms for you. Phone (02) 85 6321 or write to 44 Hillview Road, Eastwood, NSW.

Separate rooms are available or, if you want to get into those midnight pillow fights, dormitory accommodation is available. ■

AROUND THE TRADE

DICK SMITH ELECTRONICS 1978 CATALOGUE

This year is Dick Smith Electronics' 10th Anniversary. In keeping with his "think big" philosophy, Dick has produced a monster 100 page catalogue of items sold in his eight electronics enthusiasts' stores.

It lists and gives prices for nearly 3,000 items with many of them illustrated and described. There is also an eight-page data section, full of semiconductor specs and base connections, data for amateurs and CBers, useful circuits and component colour codes.

The Dick Smith 1978 catalogue is priced at 75 cents at all Dick Smith Stores and Dealers or by mail order from Box 747, Crows Nest, 2065. ■

DAIWA RELEASES NEW ANTENNA RELAYS

Daiwa Corporation of Japan have released a range of antenna changeover relays to complement a long list of high quality Amateur Radio accessories.

Two models are available, one covering 1.6 to 170 MHz and the other 1.8 through 450 MHz, with maximum power rating 100W PEP and 200W PEP respectively.

Both units offer extremely low insertion loss and are properly matched for 50 ohms antenna impedance.

The remote coax switches are controlled from a DC source of 10-15 volts.

The Daiwa antenna relays are available through the Australian distributors, Vicom International Pty. Limited, 68 Eastern Road, South Melbourne 3205, telephone 699 6700. ■

NEW ANTENNA COMPANY IN QUEENSLAND

The Scalar Group is pleased to announce the commencement of a sales office and factory in Queensland.

A new company, Scalar (Qld.) Pty. Ltd., has been incorporated to provide the Queensland communication industry with local access to the complete range of the Scalar Group's products.

Design and manufacture has commenced in Brisbane of many of the antenna product lines which were formally manufactured in Melbourne for the Queensland communication market. It is the intention of the company to manufacture antennas for Queensland in Queensland and also as a back-up technical and manufacturing facility for its N.S.W. outlets, providing a technical consultative service, improving delivery schedules and minimising freight costs.

The company is under the management of Mr. Brian Robinson, whilst Mr. Terry O'Meara, Technical Manager, is in charge of the design and manufacturing facility. ■

AMERICAN ELECTRONIC LABORATORIES AEL 2 TO 40 GHz ANTENNA

American Electronic Laboratories, Inc. (AEL) presents its model ASO-1601A cavity-backed spiral antenna. It provides 2 to 40 GHz coverage (in a single antenna). It is useable in airborne amplitude-comparison direction finding systems as a broadband dish feed, or in any application requiring extremely broad frequency coverage from a single antenna. The model ASO-1601A is qualified for use in severe airborne environments and meets, or exceeds, the requirements of MIL-E-5400.

This antenna provides an essentially constant circularly-polarized beam over the entire frequency range. Polarization is LHCP (model ASO-1601AA is RHCP). Three dB beamwidth is 90 degrees ± 20 degrees from 2 to 4 GHz; 75 degrees ± 15 degrees from 4 to 30 GHz; 65 degrees ± 15 degrees from 30 to 40 BHz. The axial ratio is 1 dB nominal, 2 dB maximum from 2 to 25 GHz and 2 dB nominal, 4 dB maximum from 25 to 40 GHz. Power handling is 1W CW.

Weighing only 4 ounces, AEL's ASO-1601A antenna is 2.5 in. in diameter and 2.0 in. deep.

Order data sheet No. 20-15 by writing to:—

Scalar Distributors Pty. Ltd.,
18 Shelley Avenue,
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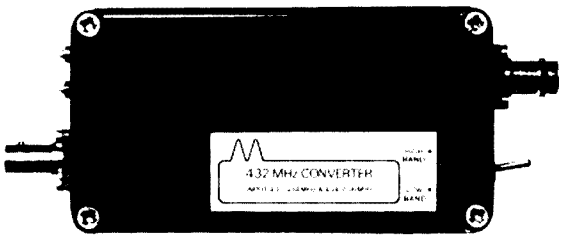
NEW

DUAL RANGE 432-434MHz & 434-436MHz CONVERTER TYPE: MMC432/28-S & MMC432/144-S



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FEATURES

- ★ **Extra Range (434-436 MHz) For Satellite Reception**
- ★ **Ultra Low-Noise First RF Amplifier Stage**
- ★ **Highly Stable Zener Diode Controlled Crystal Oscillator and Multiplier Stages.**

SPECIFICATION

Input frequency ranges	: 432-434 MHz (low) : 434-436 MHz (high)
I.F. output frequency	: 28-30 MHz or 144-146 MHz
Typical gain	: 30dB
Noise figure	: 3dB Maximum
Oscillator frequencies	: 101 MHz (low range) — 28-30 MHz I.F. : 101·5 MHz (high range) — 28-30 MHz I.F. : 96 MHz (low range) — 144-146 MHz I.F. : 96·666 MHz (high range) — 144-146 MHz I.F.

Maximum frequency error at 432 MHz	: ±5 KHz
R.F. connectors	: 50 OHM BNC
D.C. Power requirements	: 11-13·8 volts 12.5V nominal
Current consumption	: 50 mA Maximum
Size	: 110 x 60 x 31 mm
Weight	: 260g

DESCRIPTION

This 432 MHz converter is intended for use with either a 28-30 MHz or 144-146 MHz receiver to produce a high reliability receive capability for satellite or terrestrial communication.

The unit has two ranges, 432-434 MHz and 434-436 MHz, both for the same I.F. output frequency, which may be selected by means of a toggle switch mounted on one end of the diecast case. The second range (high) has been included to allow reception of satellite signals normally transmitted above 434 MHz.

Incoming 432-434 MHz and 434-436 MHz signals are fed to the first R.F. amplifier, which uses a BFR34a low noise silicon transistor. This signal is further amplified by a BFY90 transistor, before being passed to gate 1 of the 3N204 dual-gate MOSFET mixer. The local oscillator signal, 404 MHz or 406 MHz, is applied to gate 2 of this mixer, to produce the required intermediate frequency. The use of printed strip-line techniques together with an ultra low-noise first R.F. stage, produce a selective receive converter with an overall system noise figure of less than 3·0dB.

The zener diode controlled crystal oscillator uses high-stability 5th overtone quartz crystals which provide a high degree of accuracy and stability for the converter. The output from this oscillator is fed into a doubler stage, to produce 202 MHz or 203 MHz, which in turn is fed into the final multiplier stage to produce the local oscillator injection of 404 MHz or 406 MHz.

The converter is housed in a highly durable black diecast case, and all circuitry is constructed on high quality glass-fibre printed circuit board.

All prices subject to change without notice. Onwards forwarding please add sufficient for freight or postage. Excess will be refunded.

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P.O. BOX 160, KOGARAH. N.S.W. 2217
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CABLE: "AMATEURIMPORT, SYDNEY"

New Release $295

MMT432/144'S' TRANSVERTER, FEATURING 2 SWITCHABLE RANGES. 432 – 434, 434 – 436 MHz, INPUT FREQUENCY 144 to 146 MHz.

Get away from the maddening crowd below. The MMT432/144'S' Linear Transverter will get you there. This solid state linear made transverter allows you to operate your 144 MHz SSB, AM, FM, or CW units at 432 MHz ... up where there still aren't a lot of people. Amateur Electronic Imports is the exclusive Australian distributor for this precision British made unit from Microwave Modules, Ltd.

SPECIFICATIONS MMT432/144S

GENERAL		RECEIVE SECTION	
Frequency Coverage	: 432 - 434 MHz. Low Range 434 - 436 Mhz. High Range (Oscar)	Converter gain through transceive port	: 10 dB typical
Selectable Offset	: 2 MHz.	Converter gain through independent port	: 25 dB typical
Input Frequency Range	: 144 - 146 MHz		
DC Power Requirements	: 11 - 13.8 volts, 12.5 volts nominal	Overall converter noise figure	: 3dB maximum
Current Consumption	: 2.1 amps peak	Input impedance	: 50 Ohm
RF connectors	: 50 Ohm BNC Sockets	IF output impedance	: 50 Ohm
Power Connector	: 5 pin DIN Socket		
Size	: 187 x 120 x 53mm		
Weight	: 900 grams		

TRANSMIT SECTION		LOCAL OSCILLATOR	
Input impedance	: 50 Ohm	Maximum frequency error at 432 MHz	: ± 5KHz
Input modes	: SSB, FM, AM or CW	Typical drift at 432 MHz	: 2 KHz/Hour
Input drive for full output	: 10 watts or ½ watt via selectable attenuator	Frequency sensitivity (11 - 13.8 volts)	: 50 Hz
Power Output	: 10 watts continuous rating	Oscillator frequency 432 - 434 MHz	: 101 MHz
Output impedance	: 50 Ohm	Oscillator frequency 434 - 436 MHz	: 101.5 MHz
Relative 404/406 Mhz output	: Better than – 65dB	First oscillator	: 116 MHz
Other spurious outputs	: Better than – 65dB		
Quiescent transmit current	: 250mA.		

SPECIAL UHF CONVERTERS WHILE THEY LAST
Type MMC 432/28 – MMC 432/144 – MMC 434/28
PRICE: $41.00

BNC CONNECTORS
Excellent quality, fully imported from U.K.
U.S. Mil. No. UG88E/U
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NEW RELEASE FOR OSCAR 8 DOWN LINK – 70CM CONVERTER MODEL MMC434/28, COVERAGE 434 to 436 MHz.
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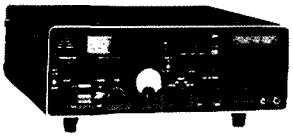

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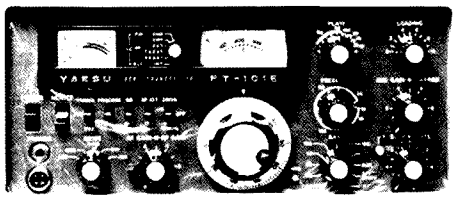
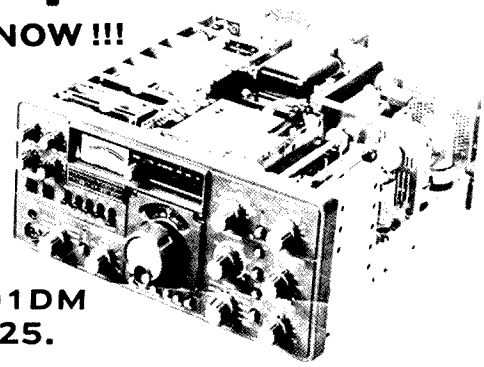


FT-101E 160-10M Transceiver.
$849.



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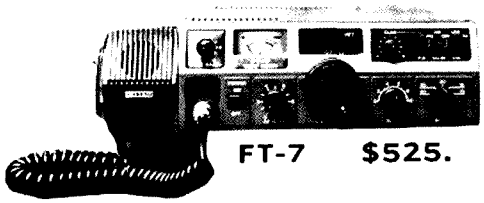
ALL you will ever need in ONE unit.



FT-7 $525.

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VS-22 3 el. Duo-band beam incl.balun.
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ROTATORS.
103LBX Medium duty Rotator.
502CXX Heavy duty Rotator.
1102MXX Extra heavy duty Rotator.
1215 Mast clamp for 1102MXX.
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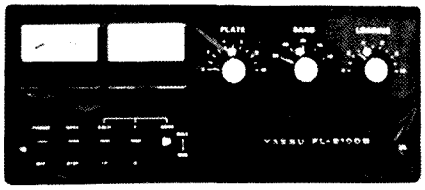
300 Mast Bearing.



$535.

FL-2100B Linear Amplifier.

VHF Equipment also available.

Yaesu FT-225R.Digital 2M.Transceiver.

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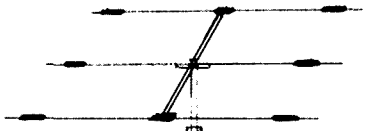
$330.

VS-41/80KR **$110.**

HIDAKA ANTENNAS BUILT TO LAST !



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AMATEUR BAND BEACONS

VK0	VK0MA, Mawson	53.100
VK1	VK1RTA, Canberra	144.475
VK2	VK2WI, Sydney	52.450
	VK2WI, Sydney	144.010
	VK2RHR, Mittagong	144.120
VK3	VK3RTG, Vermont	144.700
VK4	VK4RTL, Townsville	52.440
	VK3RTT, Mt. Mowbullan	144.400
	VK4RBB, Brisbane	432.400
VK5	VK5VF, Mount Lofty	53.00
	VK5VF, Mount Lofty	144.800
VK6	VK6RTV, Perth	52.300
	VK6RTU, Kalgoorlie	52.350
	VK6RTW, Albany	52.950
	VK6RTW, Albany	144.500
	VK6RTV, Perth	145.000
VK7	VK7RNT, Launceston	52.400
	VK7RTX, Ulverstone	144.900
	VK7RTW, Ulverstone	432.475
VK8	VK8VF, Darwin	52.200
JA	JA2IGY, Nagoya	52.500
KG6	KG6JDX, Guam	50.110
KH6	KH6EQI, Hawaii	50.110
TI	TI2NA, Costa Rica	50.080
W	WA6JRA, Los Angeles, USA	50.091
ZL1	ZL1VHF, Auckland	145.100
	ZL1VHW, Waikato	145.150
ZL2	ZL2VHP, Palmerston North	52.500
	ZL2VHF, Wellington	145.200
	ZL2VHP, Palmerston North	145.250
ZL3	ZL3VHF, Christchurch	145.300
ZL4	ZL4VHF, Dunedin	145.400

There are no changes to the beacons list this month, but the continued inclusion of the overseas beacons is necessary due to the rising sunspot cycle and the likelihood of those beacons not yet heard in Australia will soon be heard. There is every chance of long haul 6 metre OX during June and July for the winter peak followed again by an even better chance of some rare contacts during September/October with the equinoxial changes.

What does seem a pity to me is the little advantage taken of the potential for eastern State amateurs in VK2 and VK3 to work across to New Zealand, particularly on 144 MHz. The all water path which exists between large areas of the two states and ZL must be open quite often but seems to lack any specific co-ordination from either end to achieve anything. There are beacons in both countries, and the fact that west-east paths exist along the southern areas of Australia which are exploited fairly regularly between Albany and Adelaide and Melbourne surely indicates similar paths exist between VK2 and ZL at least, on 144 and 432 MHz!

Are the *amateurs on* both sides of the Tasman totally uninterested in one another? I have been told the antenna systems of some ZL beacons are on a directional line rather than uni-directional, i.e. signals are beamed more or less to defined areas rather than in all directions; if this is so it would tend to indicate favouring north-south paths which exclude Australia. One wonders what amateurs on both sides of the Tasman are really doing to protect at least 144 and 432 MHz with the impending WARC 1979 coming up? The Queensland boys only needed convincing they could work up and down the coast on 2 metres — after being suitably convinced they now do that, over areas previously not thought possible, and they will eventually work the 1000 mile path from north to south, i.e. Townsville to Brisbane, etc. Hence I will take a lot of convincing it cannot be done with some regularity between VK2 and ZL if people were interested enough to make the effort, and I am sure that is all it requires, the effort!

I also read complaints in "QRM" on how difficult it is for anyone in VK7 to have contacts with 2 metre stations in Melbourne, the beacon can be heard regularly but no one seems to want to work south. Robert VK3AUR in the Grampians area also complains of no contacts into Melbourne and adjacent areas. Even the halfway house at Mt. Gambier doesn't seem to be flooded with contacts from Melbourne or Adelaide either for that matter. With Melbourne a Channel O area one would think 2 metre activity would boom, but perhaps it is more of interest to work through the repeaters. Surely there must be many circumstances where a contact could be established via a repeater and then switched to SSB on the low end of 2 metres. I note Robert VK3AUR calls most nights on 144.1 beaming to Melbourne, at about 2000 hours local time. Here in VK5 the Channel 7 repeater on Mt. William is regularly monitored to warn of impending openings to VK3 — later on I suppose we will be able to monitor Channel 5A from the same area, but with no one to work!

Having got the moans out of the way, on to more interesting things! During the month I received a letter from Bob K6RNQ, Box 167, Somerset, California, 95684, USA, and he supports the efforts being made here for the use of 50 to 52 MHz. He goes on to say "Contrary to previous predictions this present sunspot cycle is supposed to reach a peak smoothed number of 150 in April 1980, making it the second greatest sunspot maximum in recorded history, the greatest being 1958-59. It would be a tragedy if VK/ZL were not permitted the use of the lower 2 MHz of the 6 metre band. Much could be added to the knowledge of VHF propagation if VK and ZL were permitted to use the part of the 50 MHz band that is useable to other VHF enthusiasts around the world. Let's face it, it's just not practicable to try to tune over 2 MHz listening for weak signals.

"I was very active on 6 metres during 1958-59 as a member of IGY and IGC-59, during this time I worked many ZLs, frequently on a day basis on MHz. For some reason VK is a very difficult path on 50 MHz and despite the enormous number of ZL openings there were only 3 openings to VK I know of, and 2 of these were to VK4, during which I worked VK4XJ on CW, the other was a very marginal opening to VK2 and had a partial contact with VK2ZAO. Also at one time I heard VK5RO or VK5BC testing, but being so long ago I forget which one it was. However, after the ZLs were moved up to 51 MHz we had only one opening to ZL from W6, the MUF apparently dropping off quite sharply. No VKs of course.

"During the 1958-59 sunspot maxima, if the ZL/VK authorities had not dragged their feet in granting 50 MHz authorization, I am sure ZL and VK contacts could have been made as early as 1957, due to the number of backscatter openings from that direction at that time.

"I do have both transmitting and receiving capability on 52 to 52.500 in the worst case, but do hope you guys will get 50 MHz authorization." (Thanks for writing, Bob, we live in hopes here of course for some consideration.—5LP.)

FROM DARWIN

Graham VK8GB writes again with a very newsy letter of mouth-watering contacts from the Darwin area on six and two metres. If you have been keeping a chronological note of Graham's activities, then this follows on exactly, starting with 10th April: 6 metres 1010 to 1330Z, JA2, JA6, JA7, HL9WI and KG6JDX for 7 contacts. On two metres: 1107 to 1250Z, 26 contacts all to JA4 and JA6 areas. Additionally, on six metres, KH6EQI heard and JA2BZY reported KH6EQI 0600 to 0730Z and FK8AB 0400 to 0445Z on 52.084 MHzI 11-4: nil. 12-4: 6 metres, 0320Z WA8GUB/KH6 0325Z KH6IAA, 1250Z KG6JDX. Same day, Brian VK8VV worked 25 JAs on two metres in JA4, 5 and 6. George P29HV hearing JA low band TV. KG6DX worked KH6EQI at 5 x 9 0400Z, then VK3OT (539) and Ross VK4RO. VK4RO worked WA8GUB/KH6 also.

13-4: Six metres open but no contacts. Two metres: 1135 to 1155Z JA4HI, JA4UDS, JR6AHK, JH6UKM and JH6CTY. 14-1: Six metres, KH6EQI heard. 1033 to 1300Z JH4PFU, JA4MBM, HL9WI, JA2BZY, KG6JIH and JH6TEW. On 2 metres 23 contacts between 1058 and 1205Z to JA4, 4 and 6 areas as usual, but in addition JF3IGZ, which is the first time Graham has mentioned a 3 area on two metres. JA4MBM reported that on 13-4 the following were heard in Japan: KH6EQI, KH6HI, YJ8KM, Y8ZV, FK8AB, KG6, P29, VK2, 3, 4, 5, 6, 7 and 8. Very good conditions and a very long opening. KG6 open very late at night and the low end of six was like 20 metres!

15-4: 1013Z JF3III, 1330Z JH6VGX, 1302Z JA2IJV, 1303Z JA2BZY. Brian VK8VV reported no signals on 2 metres this date, but an afternoon opening on six. JA2BZY reported KH6HI at 0936Z and VK7DA 0700 to 0800Z. 18-4: Six metres: 0213Z KH6IAA, 0229 KH6HI, 0400 KH6JSI, 0630 WA8GUB/KH6, 0700 JA4YBS, 0709 JA2DDN, 0134 KG6JDX, KG6DY, 1255 JA1WUS, 1337 JH8FMA, 1358 JH6TEW, 1404 HL9TG. (In other words, six metres open to somewhere for 12 hours!—5LP.) On 2 metres 1117 to 1213Z JA5 and 6 for 9 contacts. Information received from KH6IAA: He worked on 15/4 into JA via backscatter, reported 3D2CM working JAs also, and he worked four LU and one CE stations 0130 to 0300Z on 15-4. On 14-4 at 0200Z KH6HI and WA8GUB/KH6 worked KZ5NN in the Panama Canal Zone!

"From KH6HI: Open to South America today (16-4) but only weak CW. FO8DR will be back on six in August; WB6KAP now K6FV has info on ZK1. KH6HI worked YJ8 0730Z on 13-4. From KH6JSI: Worked YJ8 and two P29s on 8-4. XE1GE Mexico active on six. From JA2DDN: VK3, 4, 5 and 6 into JA on 16-4. From KG6DX: YJ8 working JA 16-4, C21TA reported active on 52.050. From JH6TEW: 0800 to 1000Z KH6 on 15-4, worked VK5 and VK4 9IM; K9PNT/DU2 working JA1; P29 to JA in evening."

17-4: On six metres heard KH6EQI. 1025 to 1349Z worked JA1, 2, 3, 4, 5, 6, 7, 8, 9 and 0 as well as P29ZNL. On 2 metres: 1105 to 1157Z 10 stations in JA4 and 6 districts. Message from JA2BZY: 0936Z 15-4 worked KH6EQI on CW. 0648Z 16-4 worked VK3OT and many VK6 stations in Perth to 0705Z. JA2DDN worked FK8AB 0450Z on 52.010. From JA2DDN: A2 worked on Es today. KG6DX full scale on meter at 0000Z. Heard VK5LP 5 x 2 and worked VK5KK 0730Z 16-6, also VK3OT. H6TEW heard VK4 and YJ8KM today. From Brian VK8VV: Worked KH6IAA, WA8GUB/KH6, 0223Z. KH6EQI beacon in all day! The contact with P29ZNL mentioned at the start of paragraph was notable in that it was Graham's (VK8GB) first F2 contact with P29 for many years. Dick is located at Madang and runs 20 watts to 5 elements.

18-4: No signals. 19-4: Six metres 1027Z JA4PSO, 1028 JA9QYC. 20-4: Heard KH6EQI. Six metres: 1213 to 1305Z JA2, 3 and 6 for 7 contacts. From JA2OBZ: Worked VK4 at 0730Z. From VK6FQ: He (Steve ex-VK6ZBW) has observed 7 or 8 JA openings this year. Worked 16 stations on 18-4 and 31 on 13-4. VK6ZFY heard VK6VV on two metres on 17-4 via F2! Brian had his CW Ident running with his beams (10/10) looking north. Time about 1800 local (Perth) time, and signal weak with QSB and flutter. We can't explain how the signal propagated!

21-4: Six metres 1027 to 1230Z 17 stations in JA, HL and KG6 areas. Two metres: 1112 to 1139Z JA4, 5 and 6 for 10 contacts. From KG6JDX: ZL TV into KG6 today on 50.740, 50.750 and 50.760 MHz. KG6JIH worked VK2. KG6 hearing VK1ZAR working JAs at 1040Z. 23-4: Six metres, heard KH6EQI. 1032 to 1255Z, KG6JIH, KG6DX and JH6TEW. Two metres: 1103 to 1218Z 11 contacts JA4 and 6 areas. From KG6JIH: Into VK4 again. Thought he heard a VK7 on CW. KH6HI reports JD1YAA on 50.110 is on again from Marcus Island. 24-4: Six metres, 0955 to 1032Z JA1, 2, 3, 7, 8, 9 and 0 for 11 contacts, this an afternoon type opening. 25-4: Six metres, 0300Z KH6JSI, KH6IAA. 1140Z HL9WI. On 16-4 A1 KH6IAA worked four VK2s and P29. 26-4: Six metres, heard KH6EQI. 1020 to 1306Z JA2 and 3 for 5 contacts. JAs heard on two metres but none worked. From JA2BZY: Worked 3D2, FK8AB, YJ8 and KH6. VK6 at 0700Z 5 x 9+. 27-4 Six metres, 0815Z JR3PEO, 0828 JH4SSP, 0838 JF3DYA, 1040 KG6JIH, 1945 KG6JOX, 1047 JF3NJY, 1305 JR1MLZ, 1312 JH4NTN/1, JL1NDP and 1318 JF3LQY, five hours of openings. On two metres: 1255 JA6AHB. KG6JIH reports working JA on 26-4 and heard ZL TV on 24-4. 28-4: No signals.

29-4: Six metres, 0420Z KH6IAA. VK4MS reports very good JA opening 28-4, and has heard KH6EQI 18 days in a row! 30-4: Six metres, 1040 to 1319Z 16 contacts to JA, HL and KG6. Two metres: 1238Z, JH6IFF. KG6s all worked CR9AJ on 30-4 at

5 x 9+! 1-5: 1049 to 1336Z, JA1, 2, 3, 4, 5 and 6, HL9WI, for 27 contacts. Two metres: Brian VK8VV worked JA5RQN 1120Z. YJ8KM being worked in JA 0915Z. CR9AJ DXpedition worked 500 JA stations. VS6HK works into Japan. Bill HL9WI advises the FM signal on 49.305 heard regularly is in fact an FM link between HLKA studios in Seoul and their transmitters at Inchon! 2-5: No signals. 3-5: Six metres, 1030Z JA2HMO, 1037 JR7AFK. Six still open at 1340Z, HL9WI worked VS6HK. JA2HMO reports VK4 and VK6 (Perth) worked in JA today. 4-5: OHT here on 4-5 and 5-5. Brian VK8VV worked two metres to JA for 26 minutes to JH4 and JA6. 5-5: Brian VK8VV worked 1130 to 1430Z on six to HL9WI, JH8, JA7, PA2, JA3, and on two metres to JA4 and JA6 around 1225Z.

6-5: Six metres, 1021 to 1039Z JR2SQZ, JE3JCV, JA3VXH and JA4LHR. 8-5: Six metres, 1020 to 1215Z 12 contacts to JA, P29 and KG6. Two metres: 1155 JH6TEW, 1200Z JA6QFH. KG6JIH advised JD1APC, JD1AOP active on Bonin Island. Worked VK4RO at 0830 his time! Working Es into JA. P29 NOW HAS 50 to 54 MHz!! Bruce P29BB is located at Yonki Village near Kainantu, between Goroka and Lae, and runs a TV506 to a ground plane. JA2BZY advises WA4TNV/KL7 Sheyma Island has been worked in JA via Es. 9-5: Six metres, 0726Z KH6JSI, 0730Z WA8GUB/KH6, KH6IAA, 1045 to 1109 PA4MBM, JA9QYC, JH7VYN, JA1ETO and JR1ZIX. KH6IAA advises big two metre tropo opening from Hilo (Hawaii) to San Olego (California) today and still on while working on six. Most contacts via the repeater on Hilo 146.220/146.820, but Al made it simplex by driving up the mountain to 7000 feet and used a five element beam on 145.100! Al also worked three W6 stations on backscatter on 8-5 but no Es opening to W as yet.

10-5: Six metres, 1100Z to 1155Z KG6JIH, JH6EYL and JH2NUU. Two metres: 1210Z JH4JPO on SSB and CW. There is a commercial RTTY station in JA on 146.800 which gives a good indication of two metre conditions. 11-5: Nil signals. Lyn VK4ALM advises he has worked 560 JAs on six since February, also KH6, KG6, HL9WI and HL9TG, also HM2GS and believes HM1IJ is also active. The CR9 DXpedition left their TS600 in Macao for local operation. 12-5: Six metres, heard KH6EQI. 1000 to 1040Z: 10 contacts JA1, 2, 3 and 8. JH6TEW advises Es between JA6 and JA7 today. Hal VK4DO has worked 924 JAs since February. KG6DX reports a new call on six in KG6 might be KG6JSG and that maybe KX6 is on six now. JH2VHL reported today he heard VS6FX, HM1EJ(?), KG6JIH, VK4, VK6 and JD1. 14-5: Six metres, heard KH6EOI. 1005 to 1053Z worked 9 JAs in 1, 2, 3 and 7 districts. JA2BZY worked HL9WI and HL9TG and heard VS6BE calling VK at 0400Z. JFOWO rumours that KG6R Saipan is on six and also KX6. 15-5: Six metres, 0950 to 1028Z, JA1, 2, 3, 4, 7, 9 and 8J9ITU (JA9).

Graham makes some final comments: "I think we have seen the last of the JA-VK two metre contacts for a while but six looks like holding on with afternoon openings for a period yet. It would appear the skip doesn't favour JA at night as we get strong TV on 49.75 well into the evening but no amateur signals. If you like statistics here are a few about my contacts on VHF since coming back on 15-2 from my holiday:

"Six metres: 580 contacts in 60 openings to JA. 58 contacts in 33 openings to KG6. 33 contacts in 16 openings to KH6. 15 contacts in 14 openings to HL9. P29ZNL and P29BB. Also VK4RR on backscatter.

"Two metres: 359 contacts in 31 openings to JA.

"The openings are when I personally contacted a station and do not include days when VK8VV contacted areas when I didn't, nor days when I heard signals only."

My grateful thanks to you, Graham, for the trouble you have taken to keep the rest of the country informed of your activities, to prepare the reports you have for so many weeks speaks highly of your dedication, and the Australian amateurs should be gratelul to you and Brian for putting Australia on the map on both six and two metres. At least there are many more areas who are now aware of where we are, but we still face that ever present difficulty of a 2 MHz difference in prime operating frequency.

I repeat what I have said many times before, we surely miss out on many contacts for no other reason than we are two megahertz higher in our operating band, two MHz higher which means poorer antennae, poorer equipment coverage and operation, poorer liaison with other areas, and it is a most frustrating experience. Now with the report which has just come to hand that P29 have been granted the full 4 MHz from 50 to 54 MHz, it's even more frustrating. It would be interesting to note what the position might be if we could speak with the massive voice as the Citizens' Band operators have done, and what they have achieved in the small time they have been around — oh for a hundred thousand extra amateur voices!

Referring back to Graham VK8GB and his reports once again, I make no apologies for using up a fair bit of space for some months with his information. I believe it is interesting to most who read the pages, it's fresh, newsy, and being presented in chronological form I know those who study these things are getting the total information. So much is happening to the north of us that if nothing else, the total reports of Graham's information keeps a few of the dedicated operators in the south and other areas on their toes, and in the future will surely ensure more contacts are made, allowing for the 2 MHz differential!

Tony VK6BV in Kalgoorlie has written and quotes a small paragraph from the WA VHF Group Bulletin: "It is interesting to note that the RSGB policy is to try and establish a new (to the UK) Amateur Band in the region of 50 MHz and proposals to this effect will be put to the IARU Region 1 Conference due to be held this month. If they manage to pull it off (fingers crossed) who's for 6 metre long-haul DX?"

Good luck to the boys in UK, they must be really out on a limb with their 70 MHz band. Tony also writes to advise of various 6 metre openings to Kalgoorlie, namely, 17-4: 1350 to 1436Z JA1 only, S3 average, 5 stations. Also heard VK6ZFO Koolan Island on backscatter. 19-4: JH4PFU very weak and short opening. Peaked to S2 for 30 seconds, time 0630Z. 20-4: 0610 to 0706, JA1, 2, 3 and 4 areas, S5 average, peak S7, 13 stations. 25-4: 0642 to 0756Z and 0852 to 0900Z, JA1, 2, 3 and 4, S6 peaking to S9+, and 23 stations. JA also working VK4. 16-4 and 22-4: Weak but audible JA signals on 50 MHz. No response from calls on 52 MHz. Time 0600. (That's that 2 MHz difference again!) 27-4: 0636 to 0713Z, JA1, 4 and 9, plus 0, S3 average peaking S8, 8 stations. 29-4: 0719 to 0741, JA1, 2, and 0, S3 peaking S5, 4 stations. 30-4: 0702 to 0750Z, JA1, 2, 3, 7 and 9, S4 peaking S6, 12 stations. Could still hear JAs on 50 MHz section at 0900 but nothing on 52 MHz.

Steve VK3OT writes to say on 12-4 he heard HM2GJ who runs 1 watt output! KG6DX-VK3OT equipment both ends FTV650B into 6 element yagis 50 watts — this being the first genuine KG6 to VK3 two way. Steve worked JA1 and 5, one each. 16-4: 0530 to 0700Z all JA areas except JA8. Second opening 1230Z with weak signals on 52.050 and 50.110. Some JAs reporting all States on 12-4 except VK7 — Steve wonders where you are.

Steve also writes: "A letter via JA1PIK shows photos of Khabarovsk Radio Club in Eastern Siberia, depicting transmitter used to send signals to VK in 1976. All valves with the final a type 829B would you believe! Power supply uses mercury arc rectifiers of some sort with about 1000 volts on anode. Rig looks very neat at front especially the Russian writing and receiver dial. Antenna 4 element quad type with upper and lower sections fed actively. Antenna was rotated atop a very high building. Their HF rig shows a single 813 valve with pi output for 10 metres, also about 200 watts.

"The six metre rig appears to operate on several modes, FM, CW, etc., and looks very much like any homebrew transmitter from the late sixties. The 829B socket was a ceramic type no doubt from the Russian type 522 fitted to Allied tanks during the Second World War. None of the equipment in the photos shows any solid state parts. Bandswitching is shown for 144 MHz and smaller coils. F max. shown as 220 MHz.

"Total score this season were 157 QSOs with Japan. $6.11 airmail to JARL OSL bureau. All JA districts worked plus KG6. Missed were HL9 and DU0WPX. That's all from Western Victoria except would anyone be interested in joining in the purchase of a FTV650B for VR4DZ and future DX locations? One is available at about $170, that's $9 at 20 people, $5 if 25 chip in. How about it? SMIRK have a rig for anyone to use and borrow to go DX. VR4DX wants to buy a rig and sell it at the end of his term 9-79. If anyone wants to be put on a list which will make 25 people then please drop me a line." Thanks for writing, Steve, and the venture with the FTV650B looks reasonable, so hope you receive some support to get the thing under way soon.

Robert VK3AUR writes from Halls Gap in the Grampians with some news from an area which for some reason seems to put a better 6 metre signal into my QTH than on 2 metres. Rob says: "The guys in Mildura are active, and enthusiastic, Noel VK3AUG has a 14 over KLM which tilts over for vertical, and slams a signal down here consistently. Ray VK3BRB also active again, although a few dB down on Noel, but still good. Keith VK3ZST, new to the band, is also workable. The Mildura boys do not have good operating paths to anywhere, but look towards Melbourne and Adelaide most nights from 2000 EST.

"I arranged with Alan VK4ZRF to take part in meteor scatter checks during the predicted showers for 4-5-78 to 5-5-78 and built a rhombic pointed at him with slight elevation (25 degrees). However, the tests could not be continued due to the arrival of first harmonic on 4-5-78. Such is life!

"I have not received confirmation of my contacts with KH6HI and KH6EQI yet, but live in hopes. Details are as follows: 4-4-78: Maintaining listening watch on 50.104 I heard KH6EQI beacon rise up out of the noise at 0635Z peaking to 5 x 5. Finally at 0713Z I received acknowledgement. KH6HI called me on SSB and reports were exchanged. Signals faded on phone so back to CW. It was touch and go. A very fast CW station is also audible on the tape and it appears it could be LU . . . L or similar. Having difficulty in confirming."

Congratulations to you, Robert, for your efforts with these two stations, and for their co-operation in working you. Robert's tape has been examined by me and I confirm the contacts made, also the very fast CW station very weak in the noise. Eventually we may all be able to learn the station's call if it can be deciphered.

Robert also had a ball on 11-4-78 when he worked into a mass of JA stations for three hours. Worked all call areas. Along with others, he's not very happy at the prospect of a Channel 5A 100 kW TV station at Mt. Dundas, near Hamilton. Neither is anyone else, and I can see it's use being even more widespread, thanks to the establishment of FM.

Two metres has been rather quiet along the southern coasts this past couple of months, but June/July might see some improvement. I hear on the grapevine from time to time about someone somewhere working something worth while, but I am rather careful about writing too much from what could be considered hearsay, so until you write silence prevails. I would certainly have liked to receive some information on what has been going on along the north Queensland coast during the period since February, when so much has been worked in Darwin — we all know from cross-information much has been worked but some details would be really appreciated from time to time.

I draw your attention to the new Australian record set for the 10 GHz band and recorded in the separate box in this column. Congratulations to Stan VK4ZSH and Nev VK4ZNC for their efforts in extending the distance to 106.1 miles. I note the current world record for that band is 324 miles, held by G4BRS and GM3OXX on 14-8-76.

Ed VK4ZEZ in Townsville sends a message to say he now also has the call of VK4NFR, and will be living there until September after which he will be moving to Longreach after having a wife place a ball and chain on him. Active stations on six and two metres in the Townsville area include VK4RO, VK4GS, VK4ZJT, VK4JH, VK4ZEZ, VK4ZBJ, VK4MS plus VK4BF on 2 metres. Those with 432 MHz capability are VK4RO, VK4JH, VK4ZEZ, VK4GD, VK4MS and VK4AM. (It's good to see so many stations setting themselves up for extra bands and hope results will be worthwhile.—5LP.)

Ed also advises VK4ZRQ will be shifting from Brisbane to Townsville for two years, and that the

VK4RTL beacon has been heard in Hawaii strongly on occasions this year. Additionally, VK9ZM on Willis Island monitors 144.1, 52.050 and Townsville repeater R42. On 6 metres he uses an IC502 plus amplifier to produce 25 watts to a 5 el beam; on 2 metres an IC202 plus 100 watt amp to a 10 element and on 432 MHz hopes to be soon running 10 watts and working through Oscar. Thanks, Ed, for the news.

I am working towards a separate article for Amateur Radio to appear in the August or September issue on the subject of the six metre band and a few other relevant matters. This article will be based on facts, figures and thoughts and ideas received from various interested operators of the six metre band via your letters. I hope you will take time to read it and digest the thoughts thoroughly, and see what can then be done.

As I now want to go out to the shack and see if anything is happening on 2 metres I will close with the thought of the month: "Statistics are like sausages. You have to ask who made them, who cooked them, and who swallowed them." Thanks to John VK2ZXU, of Broken Hill, for that one, it came a long time ago and I lost it until recently.

73. The Voice in the Hills. ■

AUSTRALIAN 10 GHz RECORD

On 14-5-78 at 0425Z Stan VK4ZSH contacted Nev VK4ZNC over a distance of 106.1 statute miles on the 10 GHz band. Reports were 5 x 7 both ways with QSB.

VK4ZSH transmitted on 10.194 GHz from Springbrook Mountain 3100 feet a.s.l. and VK4ZNC transmitted on 10.050 GHz from Howells Knob 1642 feet a.s.l. The path was slightly obstructed by Mt. Tamborine, 25 miles north of Springrook, which accounts for the QSB (Fresnel zone obstructions).

Transmitters ran 100 mW Gunn diodes 150 kHz (F3) deviation. Aerials 19 dB horns. Receivers used firstly a high IF of 144 MHz and then a low IF of 10 MHz with a VCO down converter with AFC. The microwave side of things was a burglar alarm module with a higher power diode inserted ($50.00) and 1N23 receive mixer in separate cavities feeding into the one horn.

Stan recommends strongly against anyone else using high power Gunn diodes as they are prone to severe instability (broadband spectrum generators) and it would be virtually impossible to get them working satisfactorily without a 10 GHz spectrum analyser.—VK5LP. ■

AMATEUR SATELLITES

Bob Arnold

VK3ZBB

OSCAR 7

Although this satellite now appears to have stopped its mode jumping, a number of reports have been received concerning noise and audio distortion; OSCAR 7 at times completely disappearing for minutes. The passes in which these anomalies occur are not frequent, but the irregularities are obvious at the time.

A number of explanations have been offered, such as wobble or rolling of the spacecraft.

However, I passed this query to Harry JA1ANG, who is the AMSAT Asian Pacific Net Co-ordinator, for his comments, and he stated he had also had similar reports, mentioning that OSCAR 7 when in Mode B had developed a slight problem: under certain conditions it went into oscillation and periodically rolled.

OSCAR 8

As this spacecraft was built primarily because the Phase III spacecraft would not be available until late 1979, OSCAR 8 has now been in orbit 116 days to the 30th June, 1978, and has completed 1623 orbits to that date.

For the first few weeks after its launch, orbit times varied, but now it appears to have stabilized, making it much easier to establish an accurate prediction.

In comparing reports from Japan via Harry JA1ANG he states that OSCAR 8 signals are superior to OSCAR 7, this being more noticeable when in Mode J; this is, however, contrary to what has been found here, but could be due to the change of the circular polarization of the antennas.

PHASE III

Now that OSCAR 8 has been launched and performing satisfactorily, we await the launch of the revolutionary PHASE III spacecraft.

Design work will be completed during 1978, as will prototype of Transponder, Computer, Attitude/Stabilizer and Power Systems.

PHASE III is now destined to fly on the ARIANE 2 launch from FY7 in December 1979 into an elliptical orbit with a 932 miles perigee and a northerly 24,249 miles high apogee.

I am sure all those amateurs interested in Satellite Communication will be looking forward to the launch of this bird. ■

ORBIT PREDICTIONS — AUGUST 1978

	OSCAR 7				OSCAR 8		
		Time Long.				Time Long	
Dale	Orbit	Z	W	Dale	Orbit	Z	°W
1	16967A	0053	71.7	1	2069A	0059	54
2	16980B	0147	85.3	2	2082A	0104	55
3	16992B	0047	70.2	3	2096A	0109	56
4	17005A	0141	83.8	4	2110A	0114	58
5	17017B	0040	68.6	5	2124J	0119	59
6	17030B	0134	82.2	6	2138J	0125	60
7	17042A	0034	67.0	7	2152A	0130	62
8	18055B	0128	80.6	8	2166A	0135	63
9	17067B	0027	65.5	9	2180A	0140	64
10	17080A	0122	79.1	10	2194A	0002	40
11	17092B	0021	63.9	11	2208A	0007	41
12	17105B	0115	77.5	12	2222J	0012	42
13	17117A	0015	62.4	13	2236J	0017	43
14	17130B	0109	75.9	14	2250A	0022	45
15	17142B	0008	60.8	15	2264A	0027	46
16	17155A	0103	74.4	16	2278A	0033	47
17	17167B	0002	59.2	17	2292A	0038	49
18	17180B	0056	72.8	18	2306	0043	50
19	17193A	0151	86.4	19	2320J	0048	51
20	17205B	0050	71.3	20	2334J	0054	53
21	17218B	0144	84.8	21	2348A	0059	54
22	17230A	0044	69.7	22	2362A	0104	55
23	17243B	0138	83.3	23	2376A	0109	56
24	17255B	0037	68.1	24	2390A	0115	58
25	17268A	0131	81.7	25	2403A	0120	59
26	17280B	0031	66.6	26	2417J	0125	60
27	17293B	0125	80.2	27	2431J	0130	62
28	17305A	0024	65.0	28	2445A	0136	63
29	17318B	0119	78.6	29	2459A	0141	64
30	17330B	0018	63.4	30	2473A	0003	40
31	17343A	0112	77.0	31	2487A	0008	41

AWARDS COLUMN

Brian Austin, VK5CA

P.O. Box 7A, Crafers SA, 5152

BLUE MOUNTAINS AMATEUR RADIO CLUB AWARD

This certificate is available to amateurs who make five different contacts with members of the Blue Mountains Amateur Radio Club as from 3rd April, 1978.

Applicants should forward 50c in stamps, money order or a personal cheque to VK2AUX, VK2NCM, 80 Old Bathurst Road, Blaxland, N.S.W. 2774.

Applications should include five call signs contacted, dates, frequency, mode, names and QTH.

DXCC COUNTRIES LIST

Delete FH: Comoros. Only contacts made before 6/7/1975 count towards this country.

Add D6: Comoros.

Add FH: Mayotte. Only contacts made after 5/7/1975 count for this country.

WAC — WORKED ALL CONTINENTS

1. The award is available to licensed amateurs.
2. Contacts after 1945 are valid.
3. Applicants should send cards to their IARU member society who will then certify the claim to the HQ society (ARRL) for issuance of the award. Where such a society exists applicants must be members of the society. Canadian amateurs send QSL cards to ARRL HQ.
4. Contacts must be made from the same location — the "same location" being taken as an area not exceeding 25 miles (40 km) in diameter.
5. The award is normally issued for CW/Phone but endorsements are available for 2 x SSB, all 80 metres or all 160 metres.
6. There is no fee for the award.

Requirements: One confirmed contact is required from each of the six continents — North America, South America, Europe, Africa, Asia and Oceania.

FIVE-BAND AND SIX-BAND WORKED ALL CONTINENTS AWARDS

The following rules apply:

1. The basic award shall be known as "Five-Band Worked All Continents" ("5BWAC"). An endorsement for "Six-Band Worked All Continents" (6BWAC") shall be available upon submission of proof of this additional accomplishment.
2. Applications shall be sent by the applicant, accompanied by the originals of the required confirmations, to the HQ of the member society for the country in which he resides. The HQ of the member society shall then examine the application and, if it is found to be satisfactory, shall so attest to the HQ society, ARRL, which shall issue the certificate and deliver it directly to the applicant. If the applicant resides in a country not represented in the Union, the application shall be sent directly to ARRL.
3. Where the applicant resides in a country which is represented in the Union, it shall be necessary for him to hold membership in the representative member society in order to be eligible for the award.
4. The continental boundaries defined in the WAC rules shall apply to 5BWAC and 6BWAC.
5. To be used toward the award, contacts must be made from one station (in terms of licence and call letters, but not necessarily of equipment) operated at one location. The term "location" shall be construed as representing one metropolitan area, or, alternatively, an area not exceeding 25 miles (about 40 km) in diameter.
6. Contacts must be made on or after 1/1/1974 to be used in qualifying for this award.

ASHBURTON NZ CENTENNIAL AWARD, ASHBURTON RADIO CLUB

Duration: 1st July to 31st August, 1978.

Rules:

1. 60 points to qualify for the award. VK and DX stations 40 points.
2. All bands from 160 metres to 1296 MHz. All modes.
3. Each Ashburton station contacted will be credited 10 points. Contact with Club station ZL3AF is compulsory.
4. Repeater QSOs not valid.
5. Two-way QSOs via OSCAR will be awarded 20 points per QSO.
6. QSL cards not required.
7. All stations in Ashburton may be contacted twice BUT NOT IN THE SAME MONTH.
8. There is no charge for the award.
9. SWL award on a "Heard" and report of stations RS(T).
10. Time limit of three months after 31/8/1978 for application for the award.
11. Previous holders of the Ashburton Centennial Award will, on request, be awarded a special merit seal to attach to their award.

Application for the award to:
Vern Lovell ZL3AQ,
148 Alford Forest Road,
Ashburton, NZ.

The following are the most active and should be readily available:

ZL3AF Branch station, ZL3AG George*, ZL3AQ Vern*, ZL3AR Barry*, ZL3FA Graham, ZL3FN Dick,

ZL3IQ Bill*, ZL3JL Andy*, ZL3LG Colin, 3UN Lex, ZL3AAN Max*, 3AFB Ken*, ZL3CX Mike*.

VHF only: ZL3TAK Reg, ZL3TFZ Don, ZL3TJG Alan, ZL3TKK Alan, ZL3TIK Phil, ZL3TFS Dave.

*These stations are also on VHF. ■

WICEN

WHY BOTHER WITH WICEN?

Have you ever thought about how many privileges Amateurs have compared to other radio services? We pay hall the cost of a commercial mobile licence for any number of transceivers, fixed or mobile (only radios used by emergency services have a lower licence fee), we can use any type of transceiver using many different modes, whereas all other services must use type-approved equipment, we can use aerials with any amount of gain and our frequency allocation is second only to the military services.

This privileged position was achieved due to amateurs playing vital roles in the development of radio communication but due to the high cost and high level of technology achieved today it is almost impossible for amateurs to contribute as they have in the past when so many major laboratories are spending small fortunes in this field.

The only way to justify our position is to look upon the Amateur Service as a reserve of experienced operators with their own communications equipment who can use their spectrum allocation to practise and develop their capabilities until required in an emergency lo provide vital communications that may save lives. If you feel that you will provide the required service when the need arises, because you are an experiencd amateur then I suggest you take part in one WICEN exercise and you will realise that there is far more to being a good message handler than just being a good amateur operator. Of course there will be many amateurs who just can't find the time to become WICEN operators, but they can still help by sitting back and leaving the channel clear while a WICEN exercise "hogs" one or two of our thousands of channels.

Remember that our public image may ultimately make the difference between a bright future or no future lor Amateur Radio, and surely II WICEN can provide a service to the community it will be the best form of public relations exercise Amateur Radio could provide.

Mike Richter VK2BMM,
NSW WICEN Deputy Co-ordinator. ■

INTERNATIONAL NEWS

Publication of the FCC's 8th Notice of Enquiry In the USA gives some further glimpses into amateur affairs leading up to WARC 79.

The first amateur band on the list Is 1860 to 1900 kHz as a proposed exclusive world-wide allocation and 1900 and 2000 kHz, shared. The next is the band 3500 to 3800 shared in Region 1 with Fixed and Mobile (except aeronautical mobile), 3500 to 3900 exclusive In R2 and 3500 to 3900 in R3 shared with Fixed and Mobile. In addition 3900 to 3950 Is shown as shared.

The next band Is 40m where they recommend 6950 to 7250 kHz for amateurs (6950-7100 includes Amateur Satellite) for Region 2, 6950-7250 in R1 and R3. The comment about this band was that the FCC shared ARRL's concern regarding broadcasting operations but are confident that the overall solution which they propose for HF broadcasting (in 5th NOI) will result in more disciplined operation

Next on the list is a new exclusive amateur band from 10100 to 10200 kHz proposed for all three Regions. 14000 to 14350 kHz exclusive is unchanged (Amateur Satellite Service 14 to 14.25). Another new band proposed for exclusive amateur use in all regions is 18068-18168 kHz. 21000 to 21450 remains unchanged except for the addition of 20950 to 21000 kHz. Then comes a new band exclusive for both amateur Services 25110 to 25210 kHz. The table continues to list 26980 to 27230 kHz for amateurs In Australia and New Zealand. 28 to 29.7 MHz remains unaltered.

Proposals for the 6m band for amateurs refers only to Regions 2 and 3 where the allocation is shown as 50 to 54 MHz. In R1 47-68 Is for broadcasting. Numerous footnotes remain including Footnote 246.

144 to 146 MHz is shown as exclusive for both amateur services in alt Regions, with 148 to 148 MHz as amateur exclusive in R2 and R3 but for fixed and mobile in R1. Most of the allocations from 136 to 144 refer to space research and space operations or In the case of R1 includes aeronautical mobile from 138 MHz. No broadcasting is shown for these segments.

In Region 2 amateurs are included in 220 to 225 MHz shared with Radiolocation and Mobile.

For 70cm the proposals remain 420-450 MHz for R2 and R3 but only 430 to 440 MHz, as now, for R1. There is a modification to footnote 320A which proposes additional band segments for the Amateur Satellite Service on the existing harmful interference conditions for 1250 to 1260 MHz, 2390-2400 MHz, 5650-5670 MHz, 76-81 GHz, 165-170 GHz and 240-250 GHz. For R2 a shared amateur allocation (secondary) appears at 902-928 MHz where the primary services are fixed and radiolocation.

1240-1300 MHz includes amateur as a secondary service for all Regions to Radiolocation. 2300 to 2450 MHz includes amateur as a secondary service in all Regions. 2450 MHz ± 10 MHz is proposed to be designated for the wireless transmission of power, space to earth and space to space. An amateur shared allocation from 3300 to 3500 remains in R2 and R3. Amateur is still shown secondary from 5650 to 5850 MHz in all Regions and 5850-5925 MHz in R2. 10000-10500 MHz remains in all Regions for amateurs on a secondary basis to Radiolocation. 24 to 24.05 GHz continues exclusive in all Regions for the two amateur services plus 24.05 to 24.25 GHz for amateur shared with radiolocation as the primary service as usual.

After that the proposed amateur bands for all Regions are 49.8-50 GHz, 76-81 GHz, 165-70 GHz, 240-240 GHz and all above 300 GHz.

All the above is necessarily a very brief resume of a voluminous document. Another new footnote is proposed, namely, that 3790-3800 kHz, 7240-7250 kHz, 10190-10200 kHz, 14340-14350 kHz, 18158-18168 kHz, 21440-21450 kHz and 25200-25210 kHz be allocated to the amateur service on a world-wide priority basis for use by stations covering the scene of a natural disaster. Such world-wide priority only to be afforded to communications by or with stations operating at the scene and during the time of the declared natural disaster.

It is again emphasised that all the above represents proposals in the USA's 8th NOI. ■

QSP

JARL VISITOR TO VK

JARL Director, Professor Masakazu Ohtsuka ("Masa") JA5AF, and his XYL with Peter Dodd, WIA Secretary and Business Manager, and David Wardlaw, the Federal President (R.). Masa visited Melbourne and Sydney on a flying package tour early in April and is the author of numerous electronics reference books. ■

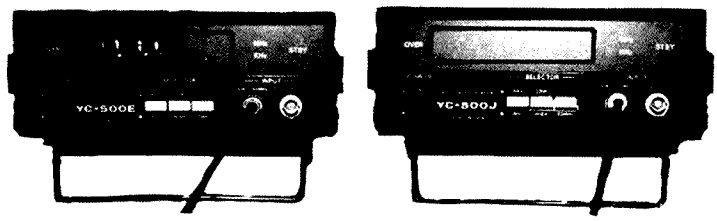
From the large range of Yaesu Measuring Equipment comes the YC-500 series Frequency Counters

• 500MHz Frequency Counter

The YC500 series is designed for the discriminating Amateur-Experimenter who desires accuracy at an affordable price. The YC-500E can provide 0.02 ppm (±1 count) (YC-500S 1 ppm & YC-500J 10 ppm) accuracy (using a dual range 6 digit readout) up to 500 Mhz, with readout in kHz or MHz, selectable with a front panel switch.
Compact and extremely flexible in application, the unit is complete with easy to read display. The unit will function on 234V AC 50Hz for bench use, or on 12V DC. Double sided glass epoxy circuit design assures stable and reliable operation for many years to come. A "must" item for 144, 450 MHz operators!

TECHNICAL DATA

Frequency Range:
Input 1 — 10 Hz to 50 MHz;
Input 2 — 50 MHz to 500 MHz.
Accuracy:
YC-500-E model — 0.02 PPM;
YC-500-S model — 1 PPM;
YC-500-J model — 10 PPM.
Display Digit: 6 digits.
Display Time:
0.1 or 2 seconds.
Counting Time: 0.001 or 1 second.
Input Voltage:
Input 1 — 25 mV to 20 V RMS;
Input 2 — 100 mV to 2 V RMS.
Input Impedance:
Input 1 — HIGH 1 Meg, LOW 50 ohms;
Input 2 — 50 ohms.
Input Capacitance:
Input 1 — Less than 20 PF;
Input 2 — Less than 20 PF.
Operating Temperature: 0 to 40°C.
Power Requirement:
AC — 100/110/117/200/220/234 V;
AC, 50/60 Hz;
DC — 12 to 14.5 volts.
Size: 220(W) x 80(H) x 235(D) m/m.
Weight: Approx. 3.2 kg.



HI-MOUND HAND KEYS

from BAIL ELECTRONIC SERVICES

Model HK-808. Heavy duty commercial hand key with full ball race pivots, heavy marble base and dust cover. The ultimate hand key. Price **$78.00**

Model HK-710. Heavy Duty De Luxe Hand Key, fully adjustable, ball bearing shaft, plastic protective cover. Mounted on heavy non-skid poly marble base. Base dimensions 168mm x 103mm. Price **$45.00**

Model HK-707. Economy hand key in all black ABS resin, metal parts protected by moulded ABS resin cover. **$19.50**

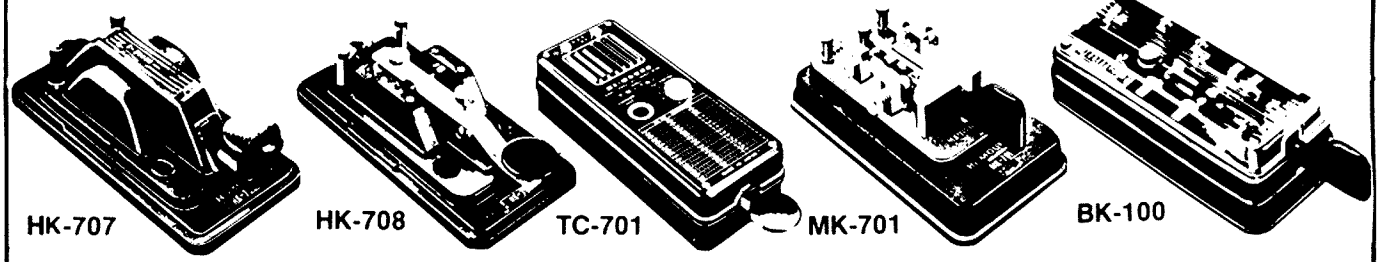
Model HK-708. Similar to HK-707 but without cover and with smart chromium plated keying mechanism and flat American style knob. Price **$16.00**

Model TC-701. Morse practice oscillator with built in key and speaker. Including battery and earphone. Copy of morse code on case. Two can be wired together to form a practice communication set. Price **$19.50**

Model MK-701. Manipulator (side swiper) for an electronic keyer. Accurate and restful keying operation are assured owing to a heavy metal plate and a frictional rubber belt beneath the periphery of the main base. **$45.00**

Model BK-100. Semi-automatic (bug) key, with standard adjustments, wide speed range, protective plastic cover, on heavy non-skid base, beautifully finished. Base dimensions 175mm x 75 mm. Price **$49.00**

Prices incl. ST/Freight and Ins. extra/Prices and specifications subject to change.



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FRED BAIL VK3YS
JIM BAIL VK3ABA

60 Shannon St., Box Hill North, Vic., 3129.
Ph. (03) 89 2213

Yaesu Agents in Australia since 1963

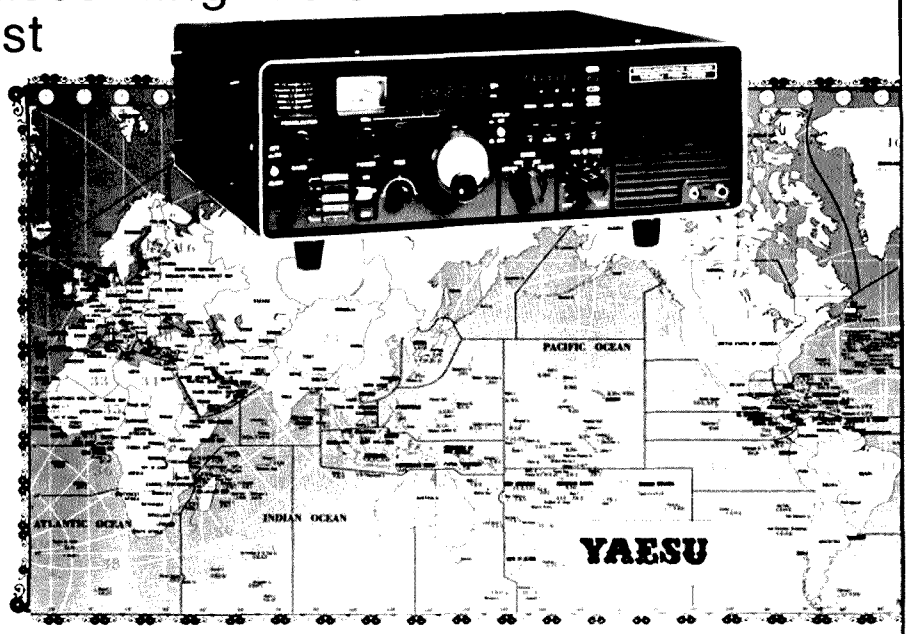
Radio amateur equipment from B.E.S. also sold by —

W.A.	Radio Communication Services, H. R. PRIDE, 26 Lockhart St., Como, 6152	Ph. 450 4379
	WILLIS TRADING CO., 429 Murray Street, Perth 6000	Ph. 21 7609
S.A.	FARMERS RADIO PTY. LTD., 20 Stanley St., Plympton 5038	Ph. 293 2155
TAS.	G. T. ELECTRONICS, 131 Westbury Rd., South Launceston 7200	Ph. 44 4773
	PRINS RADIO, 123 Argyle Street, Hobart 7000	Ph. 34 6912
N.S.W.	Aviation Tooling, STEPHEN KUHL, 104 Robey St., Mascot 2020	Ph. 667 1650
	Amateur & Novice Comm. Supplies, W. E. BRODIE, 23 Dalray Street, Seven Hills 2147	Ph. 624 2691
	DIGITRONICS, 186 Parry St., Newcastle West 2302	Ph. 69 2040
	RIVERCOM, Sid Ward, 9 Copland St., Wagga Wagga 2650	Ph. 21 2125
QLD.	H. C. BARLOW, 92 Charles St., Aitkenvale, Townsville 4814	Ph. 79 8179
	MITCHELL RADIO CO., 59 Albion Rd., Albion 4010	Ph. 57 6830
A.C.T.	QUICKTRONIC, Jim Bland, Shop 11, Altree Crt., Phillip 2606	Ph. 81 2824, 82 2864

New Release — FRG-7000

Advanced Communications Receiver . . . for the discerning radio enthusiast

Yaesu, the leader in quality communications equipment, proudly introduces the FRG-7000: a high performance general coverage receiver for the discriminating shortwave listener.



Features:

- **Full MF/HF Coverage** . . . from 0.25-29.9 MHz, with provision for SSB and AM voice, as well as CW reception.
- **Digital Frequency Display** . . . gives resolution to 1 kHz, using large, bright LED's for maximum readability.
- **Digital GMT/Local Clock** . . . can be set to your local time plus GMT time. Just flick a switch for selection of the desired time.
- **CPU Clock Timer** . . . clock contains a timing feature that activates the receiver and internal relay contacts. Set the time you want to start and stop recording, hook up your tape recorder, and your FRG-7000 will do the rest.
- **Advanced Technology** . . . an FET front end provides excellent sensitivity, and the "Wadley Loop" heterodyne oscillator yields rock-solid stability.
- **AM Noise Limiter** . . . provides noise-free reception in the AM mode, and the amplified Automatic Gain Control circuitry minimizes distortion due to fading.
- **Human Engineering** . . . ease of operation is ensured by careful selection of positions for controls and switches. You'll never own a receiver that's easier to use.

GENERAL

- **Frequency range:** 0.25 — 29.9 MHz
- **Modes of operation:** AM, SSB, CW
- **Sensitivity:** SSB/CW — Better than 0.7 µV for S/N 10 dB AM — Better than 2 µV for S/N 10 dB (400 Hz 30% modulation).
- **Selectivity:** SSB/CW ±1.5 kHz (−6 dB), ±4 kHz (−50 dB) AM ±3 kHz (−6 dB), ±7 kHz (−50 dB)
- **Stability:** Less than ±500 Hz drift for any 30 minute period after warm-up.
- **Antenna requirements:** Random wire for 0.25 — 1.6 MHz 50 ohm unbalanced feed for 1.6 — 29.9 MHz
- **Speaker impedance:** 4 ohms
- **Audio output:** 2 watts
- **Power requirements:** 100/110/117/200/220/234 VAC, 50/60 Hz
- **Power consumption:** 25 VA
- **Size:** 360(W) x 125(H) x 295(D) mm
- **Weight:** Approx. 7 kg

JAS 7778-55

Our years of handling and specializing in this equipment have enabled us to build up a fund of knowledge and technical experience, backed by a comprehensive range of spare parts and service facilities. We don't just sell a set, our concern extends throughout the life of your equipment.

Contact us for details of other Yaesu equipment plus the accessories required to complete your station.

All equipment from Ball's carries a full 90-day warranty and complete service back-up.

Prices and specifications subject to change without notice.

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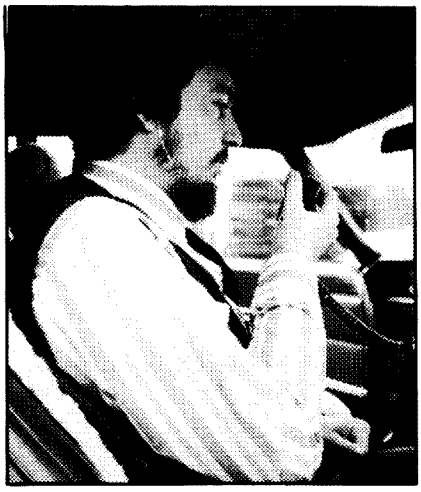
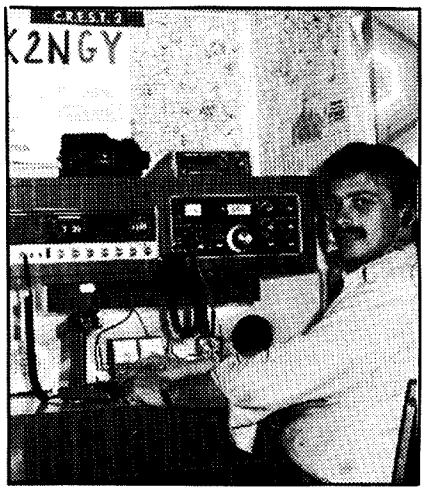
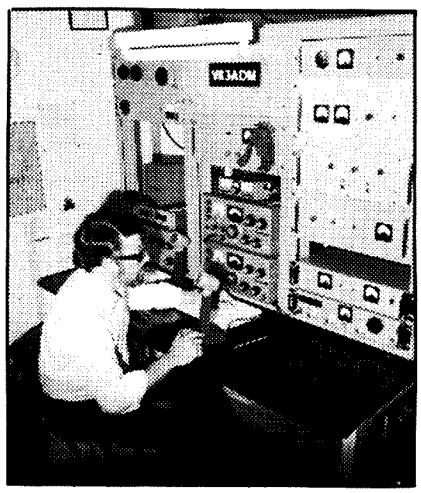
A.C.T.	QUICKTRONIC, Jim Bland, Shop 11, Altree Crt., Phillip 2606	Ph. 81 2824, 82 2864

AMATEUR RADIO ACTION

IS THE NEW GENERATION AMATEUR MAGAZINE







Whether you're a CBer, wondering how hard it is to become a Novice, a Novice — wondering how hard it is to obtain your full ticket, or an old time ham — wondering what the hell is going on anyway — we think you will find plenty to interest you in this new magazine.

PLEASE ACCEPT OUR APOLOGIES

When we published the first issue of AMATEUR RADIO ACTION, we greatly underestimated the market, and in consequence, many would-be readers were unable to obtain a copy before it sold out. We can only offer our sincere apologies and advise that stocks to newsagents have been greatly increased — but we still suggest that you be early.

ALSO OUR THANKS

Publishing the first issue of anything is invariably a testing time on the nerves — your acceptance of AMATEUR RADIO ACTION proves to us that the magazine is on the right track. Sure, there were (and undoubtedly still are) areas which can and will be improved but, overall, your response was extremely favorable and for this, we thank you.

Please put me down for 12 editions of Amateur Radio Action, starting NOW!
RATES: Within Australia and surface mail overseas: $12.00
Air mail to New Zealand and Papua New Guinea: $A29.40
Air Mail to USA and Europe: $A46.20
Herewith enclosed cheque/postal note/money order to the value of: $ .....
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Miss print...? Page 52

DIVISIONAL NOTES

VK2

NOTICE OF RE-CONVENING OF SPECIAL GENERAL MEETING

NOTICE IS HEREBY GIVEN that the Special General Meeting of the Wireless Institute of Australia, NSW Division, held on 28 October, 1977, and adjourned on that date, will be re-convened at 14 Atchison Street, Crows Nest, on FRIDAY, 26 JULY, 1978, at 2000 hours.

BUSINESS

1. Further consideration of the proposed revision of the Articles of Association of the Wireless Institute of Australia, NSW Division.

The following officers were appointed at the first Council meeting for the current year.

Phil Card VK2ZBX — Vice-President, Repeater Officer, and also Liaison for:—City, RTTY Group, VHF and TV Group, Newcastle, Far North Coast and Central South Coast.

Gareth Davey VK2ANF — Broadcast Organiser and Editor, Council Minute Secretary and Liaison Officer for Central West Zone.

Henry Lundell VK2ZHE — Property Officer for Dural and Crows Nest, also Engineer for Dural and Crows Nest.

Tim Mills VK2ZTM — Secretary, Treasurer, Sale of Publications, Federal Councillor and Duplication Officer.

Mark Salmon VK2DI — Publicity for and Applications from New Members, Liaison Officer for QSL Bureau, WICEN and South West Zone.

David Thompson VK2BDT — President, Council Chairman and Assistant Treasurer.

Keith Woodward VK2AT — Vice-President, Monthly Meeting Chairman, Mini-Bulletin Editor and Producer, Educational Officer, Liaison Officer with Amateur Radio and the Shire of Great Lakes.

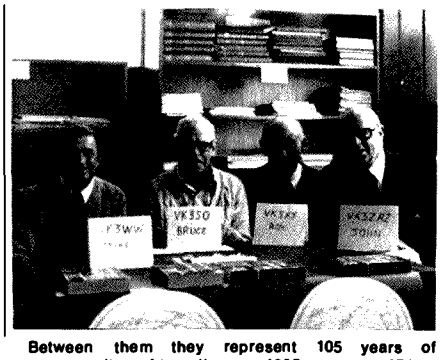
After the Special General Meeting announced above it is hoped that we will be able to continue our programme of interesting lectures and functions for the remainder of the year. The August General Meeting will feature the lecture "Sugar Coated Oscar 8", ably presented by Gil Spencer VK2JK. The accent will be pleasure not business, and your presence will make the night more enjoyable. Bring an interested friend, as visitors are most welcome.

73 de VK2AT ■

VK3

THE MEN IN THE ROOMS

four amateurs pictured have helped the Victorian Division WIA by voluntarily manning the Division's office at 412 Brunswick Street, Fitzroy, on Tuesday, Wednesday and Thursday.



Between them they represent 105 years of amateur radio, oldest licence 1935, newest 1974.

In addition, Roy is outwards QSL Manager and Mike is Divisional Librarian.

A tradition has been established called "lunch with the boys" — all welcome — join them about midday for a counter lunch at the Moonee Valley Hotel, just one block south of the rooms.

The Divisional Council has expressed thanks to the "men in the rooms" and would welcome any others that would like to help. ■

IARU NEWS

The Executive, in May, voted in favour of the admission of the Grenada ARC and the Association des Radio Amateurs du Senegal.

In the Special Report on the 1978 Federal Convention in this issue mention was made of seeking international agreement for RTTY frequencies on HF. These seem likely to be the segments discussed at the IARU R1 Conference in Hungary during April. The RSGB had recommended the following — 3560-3600 kHz, 7035-7045 kHz, 14075-14100 kHz, 21080-21100 kHz and 28080-28100 kHz. This matter is still to be discussed by the Federal RTTY Committee. ■

20 YEARS AGO

Ron Fisher, VK3OM

JULY 1958

Where are Australian Amateurs heading? This question was posed by the Editorial of the July 1958 Amateur Radio. With an ITU conference around the corner at that time, it proves that there is nothing new under the sun. Maybe things have changed to some extent but the last section of the Editorial is worth repeating. "The worth of the Amateur to any country can't be weighed by how many times he operates in a week or whether he is actively on the air at all. It's his knowledge that is valuable and it is time that the amateur himself woke up and told a few people that fact. 'Use them or lose them' . . . as we often hear mouthed should be a minor worry. It's the support of our communications people we expect right now." In light of present day developments, what do you think?

A new Receiver Tuning Principle. In other words enter the Wadley system of receiver tuning. The first receiver to make use of this was the famous Racal RA-17. Many will remember the Deltahet and of course today we have the FRG-7, SSR-1 and the Barlow XCR-30, all of which use this same system. The article was reprinted from March 1958 QST.

Part five of Amateur Television by Eric Cornelius described the video mixer and switching set-up.

Read-ing and Writ-ing for Em-erg-en-cy Net Op-er-at-ors. Norman Burton BERS11494 took a lighthearted look at the new NATO phonetic alphabet. Noted too was that the authors' views were not necessarily those of the publishers.

Two antenna articles completed the issue. 21 Mc. Quad for 300 Ohm Feed by J. W. Edge VK2AJO and Adjustment of Gamma-Matched Parasitic Beams reprinted from March 1958 QST. ■

HAMADS

- Eight lines free to all WIA members. $9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

FOR SALE

External VFO FV101, as brand new, $100; trapped vertical with 80m resonator, $90; Swiss quad, 15m, brand new, see erected, $110; Swiss quad, 10m, brand new, $100; 10m ¼ whip, $15; Realistic, 10m, 23 ch., $125; gutter mount ant., $5. VK3NFV. Ph. (03) 878 9276.

Collins $1 S1 Rx, 2-30 MHz coverage, AM SSB, CW, 240V, definitely mint cond., ex factory, sams styling as "S" line series. Ph. (02) 547 1487.

Barlow Wadley Rx, little use, in original carton, with manual, $190, or offer. Swan MB40A mobile transceiver for 40m, with mark helical antenna and manual, $260, or offer. K. Blume VK2BJK, QTHR. Ph. (02) 449 1598.

Trio 9R59DE Rx, 550 kHz to 30 MHz, with bandspread, AM and CW/SSB, $110; AWA MR3 with channel 40 xtls, 3/10 final, most minor components renewed, $30; 6m 5 el. Yagi, $30; AM modulator, 10W, audio, Electronics Aust., January 1965, $30; large home-made power supply to drive about MR3 or modulator plus other equipment, $25. VK2BMZ. Ph. (02) 868 2585 A.H.

Yaesu FT75B HF Transceiver, with AC and DC power supplies, 3 xtl locked ch. on 80 through 20m, 1 xtl for 15 and 10m, brand new condition, with instruction book, $390. VK2JD, QTHR. Ph. (02) 639 8020.

Hallicrafters HT32 SSB/CW Tx, 100W PEP output with two 6146 PA tubes, 10-11-80m, supplied with as new Dastatic D104 mic. and owner's manual, matching Hallicrafters SX115 10-80m, WWV CW-SSB-AM ham band Rx, with variable IF selectivity from 500 Hz to 5 kHz, 100 kHz xtl calibrator, T-notch filter, variable BFO pitch control, matching Hallicrafters communic. spkr. and owner's manual, Hallicrafters best ever Rx, both in mint cond., $475.00. VK2JO. Ph. (02) 36 7756.

Bondwood Caravan, fitted out as shack, needs finishing, $160; Hallicrafters SX101 Rx, ex. cond., $210, ONO; HB 7 MHz Rx, $15; large rotary inductance, $5; box bits, $10. VK3AWD, QTHR. Ph. (03) 338 8574.

Complete Station Sellout. Kenwood TS5205-DG5 counter, digital display, TV506 6m transverter; Hidaka 60 K trapped vert., inc. hardware and instructions (needs little tuning), 10-80m; Hidaka 20CL "Classic" full size 14 MHz monoband Yagi, 8.5 dB f/gain, 25 dB B/F; Kyokuto 146-148 MHz FM Tcvr, repeater/antl repeater, digital readout. All in near perfect condition. No offers! Lock, stock snd barrel, $1,200. VK8BG, c/- VK8NT. Ph. (089) 27 3989 A.H.

TR-44 Rotor, control unit, manual, good order, $90; MFJ super log speech processor, as new, $30. VK2AOU, QTHR. Ph. (02) 53 9789.

Yaesu YO301 Monitor Scope, little used, excellent cond., $300. VK5ZCW, QTHR.

Communic. RX, portable, National Panasonic Cougar 2200, phase locked loop, 100V AC or 12V DC on 4 x "D" cells, full coverage 3.9 to 28 MHz in 6 bands of 4 MHz, AM/CW/sideband BFO, 76-90 MHz FM, 180 deg. gyro ant., 125 xtal calib., RF gain control, wide and narrow selectivity, ext. ant. con. plus whip, $195. Ph. (047) 39 1144.

Atronics Code Reader, with teletype interface, model 15 teleprinter and Heathkit electronic keyer, produces hard copy from CW at up to 60 w.p.m., $300 for the lot or will separate. VK2BHF, QTHR. Ph. (02) 98 6249.

3 Scalar 6 Foot Heavy Duty Mobile Helicals for 80, 40 and 20m, fully adjustable at tip, high power rating, heavy duty spring base goes with lot, $100, ONO. Cost $150 last September, used only for rally. VK3OT, QTHR. Ph. (055) 72 3166, bus. only.

Electronic Keyer, as EA March 1978, at less than kit price, $35. Works well. VK3AVQ, QTHR. Ph. (03) 386 5524.

Yaesu FT101B Transceiver, with external VFO, speaker and mic., top condition, owner going solid state, presently in regular use. Offers requested. P29BS, QTHR.

Hallicrafters SX28 Rx, 55 MHz to 42 MHz, amateur bands calibrated, complete, in working order; Viceroy KW Tx, 80 to 10m, 160W peak with power supply, in working order; BC639 VHF Rx, 90 to 155 MHz, AM complete with matching power supply. In working order; AT 21 AMT 150 Tx, less osc. compartment, wiring complete with matching power supply; all above units with workshop manuals; coaxial dipole, 146 MHz, commercially made, complete with 6m UR67 coaxial cable. Offers to VK4AO, QTHR.

Twin SWR and PWR Meter, SML 25, as new in box, $15; Daiwa low pass filter, new in box, $8; new Micronta resistance-capacity, substitution box, $8. Ph. (03) 467 2131, Bus., or (03) 460 7450 A.H.

Pye FM789, 2m FM portable, 8W, fitted ch. 1, 2, 3, 4, 6, 7, 8, 40, 50, Oryfit batteries, 12V (run or charge direct from car, or 13V PS), ¼ wave whip fits BY BNC to allow coax connection, telephone handset, Rx sensitivity excellent, full handbook, $175. VK1ZBL/VK1NAK, QTHR. Ph. (062) 81 0067.

Tx, Collins 17L-7, 144-148 MHz, 20W, hybrid circuit, mil. (aircraft) construction, synthesized every 50 kHz (WIA channels), AM/CW, suitable xtal FMing, complete mil. handbook. Requires 28V 7A fan blower. Autotune using coded control lines, $60; AVO VTVM, model ETM4, incl. RF probe, $30. VK1ZBL/VK1NAK, QTHR. Ph. (062) 81 0067.

Yaesu FT101B with G3LLL clipper, as new, $670. VK2BHE, QTHR. Ph. (066) 21 2211 Bus. or (066) 24 1447 A.H. (Fred Herron).

2m Transceiver, AWA MR6, transistor PS, with repeaters 2, 4, 6, 8, Simplex 40, A, excellent condition, with original manual, $85. VK3ZKS. Ph. (03) 66 6046, ext. 608, bus.

IC22 10W 2m Mobile, crystalled for repeaters 1-8, reverse 2-8 and 6 Simplex channels, with mike, manuals, etc., excellent condition, $195 ONO. Ray VK1ZJR, QTHR. Ph. (062) 86 5624.

Yaesu FT75B, FP75B, packed in original cartons, mint condition, 6 months old, no work, xtls, as supplied, suitable Novice 30W full call 80W output, $380. VK7NAB, 3 Denman Road, Trevallyn, Launceston. Ph. (003) 44 4172.

Video Shack Clearout — B&W video recorder, AC operation, new video heads, $290. Sanyo viewlinder video camera, complete, $350. Video, audio RF modulator H/B, $90. BWO 509 Cro., $150. All A1 condition. 432 MHz Tripler, final using 2-2C39A's H/B, $100. 500 MHz OF counter H/B, needs debugging, $80. VK5ZEZ, QTHR. Ph. (08) 277 2547.

Icom IC22 2m Transceiver, complete with mobile bracket and operator's manual. Repeaters 2, 4, 6, 8, simplex 37, 40, 49, 50, 51, $170. AC power supply, $30. VK3ZI, 2 Dalgety Street, Brunswick West. Ph. (03) 380 6991.

SB101, SB500 Heathkit transceiver and 2m transverter, re-valved, matching spkr. and power supply, handbooks, $400. VK3SP, QTHR. Ph. (03) 842 1841 A.H.

Icom 215 2m FM with R2, R6, R7 and ch. 50. Icom 502 6m SSB. Both with original cartons, had little use, $170 each. Hammarlund HQ170 HF Rx with service manual, $100. P. Fraser VK2BVM, QTHR as VK2ZIY. Ph. (062) 49 2222, 0830-1230h, Mon.-Thur.

FT101E, latest model, complete with all xtls., man., mic. and spare valves, approx. 9 months old, in mint condition, hardly used, $700. VK2ABB, QTHR. Ph. (02) 520 0866.

Communications Rx, Drake SSR-1, 0.5-30 MHz, 12V DC or 240V AC, CW, SSB, AM, very stable, as new, $245. VK3UJ, QTHR. Ph. (03) 674 5632.

2m IC22 Transceiver with repeaters 2, 3, 4, 5, 6, 7, 8, Simplex 40, 50, little use, in good condition, complete with mobile mtg. bracket, manual and original carton, $175.00 ONO. AWA MR6a transceiver, repeaters 3, 4, 8, Simplex 40, 50, good condition, with manual, $75.00 ONO. VK2AGY, QTHR. Ph. (02) 789 2401 bus., (02) 601 1221 A.H .

Triangle Telescopic Antenna Mast, outer section 20ft. high, inner section 30ft. high, provision for in-mast rotator, six months old, sell for less than half price, $150.00. VK2NPW, 22 Woodside Ave., Burwood, 2134.

Atlas 210 Transceiver, with matching AC power supply, this model is approximately three years old and is not fitted with a noise-blanker. Price $700.00 ONO. Michael Goode VK3BDL. Ph. (03) 61 2701 bus. or (03) 99 1806 A.H.

Kenwood TR7400A, 2m FM transceiver, 800 channels, 30W out, excellent condition, $330. VK2BMR. Ph. (02) 871 5710 A.H.

Icom 215 2m FM, rpts., 2, 4, 6, 8, chan. B and 50, as new, in original carton. Wayne Rhodes VK6AM, C/- P.O. Busselton 6280 or Ph. (097) 55 4106.

Carphones AWA MTR10, with xtals for repeater ch. 2 and simplex 40. MR20 on 52.525, AC power supply for above, Pye carphone, 12V, Repeater 2, Simplex 40. Home brew OSB, complete station. Portable OSB AC, complete station. AWA all-band Rx. Sig. generators. Sig tracer and VTV. Numerous valves, old and new types. All above in good working order. Will accept any reasonable offer. VK2EI, QTHR. Ph. (02) 99 1204.

WANTED

HF Transceiver, FT200 or similar, under $400. VK3AWD, QTHR. Ph. (03) 338 8574.

2m IC22-A, in good condition, unmodified, with xtals for popular rptrs. VK2ABC, QTHR. Ph. (02) 451 1313.

FP75B and AM/SSB 27 MHz Transceiver, suitable for conversion or converted to 28 MHz. VK4NAX, 23 Drummer St., Toolooa Est., Gladstone, 4680.

ARRL Handbooks: 1923 to 1946, will pay $8 to $10; 1965 to 1969, will pay $8; 1972 to 1974, will pay $8. Will pay packaging and posting also. Please contact A. C. Garnett VK3CAQ, 117 RTC Rads, RAAF, Laverton, 3027.

Tx or Txcvr 10m-80m, also Tri-band HF Yagi and rotator. Particulars to L30778, QTHR. Ph. (060) 24 4306, A.H. (060) 24 1852.

Valve Tester, must be in good order and with all information of it and the tubes tested, these to include usual PA 572B, 813, 811A and 6146 etc. John A. Taylor VK3AJT, QTHR. Ph. (052) 78 2273.

Plug-in external VFO for **FT75B** for a needy ZL friend. Please contact Dusty VK3AYO, QTHR.

Obscure Radio equipment, amateur, professional, ex-Govt., ex-Army, etc., any condition, full details including price, please. For private collection only. L70107, QTHR. Ph. (002) 63 7112.

SOS — Can anyone supply 12C8 or 6B8 valve — Thank you, VK2ANG, QTHR.

Swan 410 VFO. Ian Dunlop, 9 James Street, Murwillumbah.

EXCHANGE

Hallicrafters SX101, Amateur band only. Rx for good quality gen. coverage, Rx 530 kHz-30 MHz, must have good bandspread. VK3AWD, QTHR. Ph. (03) 338 8574.

STOLEN

Stolen from the WA VHF Group Car Park, my Yaesu FT2FB 2m FM Tcvr with Icom microphone. Unit has been repainted a semi-shiny black. Channel selector marked with actual frequencies of: Ch. 40, 50, 51, 144.9, 145.85, Rpt. 2, 4, 6, 7, 8. Anti Rpt. 2 and 4. VK6YL, QTHR.

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Novice Candidates! Are you using the WIA (NSW) "Learning Morse Code Course"? Do you need Extra Practice Material? Could you use Two Optional Extra Cassettes based on the graded steps towards Novice standard? Write to Fred Santos, 8 Cooper Street, Blacktown, 2148, and ask for these Brand New Additions to the Morse Training system. Price? Only Four Dollars for the Two — and we pay postage! You cannot beat this price anywhere!

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Wanted Urgently: Candidates for trial Novice Examination on Saturday 16th September. Assess your chances in the Official Test. See where your weaknesses are Before the October Examination. Instructors — please encourage your Novice Students to participate. Cost? One dollar per candidate — A Good Investment! Early Communications to WIA (NSW) Education Officer, P.O. Box 109, Toongabbie, 2146. Don't leave till last moment — Act Now!

SILENT KEYS

It is with deep regret that we record the passing of —

Mr. R. MAXFIELD **L70120**

MATT BRANE **VK3SL**

Matt passed away suddenly on May 8th, 1978. His death came as a shock to everyone who knew him. Matt was mainly active on 2 metres and 80 metres, and was also well known as a result of late-night cross-band contacts to 160 metres. After studying as a law undergraduate at Melbourne University, Matt was quite active giving CW practice on some of the more oft-beat 2 metre FM channels and on 80 metres as well. Recently he also obtained his Restricted Radio Telephony Operators Certificate for seaborne use, and had lately been spending time during the weekends monitoring marine frequencies as part of the Technical Division of the Australian Volunteer Coastguard. His main station was located at North Geelong, and during the week operated portable at Brunswick.

Matt was only 34. His funeral was very well attended, and included many of his amateur friends. The WIA would like to extend its deepest sympathy to his wife Anna, his family, and many friends. ■

SES GABB **VK5GP**

Ses Gabb VK5GP and his wife, Winnefred, died in a tragic car accident whilst returning to Nairne from Adelaide. Ses was licensed in 1960 and was postmaster at Nairne. He was a friendly person with a ready sense of humour.

The loss of Ses will be felt by many members of the amateur community. Ses and Winnefred will also be missed by their five children of whom they often spoke with pride and affection. We express our sympathy to their family and friends.

(From Alan Bolton VK5TT)

ADVERTISERS' INDEX

WANTED KNOWN

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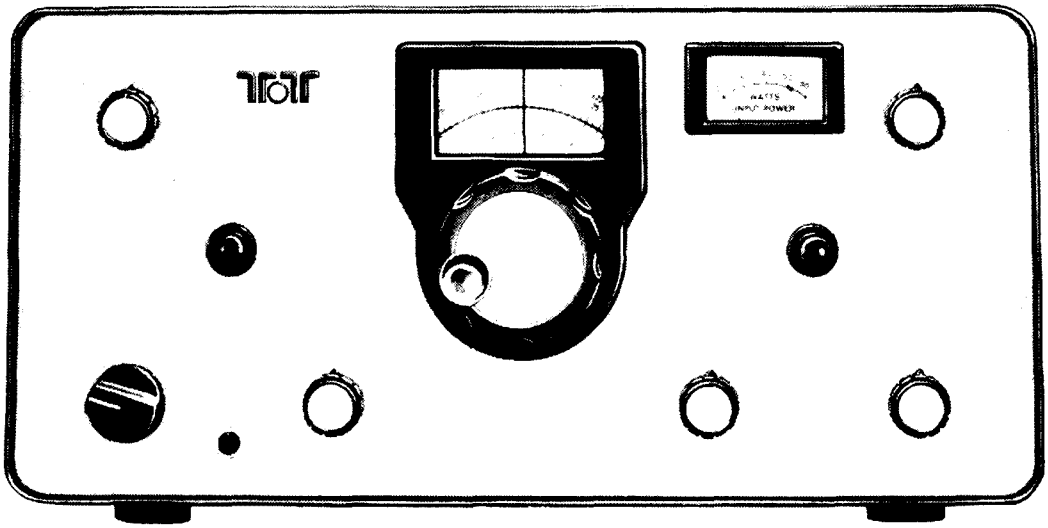

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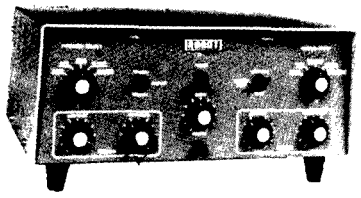

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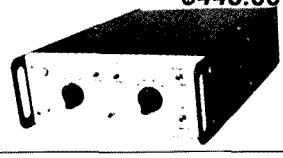

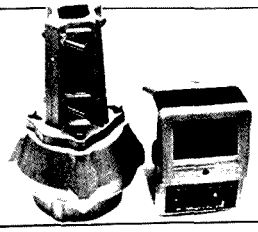

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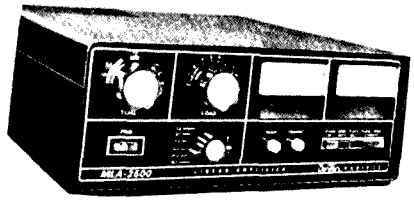

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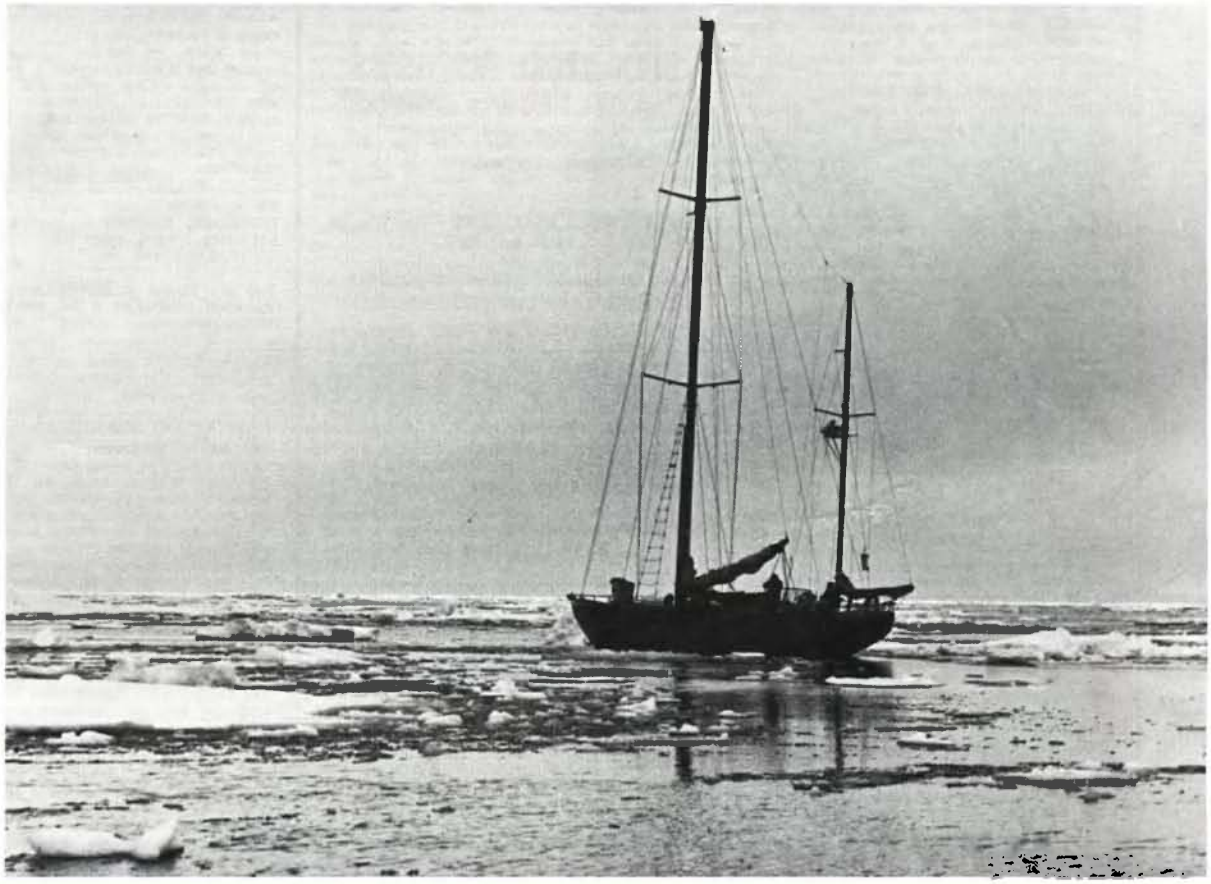

VOL. 46, No. 8 AUGUST 1978

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COVER PHOTO

The yacht "Solo" in pack ice near the Ballany Islands. The radar scanner on the mizzen mast, and the long aerial joining the triatic stay to the mainmast can be seen.

See article The "Solo" Voyage on page 6.

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QSP — NOVICE PRIVILEGES

During my recent visit to New Zealand discussion got around to the New Zealand novice class of licence. The comment was made to me that there had been remarkably few candidates presenting and that interest at this stage was at a remarkably low level. This surprised me because of the popularity of the novice class licence in Australia, however, further questioning elucidated the fact that the New Zealanders have quite restricted privileges, including a non-renewable tenure.

The Australian novice amateur certainly has many more privileges than his counterpart in many other countries, including the USA. As you know the Federal Council at this year's Federal Convention considered in depth many matters concerning novice licensing. Already since the introduction of the novice licence the WIA, with good reason, has obtained some extra privileges: the move to 28 MHz with a 500 kHz wide band and also permission to use VFOs. Currently the Institute is negotiating for the extension of the novice 80 metre segment. Nevertheless, the Federal Council was unanimous in agreeing that the novice grade licence should still be considered to be a stepping stone to the higher grades of licence.

They felt that as there are already quite liberal privileges for novices further extensions would tend to reduce the value of upgrading to an insignificant level. It was also felt that the examination standard is becoming more consistently at a level considered as suitable for novice entry into amateur ranks.

Those of us who in the past had no novice pathway into amateur ranks must now recognise the help that this grade has been in attracting recruits into the amateur service in the face of intense competition from many and varied types of recreational activity.

DAVID WARDLAW VK3ADW, Federal President. ■

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President — Mr. L. A. Ball VK6AN
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VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton (Ph. (08) 254 7442).
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (Incl. with VK5), Darwin AR Club, P.O. Box 37317, Winnellie, N.T., 5789.

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VK5 — QSL Bureau, Mr. Geo. Luxon VK5RX, 27 Belair Road, Torrens Park, S.A. 5062.
VK6 — QSL Bureau, Mr. J. Rumble VK6RU, G.P.O. Box F319, Perth, W.A. 6001.
VK7 — QSL Bureau, G.P.O. Box 371D, Hobart, Tas. 7001.
VK8 — QSL Bureau, C/- VK8HA, P.O. Box 37317, Winnellie, N.T., 5789.
VK9, 0 — Federal QSL Bureau, 23 Landale Street, Box Hill, Vic. 3128.

WIANEWS

NOVICE EXAMINATION

The Federal Education Co-ordinator, Graeme Scott, VK3ZR, arranged a special meeting early in June of educational experts, mainly from Victoria and New South Wales. A bank of nearly 500 Novice examination questions and answers was prepared, the bulk of which were transcribed on to systems cards for ultimate presentation to the Department. In addition arrangements were set in hand relating to typical question papers for Trial Novice exams and similar purposes.

TV CHANNEL 5A

As already reported, the Executive was heavily engaged with the problems of TV Channel 5A. The use of this channel, unique to Australia and adjacent to the 2m band, continues to be opposed.

EXECUTIVE MEMBERS

The departure overseas of Keith Roget, now VR4AV as well as VK3YQ, results in a vacancy for Honorary Treasurer. Certain office re-organisation appeared necessary to relieve the future Treasurer of much of the routine work so well carried out in the past by Keith for whom a most grateful vote of thanks was recorded. Any qualified volunteers to help out in this field would be greatly welcomed. ■

AFTERTHOUGHTS

AN ULTRA LOW-NOISE FET VIDICON AMPLIFIER

(June, 1978)

The following information was omitted from Figure 1:

1. The bypass capacitor at the target bias input should be 100 nF, 100 VW.
2. The collector of Q6 should be marked point "A".
3. The direction of clockwise rotation of potentiometers are as follows: AMP BIAS: right, LF COMP: up, SET UP: down, SYNC LEVEL: up. ■

QSP

OIPPSLAND GATE RADIO CLUB
Oakwood Park Scout Hall, Heyington Crescent, Noble Park (opposite Titcher Road).

Postal: P.O. Box 98, Dandenong 3175.

Meetings: Second and fourth Friday of each month at 8.45 p.m.

President: John Watkins VK3EW.

Phone: 792 2422.

Club Callsign: VK3BJA.

Educational Classes for NAOCP: conducted Monday nights at above address. For details contact Lionel Curling VK3NM. Phone 88 3710.

CLUB NETS
Sundays: 10 metre net 28.4 MHz, 12 noon EST.
2 metre net ch. 50 (146.5) 7.30 p.m. EST.
Thursdays: 80 metre net, 3.560 MHz, 8 p.m. EST.

USA — BAN ON CERTAIN LINEARS
The FCC has, in Dockets 21116-7, voted to prohibit the manufacture, import or marketing of external RF power amplifiers capable of operation on any frequency from 24 to 35 MHz. It also voted to require, for three years, type acceptance of all RF amplifiers capable of operation below 144 MHz manufactured, marketed or imported for use in the Amateur Radio Service.—Worldradio May 1978.

The FCC comment was that half of all complaints of CB-related interference resulted from the illegal use of external amplifiers and that many CBers complained they were themselves blocked by others using such amplifiers.

NOVICE SYLLABUS
Copies of the recent P. and T. approved Novice syllabus and study guide are available free to class leaders and instructors.

Please forward details of your involvement to the WIA Federal Office, P.O. Box 150, Toorak, Vic. 3142.

JOTA 1978
Have you made arrangements to help out for the 21st JOTA beginning about 00.01h local time on 21-10-1978 and ending 46 hours later? The official World Scout frequencies are 3740, 7090, 14290, 21360, 26990 kHz phone and 3590, 7030, 14070, 21140 and 28190 kHz CW. Listen before calling "CO Jamboree". ■

AUSTRALIAN VHF, UHF, SHF RECORDS

AS AT 1 JUNE 1978

			km	miles
NEW SOUTH WALES				
50/52 MHz	VK2ADE to VE7AOQ	8/4/59	11,778	7,320
144 MHz	VK2ATO/2 to ZL2HP	2/1/66	2,344	1,457
432 MHz	VK4ZT/2 to VK4KE/4	12/7/69	352	219
576 MHz	VK2HO to VK2ZAH/2	12/3/61	107	66
1,296 MHz	AX4ZT/2 to AX4NO/4	12/4/70	402	250
2,300 MHz	VK2ZAC/2 to VK2BND/2	19/5/73	159.9	99.4
3,300 MHz	VK2AHC/2 to VK2SB/2	16/1/77	114.1	70.9
5,650 MHz	VK2AHC/2 to VK2SB/2ZNO/2	12/4/75	114.1	70.9
10,000 MHz	VK2AHC/2 to VK2SB/2ZND/2	12/4/75	114.1	70.9
VICTORIA				
50/52 MHz	VK3ALZ to XE1FU	1/5/59	13,545	8,418
144 MHz	VK3ZNC to ZL2HP	13/12/65	2,692	1,673
432 MHz	◈ VK3ZQV to VK6XY	22/2/78	2,593	1,612
576 MHz	VK3AOT/3 to VK3ZKB/3	11/4/71	237	147.5
1,296 MHz	VK3AKC to VK7ZAH	17/2/71	439	273
2,300 MHz	VK3ATY/3 to VK3ZHU/3	6/12/74	210.5	130.8
3,300 MHz	VK3ZGT/3ZGK/3 to VK3ZDQ/3	14/12/63	101.4	63.0
5,650 MHz and above	No claims			
QUEENSLAND				
50/52 MHz	VK4ZAZ to K6ERG	18/3/58	8,536	5,305
144 MHz	VK4RO to VK3AMK	21/12/74	2,079	1,292
432 MHz	VK4KE/4 to VK4ZT/2	12/7/69	352	219
576 MHz	No claim			
1,296 MHz	AX4NO/4 to AX4ZT/2	12/4/70	402	250
2,300 MHz and above	No claims			
SOUTH AUSTRALIA				
50/52 MHz	VK5KL to W7ACS/KH6	26/8/47	8,626	5,361
144 MHz	VK5BC to ZL2HP	23/12/85	3,149	1,957
432 MHz	AX5ZKR to AX7ZRO/7	15/3/70	776	482
576 MHz	VK5ZJL/5 to VK5OZ/5	28/12/89	314	195
1,296 MHz	◈ VK5QR to VK6WG	25/1/77	1,885	1,171
2,300 MHz	◈ VK5QR to VK6WG	17/2/78	1,885	1,171
3,300 MHz	No claim			
5,650 MHz	No claim			
10,000 MHz	VK5CU/5 to VH5ZMW/5	30/12/71	95.7	59.5
WESTERN AUSTRALIA				
50/52 MHz	VK6BE to JA8BP	30/10/58	8,833	5,490
144 MHz	VK6KJ to VK3AOT	1/2/70	2,441	1,517
432 MHz	◈ VK6XY to VK3ZQV	22/2/78	2,593	1,612
576 MHz	VK6ZDS to VK6LK/6	15/12/63	163	101
1,296 MHz	◈ VK6WG to VK5QR	25/1/77	1,885	1,171
2,300 MHz	◈ VK6WQ to VK5QR	17/2/78	1,885	1,171
3,300 MHz and above	No claims			
TASMANIA				
50/52 MHz	VK7LZ to JA9IL	3/12/59	8,788	5,462
144 MHz	VK7ZAH to VK4ZAZ	1/1/67	1,910	1,187
432 MHz	AX7ZRO/7 to AX5ZKR	15/3/70	776	482
576 MHz	No claims			
1,296 MHz	VK7ZAH to VK3AKC	17/2/71	439	273
2,300 MHz and above	No claims			

Australian records are in bold type.

AUSTRALIAN EME RECORDS				
144 MHz	VK3ATN to K2MWA/2	28/11/66	16,761	10,417
432 MHz	◈ VK2AMW to G3LTF	30/3/74	16,955	10,536
1,296 MHz	VK3AKC to W2NFA	6/10/73	16,713	10,385
AUSTRALIAN ATV RECORDS				
432 MHz	VK7EM/T to VK3ZPA/T	13/12/72	413	256.6

◈ Also world record.

Before a contact can be listed as an Australian (or world) record, a claim must be made in writing to the Federal Office of the WIA. All claims are processed by the VHF Advisory Committee in conjunction with an independent invigilation. ■

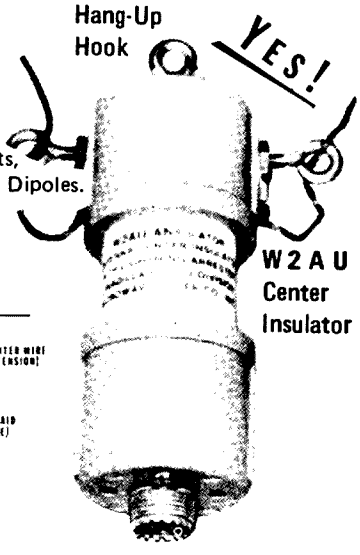
RADIO AMATEUR BAND ANTENNA PRODUCTS

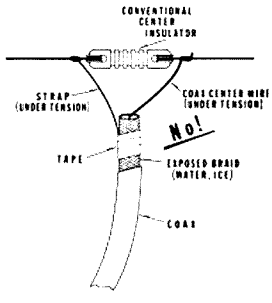
SCALAR

W2AU "ANSULATOR"

Antenna Centre Insulator by Unadilla/Reyco with built-in lightning arrestor.

- Hang up hook
- Standard Connection
- Weatherized
- Rugged 600 lb. pull
- Use on Vees, Doublets, Quads, Yagis, Folded Dipoles.



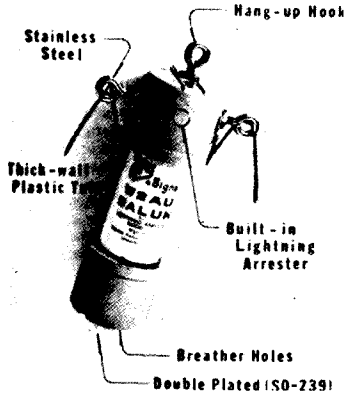


THE BIG SIGNAL W2AU BALUN

2 Models

W2AU (1:1) matches 50-75 ohms coax. to 50-75 ohm bal.

W2AU (4:1) matches 50-75 ohms coax. to 200-300 ohms balanced.



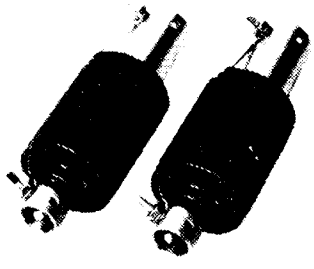
- Broadband 3-40 MHz
- 1 KW plus
- Weatherproof
- Lightning arrestor
- Prevents coax radiation and interference
- Balances your antenna current and restores full gain
- Use on inverted Vees, doublets, quads, Yagis.

"the old™ reliable" REYCO

Multiband Antenna Coils

Model			
	KW-40	40m	(7 MHz)
	KW-20	20m	(14 MHz)
	KW-15	15m	(21 MHz)
	KW-10	10m	(28 MHz)

KW 40 These coils are the standard five band coils to provide operation on 10-15-20-40- and 80 with an approximate length of 108 feet.

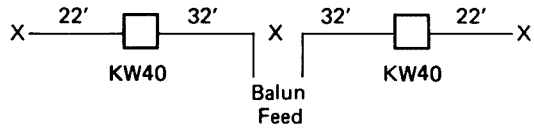


KW 10 KW 15 KW 20
Coils resonant in designated bands to provide perfect dipoles in each band. Using these coils together with a pair of KW-40 coils five band operation can be obtained with a total length between 85 and 95 feet.

SPECIFICATIONS

POWER	2KW PEP (minimum)
WEIGHT	6 ounces (max) PER COIL
SIZE	1.8" dia (max) x 5.5" long (max)
ABSORPTION	WATERPROOF COATING
STRENGTH	300# (min) TENSILE STRENGTH
CORROSION	ALL metals aluminium, including screws, nuts, washers, to resist interface corrosion
HI-Q	OPTIMUM FORM FACTOR ON POLY

USING THE KW-40 COIL AS A FIVE BAND ANTENNA



SCALAR INDUSTRIES PTY LTD

VIC. 20 Shelley Avenue, Kilsyth, 3137. Tel: 725-9677. Cables: WELKIN. Telex: AA34341
N.S.W. 20 The Strand, Penshurst, 2222. Telephone: 570-1392. Telex: AA27067
QLD. Scalar (Qld.) P/L., 969 Ann St., Fortitude Valley, 4006. Tel: 52-2594. Telex: AA43007
W.A. Everett International
17 Northwood St., West Leederville, 6007. Tel: 381-5500. Telex: AA92811

THE "SOLO" VOYAGE

Pieter Arriens VK1PA
22 Eucumbene Drive, Duffy, ACT

"Solo", a 57 foot steel yawl, recently completed a round trip from Sydney to Cape Adare (lat. 71°30'S, long. 170°24'E) on the Antarctic mainland. She called at the very rarely visited Balleny Islands on the way south, and at Macquarie Island on the return journey. In addition to amateur radio, "Solo" carried small ship voluntarily fitted marine HF radio, four "walkie-talkies", a communications receiver and a satellite buoy.

Adelie and Chinstrap Penguins on Sabrina Island.

All of this equipment (and a radar set) was thoroughly tested by a cold, wet and salty environment on a 79 day voyage through rough seas to the zone of pack ice which surrounds the Antarctic continent. Portable equipment taken ashore for ship-to-shore communication had to suffer the further indignity of transport on inflatable dinghies through surf.

Some useful lessons were learned, and to put this in context I should perhaps first explain how I came to be involved with radio operations on board "Solo" and in particular with amateur radio. Three summer field seasons with the ANARE (Australian National Antarctic Research Expeditions) had already given useful experience with the operation of field radios in Antarctica, when in 1976 I returned for a year south as Officer-in-Charge of Davis Station. Radio communication was a very important part of station operations, not only with regard to radio telephone, teletype and facsimile services within Antarctica and to Australia, but also for maintaining contact with field parties (and the related question of search-and-rescue procedures). One of the fourteen men at Davis moreover was an amateur operator (David Barrett VK0ZI). The excellent quality of his radiotelephony contacts with amateurs in Australia and elsewhere was a revelation, and planted the seeds of my own future involvement with amateur radio.

In January 1977, the relief ship arrived and the new party changed over with the old. Among those to arrive in the new party was the 1977 radio operator for VLZ Davis, Col Christiansen, who was also an active amateur operator there under the call sign VK0CC. As incoming postmaster, Col brought the first mail the old party had received since the last relief ship called 11 months previously.

One of my letters was from David Lewis, whom I knew in Canberra and from ski-touring in the Snowy Mountains, before he embarked in 1972 on his single-handed voyage to Antarctica on "Icebird". David asked if I was still interested in his plans for an independent expedition to Antarctica in a sailing vessel, for this was something we had discussed in Canberra in 1975 before I left for the year south at Davis. Col, too, had met David and was also interested in these plans. A year later, towards the end of his year at Davis, Col was to give great assistance to the "Solo" expedition by splendid radio relay work, both on the amateur bands and as the operator of radio VLZ Davis. But that is to anticipate.

After my return to Australia early in 1977, I became committed to the expedition, and my responsibilities included drafting a scientific program, and making preparations for radio communication. The expedition was beyond David Lewis' personal financial resources, and there were many vicissitudes before an effective organisation was put together to manage the project. It was not until a mere five weeks before departure, that "Solo" was purchased, and at that stage the expedition was critically short of funds and time.

PREPARATIONS FOR RADIO COMMUNICATION

The need for Amateur Radio

It seemed to me, among other things, that amateur radio, especially in the 20 metre band, was an essential thing to have on board a yacht in remote areas of the Southern Ocean. As no other potential crew member was qualified, this gave me an uncomfortable short time before sitting the three AOCP examinations. During this time, the friendly help of many radio amateurs, the clear and concise advice from the District Radio Officer (John Gore) on the requirements for the AOCP examinations, and the regular WIA morse code broadcasts were all of the utmost help. The call sign VK1PA was obtained in November, which gave just five weeks to purchase amateur radio equipment, mostly secondhand, for use on the expedition.

Equipping the Amateur Station

If "small is beautiful" when it comes to housing radio gear, the Atlas 210X was a likely choice, and it happened that a rig was for sale secondhand through "Amateur Radio Ham-Ads". That settled, the next things required were an aerial tuning unit (Tokyo Hy-Power HC500), SWR meter, CW key, assorted cable and connectors, coax switches, a set of whips for emergency use (Asahi, for 80, 40, 20, 15 and 10 metre bands), and three microphones. The Atlas was thoroughly checked by Ed Penekis (VK1VP) with elaborate test equipment, and apart from requiring some adjustment for carrier suppression, was found to be working entirely within specifications.

A strong metal cupboard measuring 390 x 390 x 300 mm was made from 14 gauge zincanneal and heavy plywood, to house the Atlas, ATU, SWR meter, CW key and microphone. If required the entire rig in its cupboard could have been quickly removed from the cabin for portable use outside, and for this purpose an insulated

base was bolted to the cupboard to provide a mounting base for the Asahi whips. For extra back-up, an early model Yaesu FT101 transceiver, which had seen service on board the "La Balsa" raft, was borrowed for the expedition and kept stowed away in reserve.

Marine Radio

Two 100W Stingray SSB marine radios, fitted with channels for small ships' frequencies up to 6 MHz, and a dual frequency 13 MHz radfone channel, were generously loaned by Findlay Electronics Pty. Ltd. (M. Findlay VK2PW). For reasons which need not be discussed, this equipment was installed at extremely short notice, and crystals for some of the frequencies appropriate for use in contacting Antarctic stations had to be rushed from Singapore.

Three of the crew were examined the day before departure — Lars Larsen and myself for Restricted Certificates in radiotelephony/radio telegraphy, and Jack Pittar in radio telephony. The equipment itself was inspected on the morning of departure, when the radio licence and call sign VJ6764 were issued. The splendid co-operation of the Postal and Telegraph Department, and Mr. Findlay's strenuous work with Jack's assistance in having the Stingray radios installed before the date of departure, are gratefully acknowledged, and resolved what otherwise would have been a difficult situation.

Aerials

"Solo" when purchased had a long wire aerial which ran from the top of the mainmast to the top of the mizzen (triatic stay) and then almost vertically down to the cabin, giving an outside length of about 21 metres. This aerial was used mainly by the Atlas and for general shortwave broadcast reception. A second wire aerial about 5 metres long was installed mainly for use by the Stingray radios. It ran up from the cabin towards the radar scanner which is halfway up the mizzen mast.

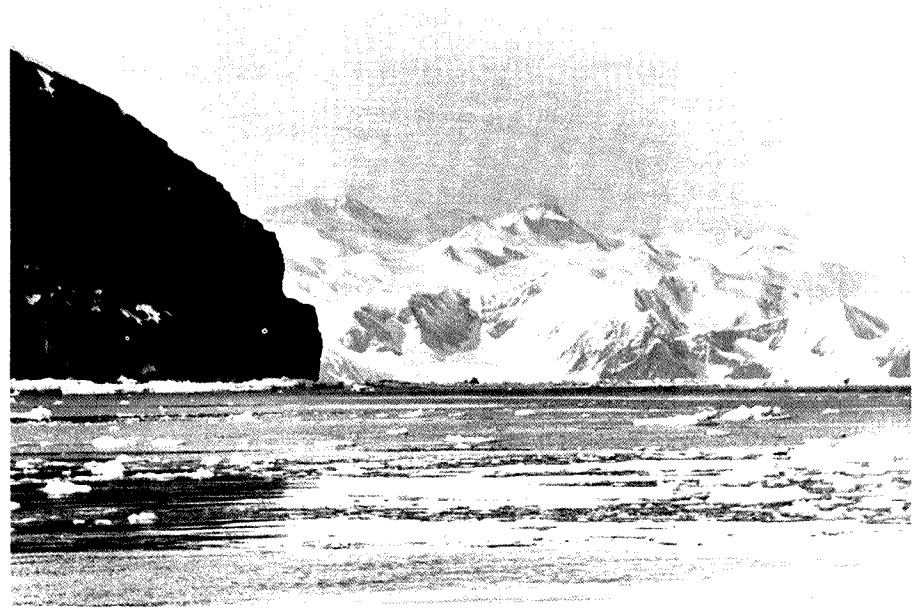
Provision had to be made for the contingency that either or both of the masts might be lost if "Solo" were rolled or severely knocked down by a huge breaking sea. Although such an event is unlikely in a yacht of the size of "'Solo", the loss of the mizzen mast by itself would have carried away both aerials, and the longer of the two aerials would have gone with dismasting of the main mast. Accordingly, an insulated base which normally served as the feed point for the shorter aerial, was fixed to the cabin roof. A 4 metre whip was carried, and could have been mounted on this insulated base. The screw thread for the Asahi whips was smaller, but an adaptor was turned so that if required the Asahi loaded whips could have been mounted for emergency amateur use.

Power Supplies

"Solo" had two battery systems when purchased. The main batteries were two very large lead-acid accumulators of about 180 ampere hours capacity, which gave a positive earth 24V system for the ship's electrical equipment which included an autopilot, radar, echosounders, sheet winches, lighting, and a bilge water level warning light. Two heavy duty truck batteries, in an entirely separate 24V system, served solely for starting the diesel engine.

When the 100 h.p. Perkins diesel engine ran, two generators, each with its own regulator, separately charged these two battery systems. The main batteries could also be charged by an ancillary petrol-powered generator. This was hardly ever used, because there was another generator which was driven by the free wheeling rotation of the propellor when "Solo" was under sail. This generator was brought into use by releasing a clutch, which decoupled the propellor shaft from the engine. When "Solo" was doing over 5 knots under sail (which she did in almost any wind except when hove to), the propellor generator could deliver up to 8 amps of power to the main 24V system. This was an extremely valuable source of power, which made no noise or exhaust fumes. A portable 150W Honda generator, capable of charging 12V batteries, was also taken on the voyage, but was not used.

An additional pair of heavy duty truck batteries was installed specifically for the radios, among other reasons because the Atlas required a 12V *negative* earth supply. Apart from this reason, it was desirable to isolate the radio batteries from voltage transients such as would have been introduced by the operation of the heavy electric sheet winches. Separate radio batteries moreover would have allowed one or both of the radio batteries to be removed without disabling any of the ship's electrical system, if it were wished to operate the amateur rig in a portable mode outside.



Telephoto shot of Cape Adare, with the Admiralty Range rising to nearly 4000 metres in the background.

Walkie Talkies

Four hand-held 5W Midland AM transceivers were donated by Dick Smith Electronics, for short haul ship-to-shore communication. These were powered either by re-chargeable Ni-cads or by dry cells, and operated on a frequency of 27.88 MHz.

Satellite Buoy

The CSIRO Division of Oceanography and Fisheries at Cronullla, NSW, loaned a satellite buoy of the sort used for oceanographic research on seawater temperatures and currents. These buoys are designed to drift behind a sea anchor, and have a panel of solar cells to provide power for the transmitter. Unlike earlier battery-powered designs which incorporated a receiver and transponded when interrogated by the satellite, this design of buoy simply transmitted to a NASA satellite. The transmitter circuitry was entirely enclosed within the sealed 1½ metre long fibreglass buoy, which had an antenna "tail" about ½ metre high also enclosed in fibreglass.

The main purpose of carrying the buoy on board "Solo" was to give at least one satellite position fix daily, accurate to within a kilometre. These positions would be available later (but not in real time for navigation) to make adjustments to interpolated dead reckoning positions on days when cloud or fog prevented taking position in the traditional way by measuring the sun's altitude with a sextant. The satellite buoy was mounted on a steel framework welded to the deck beside the cockpit, and in a very elegant way would have provided means of surveillance of "Solo's" position if all the other radio gear had ceased to work.

Memorandum on Communications
A document giving precise details of all radio equipment on board "Solo" was circulated to various organisations and persons, including the Marine Operations Centre in Canberra, the Antarctic Division In Melbourne, and amateur radio operators.

GENERAL NARRATIVE ON VOYAGE

"Solo" sailed from Sydney Harbour at midday on 15 December, 1977. On board were:—

Dr. David Lewis — Skipper, navigator, medical officer, leader of expedition.

Lars Larsen — First mate, diesel mechanic, radio operator, second-in-charge.

Dr. Pieter Arriens — Responsible for meteorology, geology, and bottom sampling program. Amateur operator and main operator of marine radio.

Dr. Peter Donaldson — Responsible for biological studies, seawater temperature and salinity measurements, film sound recorder and assistant cameraman.

Jack Pittar — Electronics technician, maintained all electric and electronic systems on board. Radio operator.

Ted Rayment — ABC cameraman/film producer.

Fritz Schaumberg — Mountaineer, skier and scuba diver.

Mrs. Dorothy Smith — Mountaineer, major role in galley.

Soon after clearing Sydney Harbour Heads, stormy weather set In, and a very tired crew (after all the intense work before leaving) was at once put to the task of making frequent sail changes. Everyone was short of sleep, and the four hours on, four hours off watch system, although necesary, did not help towards becoming adjusted to shipboard life. In addition to normal deck duties, I had to take weather observations every six hours, and transmit the coded data through OTC coastal stations to the Bureau of Meteorology in Melbourne. The Stingray equipment worked well, and apart from bringing marine weather forecasts, which were useful until "Solo" was out of coastal waters, there were also messages about several small craft which were in difficulties.

No amateur radio transmissions were made during the first six days, owing to problems with charging the radio batteries. On 21 December the log book for the new call sign opened its account with contacts to New Zealand (ZL1CU) and Antarctica (Col VK0CC, at Davis). Daily amateur radio skeds to Australia and Antarctica progressively improved, although as will be detailed in the technical narrative, another three weeks were to pass before problems with charging the radio batteries were finally resolved.

Meanwhile, "Solo" once clear of Tasmania, was favoured by good sailing winds and In one 24 hour period, while passing well to the west of Macquarie Island, she logged 184 nautical miles, and this while still very heavily laden with stores and emergency fuel. Marine radio telephone contact with the coastal stations became harder as the distance from Australia increased, for the highest small ship frequencies available were In the 6 MHz range. Once past Macquarie Island nearly all the official telegraphic messages from "Solo" (including the four ship's wireless weather reports a day) were passed through VLZ Davis or VJM Macquarie Island, and the OTC coastal stations likewise relayed telegrams for "Solo" through those stations.

Air and seawater temperatures fell as "Solo" moved to higher latitudes, and more and more time was required to change in and out of bulky warm clothing. On 2 January, 1978, as anticipated when seawater temperatures fell below 1°C, the first Icebergs were sighted, and a day later pack ice was met at about latitude 63°S. This was less than three weeks since leaving Sydney, and "Solo", twice a winner of the Sydney-Hobart yacht race, had given a good account of herself.

Further progress south was obstructed for a while by a mass of pack ice congested around the Balleny Islands. There were long fingers of pack ice with deep embayments of open water (on a scale of tens of miles) which made for confusing navigation, especially as the radar set was not working then. Visibility was often poor, and the magnetic compass was wildly unreliable in a steel boat close to the south magnetic pole.

It was soon after meeting the pack ice, when "Solo" was being sailed too fast in fog, that she hit an ice floe. A pea-sized hole was opened under water in one of the plates on the starboard side, about four metres from the bow. The damage was repaired with a patch of neoprene rubber wedged in position — and the whole area

Author Pieter Arriene VK1PA with the yacht's Amateur Radio Installation.

was stabilised with a patch of cement. At no stage was there the slightest difficulty in keeping the bilges pumped dry. Every five minutes or so the bilge water level warning light would come on, and ten to fifteen strokes of one of the hand-pumps would clear the water. The incident, however, gave fair warning that greater care would be needed in negotiating areas of pack ice.

Prior arrangements had been made with the Commander of the US Fleet weather facility, and at our request ice forecasts from the US were sent to McMurdo Station in Antarctica, and relayed by Col Christiansen through VLZ Davis. The ice reports were based on satellite microwave imagery which is capable of delineating the boundary of pack ice, even through totally cloudy skies, and our experience every time was to confirm the extraordinary precision of the US ice forecasts. This knowledge made it possible to detour around the pack ice and approach the Balleny Islands through open water from the east. About five days later, Buckle Island was sighted about 8 miles distant across a belt of pack ice, but a strong easterly wind sprang up, and "Solo" was taken away from the island. The wind later veered through the south-east, south-west and finally to the north-west, rising to force 11 on the Beaufort Scale (*mean* wind speed of 60 knots), when the barometer began to rise from a minimum of 950.9 mb. "Solo" was in open water during the storm, which pushed the margin of the pack ice to the west and south, beyond the Balleney Islands.

When the storm abated and visibility improved on 13 January, Sturge Island, the largest and southernmost in the Balleny group, was sighted downwind. "Solo" was taken close to shore along the east coast to the south-east end of the Island, where an excellent anchorage was discovered in less than 10 fathoms of water, at lat. 67° 35'S, long. 64° 50'E. Landings were made on a gravel Isthmus which tied a small snow shrouded hill to Sturge Island proper. Many Weddell seals were hauled out on the snow, but no penguins were seen ashore. Ship-to-shore contact was made with the Midland transceivers, one of which was put out of action by immersion in salt water.

Next morning, pack ice was observed moving in from the south, and "Solo" was therefore taken away from the anchorage and back the 20 miles along the east coast. The rest of the coast was hostile, with the ocean swell braking on rocky shores, and steep slopes rose 500 metres to the corniced edge of an ice cap which covered the top of the island. Several glaciers came down to sea level from the ice cap.

There was open water and good visibility overnight on the way to Buckle Island which was reached next morning. At the south end of Buckle Island, "Solo" was taken to a small island, Sabrina Island, which is tied by a gravel spit to a spectacular 100 metre high spire of volcanic rock named "the Monolith". Hundreds of Adelie penguins and a few chinstrap penguins occupied a rookery about 50 metres above sea level, and the adults were commuting up and down a steep snow slope to the sea, to gather food for feeding their chicks.

The surf landings to get ashore on the boulder beach had been quite violent, and after a few hours the swell rose further, so it was prudent for those still ashore to return to the ship. The Beaufort inflatable rubber dinghy and 25 h.p. Evinrude outboard motor performed splendidly. Overnight, but still with adequate daylight, "Solo" probed along the east coast of Buckle Island, which was even more forbidding than the coast of Sturge Island. Hanging glaciers came down from the ice cap, and a heavy swell surged along the rocky coast. It was our good fortune on "Solo" to have had good if overcast weather near the island, and the rugged scenery seen in the dim light of the early morning hours left a lasting impression.

Louis Bernacchi, an Australian on Borchgrevink's expedition of 1875-1900, aptly wrote of Buckle Island that "One sight in bad weather of that sinister coast is enough to make a landsman dream for weeks of shipwrecks, perils and death".

One rookery of Adelie penguins was perched high up on a ridge, perhaps the only site where a rookery would not be swept away by avalanches breaking from the edge of the ice cap. A predatory Leopard seal was waiting in the water, doubtless succeeding to extract a toll on the traffic of penguins driven to the water to fetch food for their chicks.

Further progress was made for some hours towards Borradaile Island and Young Island, which were visble in the distance north of Buckle Island, but the pack ice was already streaming back eastwards through the gaps between the islands, so a course was set east for the open water which had been our entry to the Balleny Islands. Once back in the open water of the Northern Ross Sea, it was decided on 18 January to turn south for the historic site of Cape Adare on the Antarctic mainland.

It was here Sir James Clark Ross first sighted this part of the Antarctic mainland and named the cape. Over 50 years later the first ever landing on the Antarctic mainland proper was made at Cape Adare, and a few years later, in 1899, the first wintering party to stay ashore in Antarctica built their two huts, and took their provisions ashore. Without radio or any other contact, they watched their relief ship depart for Australia, not to return until the following summer. Twelve years later, the northern part of Scott's ill-fated last expedition built a third hut and spent one winter there.

With great anticipation, therefore to nearly all aboard "Solo" saw the splendid sight of the Admiralty Range with peaks rising over 4000 metres, on the horizon from at least 70 miles offshore. On 23 January, "Solo" was taken through about half a mile of pack ice to a pool of open water near the Cape, from where landings were made to reach the huts, in two successive sorties with half of the party at a time. Each group had a bare threequarters of an hour ashore. After this briefest of stays, and with the glorious backdrop of the Admiralty Range still visible for hours, "Solo" was turned north away from Antarctica.

After two weeks of storms and contrary winds, "Solo" arrived in the vicinity of Macquarie Island, which lay shrouded in fog. Celestial navigation was hindered by fog which concealed the horizon, and cloud which hid the sun. For three days, the exact whereabouts of the island remained a mystery, but much kelp and many penguins in the water, and cormorants flying past the boat, confirmed the close proximity of the island. Perhaps the Macquarie Islanders even began to doubt whether "Solo" would ever make landfall, but then Jack repaired the radar set. The rest was ridiculously easy. We motored in overnight and anchored before dawn on 11 February.

We were given a very warm welcome at Macquarie Island, and the imbounded hospitality of the islanders was sustained until we left. Simple things like a hot shower or a bunk which stayed still were almost inconceivable luxuries after two months at sea. Members of the crew took turns to keep watch on board, and for two days as a precautionary measure, "Solo" had to be taken out to sea when the wind shifted.

Those ashore could do what they wished, and all found the astonishing range and abundance of wildlife to be a constant delight. I went for a walk, spending two nights away in field huts, and enjoyed fine opportunities for photography. The splendour of hundreds of King penguins (with bright orange markings) parading on vividly green grass must rank as one of nature's wonders. Meanwhile, "Solo" was used as a ferry to carry field stores to huts further south down the Island — something which will spare the shore party a good deal of coolie work, because weather conditions did not allow the operation to be done by helicopter while the relief ship "Thala Dan" was there a few days earlier. All too soon the time came to leave, and as "Solo" was the last ship to call until next summer, we took the last mail back to Australia.

The final leg of the voyage back to Sydney took a further toll of torn sails and battered railings, but the progressively warmer temperatures made deck work more pleasant, especially when it became possible to dispense with wearing gloves and bulky clothing. After 79 days the voyage ended on 4 March, 1978, when "Solo" returned to Sydney harbour.

RADIO OPERATIONS

Marine Radio

For the first week from Sydney, all radio contact was made on marine radio chanels through OTC coastal stations, including Sydney, Melbourne, Hobart and Adelaide. The contacts became weaker as "Solo" drew away from Australia, and ceased altogether beyond 50°S. The highest frequencies available for radiotelephony to the coastal stations were in the 6 MHz range, and our signals too often could not compete with QRM on the crystal locked frequencies.

It is difficult to speak too highly of the sustained effort made by radio operators of the coastal stations (many of them also amateur operators in their own right) to keep contact with "Solo". At times both Sydney and Melbourne stations would listen, each receiving different parts of messages from "Solo" when conditions were very difficult, and would compare notes. From 28 December, 1977, until 22 February, 1978, all commercial traffic through the OTC was relayed via the Antarctic or sub-Antarctic research stations at Davis, Macquarie Island and Campbell Island. Direct contact with Sydney or Melbourne coastal stations was resumed from 23 February until the end of the voyage.

One disappointment concerned the use of a 12 MHz radfone channel, for our signal was always declared to be "noncommercial" by the telephone operators in Sydney. This was despite the fact that the Stingray transceiver was working well on that frequency, as proved by a test transmission to Davis, where Col Christiansen reported good signal strength and excellent clarity. Perhaps ocean liners such as the Queen Elizabeth II or the Arcadia, which were in contact with Australia on the same frequencies, had more powerful transmitters.

Radio interference was always far more troublesome on the fixed marine radio frequencies than it was in the amateur bands, where it was usually possible to change to a different frequency. The various generators on board were not properly suppressed, and although noise blankers on the receivers were useful, the best solution was to cut the exciters from the generators, especially when working the lower frequencies. Sometimes when motoring, even that was not sufficient, and it was then better if possible to stop the engine, because apart from electrical interference, the motor was noisy inside the cabin.

Amateur Radio

Amateur radio transmissions did not begin until six days after leaving Sydney. This was to conserve the radio batteries until proper provision had been made for charging them. Jack Pittar installed a system of relays which switched the two 12V radio batteries in parallel while the radios were used (—ve earth) and in series for charging in parallel with the +ve earth 24V main bank of batteries. At first it seemed this excellent arrangement was working well, but after a few days it became impossible to avoid doubts whether the radio batteries were receiving enough charging current, and these doubts remained after adjusting the regulators of the sailing/prop generator and the generator driven by the diesel engine.

Possibly the ship's main batteries of 180 ampere hours capacity, being older, charged at a lower voltage than the brand new radio batteries, so that the radio batteries never charged to their nominal capacity of 60 ampere hours each. Whether or not this was so, it became more and more certain that the radio batteries were starved, and from time to time as an experiment, the main batteries were isolated to pass all the charging current to the radio batteries. This could be done only in stable weather conditions, and it had to be made clear to the deck crew that the slightest touch of a foot switch for either of the sheet winches would blow out the relays.

These are simple enough matters to discuss in theory and with hindsight. But in practice, when the batteries are down in the bilges under large plywood floor panels, which in turn are under a heap of assorted boots and Honda generator with nowhere else to go, and when access to soldering irons and electrical equipment requires disturbing very tired crew members to reach lockers behind or underneath bunks, and when anything left unattended for a moment is hurled across the cabin by the next large wave, and when it is very soon again time for dinner or the next watch before much rewiring can be done, then such tasks become major and long undertakings. Jack also had a misfortune while cleaning the hydrometer on deck, when the glass cylindrical portion containing the graduated float decided to part company with the rubber suction bulb. He was naturally holding the rubber bulb with due care and attention, but the rest of the hdyrometer most exasperatingly began an irretrievable journey to the bottom of the Southern Ocean.

The symptoms during skeds on the Atlas were decreasing power output, progressively higher SWR ratio, and of course reports of declining signal strength and intelligiblity during a QSO. But the Atlas has a protective mechanism whereby power is reduced at higher SWR, and the aerial of necessity passed through numerous connectors and a coax switch, to share duty for the Drake communications receiver, or the Stingray marine radios. So the aerial system for a while also had to be regarded as a possible source of trouble, but curiously the aerial always tuned nicely with 1:1 SWR at the beginning of skeds.

Naturally the amateurs at the receiving end would then suggest that both stations should change to CW. Now the "ham shack" area in "Solo" was on top of a large locker containing wet weather gear, beside which one stood none too securely on the starboard side of the cabin, in a posture which depended very much on which tack "Solo" was sailing. On starboard track the radio cupboard was "uphill" and there was a recurrent tendency for log books or message pads to be hurled on to the floor. On port tackle that was less of a problem, but then occasionally an uncongealed cheesecake would flip across from the port side galley into the radio area or else seawater would spill in from a ventilator.

It is one thing for a tenderfoot morse operator to take CW on a message pad letter for letter seated at a steady desk on land. It is quite something else to do it standing in a small boat at sea with one hand preoccupied holding on to a bulkhead, and the other occasionally fielding message pads, etc., before they escape over the edge of the working area. Sending CW was less of a problem than receiving, because the HK706 morse key has an excellent rubber base and slung to the work area. I found it distracting at first not to have side tone, for I had never practised sending morse without an audio oscillator. For all these problems, it was very fortunate that the Atlas transmitted clearly if weakly on CW, after radiotelephony had become quite unintelligible, and other stations always reported excellent tone on CW.

A few operators reported distorted modulation during some of the earlier phone contacts, and this raised further doubts about the ALC setting or the microphone. Changing microphones often led to a temporary improvement; with hindsight this was not so much because the previous microphone was malfunctioning, but probably because the batteries recovered somewhat before transmission resumed. Battery voltages were always excellent when tested before skeds, but the true state of the radio batteries became more evident after one particularly difficult sked, when the two radio batteries, each of nominal 60 ampere hour capacity, gave 8V. Incredibly, the Atlas was still transmitting readable CW!

At the same time, however, another potentially serious problem lay in the decreasing temperatures, which had fallen to about 2° or 3°C inside the cabin. Steam from cooking in the galley happily filled the cabin and condensed profusely on any cold surfaces, and microphones which unavoidably became damp failed to dry out.

Fortunately there was no overall shortage of electric power from the free-wheel prop generator or from the diesel engine when moving under power, and this led to a much simplified method of charging the radio batteries, which at the same time countered the cold-wet environment for the Atlas and its accessories. The radio batteries were now left in parallel, and

two 12V light bulbs of about 12 watts each were wired in parallel, giving a resistance when hot of about 6 ohms. These bulbs were mounted low inside the cupboard housing the Atlas, and were used as a dropping resistor to charge the radio batteries at current of 2 amps from the ship's main 24V batteries.

The beauty of this simple arrangement was the certitude that if the bulbs were shining, the radio batteries had to be charging. At the same time the Atlas and associated gear (especially the microphone) warmed up to about 11°C inside the cupboard, and this kept the rig dry when conditions were damp or even positively wet in the cabin. One of three multimeters on board was mounted on a bulkhead and wired to continuously measure the voltage of the radio batteries. This, without the services of the lamented hydrometer, helped to monitor the condition of the radio batteries.

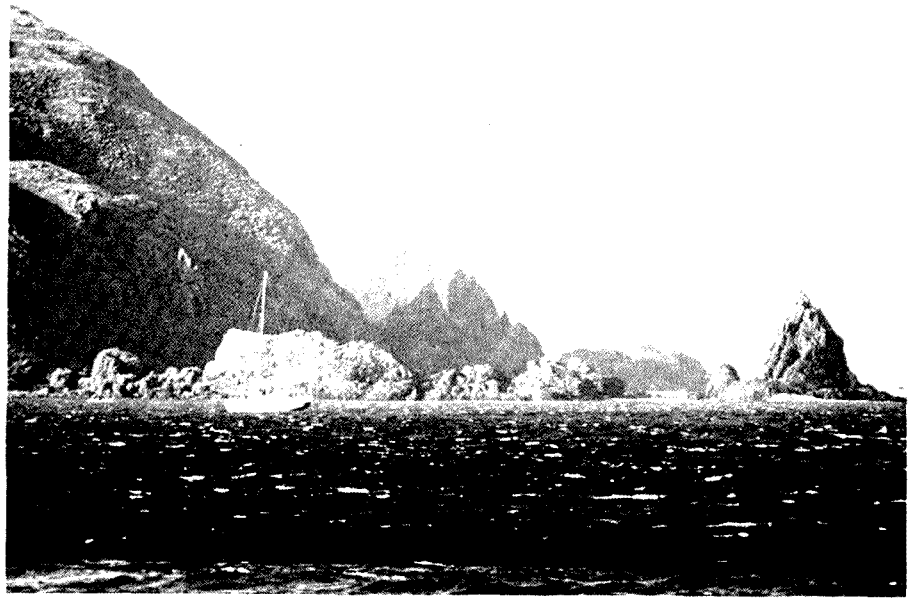
By mid-January, normal performance of the Atlas, with 1 : 1 SWR right across the 20m band, full power output, and excellent signal reports for readability (5) and strength (at time peaking over 9), all confirmed that the earlier problems had their origin in the chronically starved condition of the radio batteries. There were still some vagaries of propagation and perhaps occasional Antarctic flutter, but good contacts became the rule rather than the exception.

Although no attempt was made to operate DX for its own sake, it never proved necessary to close VK1PA/MM while other stations still wished to make contact. Perhaps a VK1 operating mobile marine outside Lake Burley Griffin was too much of a rarity to be recognisable as an unusual contact, yet at Cape Adare "Solo" was about 200 miles further south than any of the VK0s at the ANARE stations.

Over 200 amateur contacts were made during the voyage — 130 of them with six stations (VK0CC, VK1BH, VK1DL, VK1GB, VK2AAB and VK2HH).

It was often apparent that other amateur stations were listening on the side, without calling, and this was much appreciated as it strengthened surveillance of the expedition when it was working in very isolated waters.

The first amateur contacts were made on 21 December, and included an excellent QSO with Colin Christiansen (VK0CC) at Davis. Colin had the advantage of the gain of a large rhombic antenna in a very quiet area, and was often able to hear my signals better than at amateur stations in Australia. He therefore often took control of a radio net which evolved initially with other stations in Sydney and Canberra, and later extended to Ballarat, Victoria. Daily contact was attempted every evening except for one day while I was ashore on Sturge Island in the Balleny Group, and for six days when the net was suspended while "Solo" was at or near Macquarie Island. Of the sixty-six remaining days, there were only six when attempts to make amateur contact failed for technical reasons which originated either with the radio batteries or through difficulties with propagation on the 20m or alternative bands.



"Solo" at anchor in Buckles Bay, Macquarie Island. On the left the alopaa rise towards Wireless Hill, the site of Sir Douglas Mawson's radio masts for the relay station for communication to Commonwealth Bay on the Antarctic Mainland.

Under circumstances where the value of amateur radio lay so much in reliable daily communication, it is perhaps invidious to identify any specific QSO, but it was a memorable day when an hour-long contact was made with VK2HH aeronautical mobile (Harry Hocking) on a QANTAS Boeing 747 which at that time was flying over Cape Adare where "Solo" had called a week earlier. Wives and friends of the crew on "Solo" were in the aircraft, and enjoyed the chance to talk to each other through the amateur radio service.

Nearly all of the amateur contacts were made in the 20m band, although the 80, 40 and 15m bands were also worked, in all instances using the longer of the two aerials. On the final return leg to Sydney, "Solo" made extremely fast progress across the Tasman Sea, and before arrangements had been made to use alternative frequencies in the 40 or 80m band, it was discovered one evening that all the usual east Australian stations of the net could not be heard on 20m, and presumably lay inside the skip zone. Fortunately a VK6 station was in 20m contact with one of the VK1s and was able to QSP an alternative frequency to be used in the 40m band.

Communication with Antarctic Research Stations

After "Solo" lost contact with the OTC coastal stations in Australia, the only means of passing official third party traffic was by relay through Antarctic research stations. It was known in advance that two of the frequencies allocated to ANARE stations were accessible on the Atlas, and appropriate consultation was made beforehand. Naturally other ANARE traffic took precedence, but with prior amateur radio contact, it was possible to confirm whether the ANARE frequencies were free.

Colin Christiansen, as the operator of radio VLZ Davis, was therefore able to relay messages to Australia, and also to the United States Fleet weather facility via McMurdo Station. This made it possible to despatch ship wireless weather reports from VJ6764 "Solo", and to receive Ice forecasts from the Americans. Unfortunately there was no amateur operator at Macquarie Island, and it therefore proved harder to maintain effective long-range communication with Macquarie Island, except paradoxically by relay through Davis.

The final contact with Colin was on 12 January, when the Davis 1977 party returned to Australia, but the new radio operator and the previous radio technical officer, who stayed on at Davis for the summer, continued to work "Solo" until 7 February. Davis station therefore played a key role for more than half of the voyage on "Solo". Radio traffic and weather reports were relayed from 8 February through Macquarie Island, until

"Solo" anchored there, and again for a few days after leaving Macquarie Island. Good contact was also made with the New Zealanders at radio ZLBC Campbell Island, and continued for several days after contact was lost with Macquarie Island. From 23 February, direct contact was resumed with Sydney and Melbourne coastal stations, until the end of the voyage.

Social radio contacts were also made with the ANARE relief ships "Nella Dan" and "Thala Dan".

Ship-to-Shore Communication
The hand-held 27 MHz equipment gave good contact between "Solo" and parties going ashore in the inflatable rubber dinghy. One of the four sets was put out of service by saltwater immersion when the rubber dinghy was swamped during a fairly rough landing through heavy surf.

Satellite Buoy
The CSIRO's satellite buoy, named "Snow Petrel" apparently functioned throughout the voyage, so it was possible after the voyage to compare the satellite positions with those obtained by the traditional methods of celestial navigation.

Radar
"Solo" carried marine radar with a range of 24 miles. The scanner was mounted on the mizzen mast, and the screen and control unit was in the cabin, located above and even nearer to the galley than the radios. Although working normally before departure from Sydney, the radar unfortunately did not operate for most of the voyage, including all the time in fog-bound waters off the Balleny Islands, where there was much pack ice.

Jack followed the trouble-shooting procedures in the manual — which involved some work inside the scanner unit up the mizzen mast, but this was not successful. On the return journey near Macquarie Island, Jack found a resistor which must have been overheated earlier, for it had become open circuited through desoldering. The fact that the radar set performed perfectly after the resistor was soldered back in position (apart from continued overloading of this component) speaks very highly of the equipment, which had been enveloped every day by steam from the galley.

SUMMARY AND CONCLUSIONS

1. A heavy shibboleth still cited with conviction by some latter day ancient mariners, is that HF radio is utterly untrustworthy and unnecessary on board cruising yachts. The voyage on "Solo" lasted for 79 days. During the voyage, HF communication to Australia and/or Antarctica was made on 79 of those days.
2. Morale, not only on board "Solo", but also among friends and relatives in Australia was greatly helped by radio communcation. The ice forecasts received by radio were of crucial assistance to navigation in the fog-bound waters off the Balleny Islands.

Stingray Marine Radio Equipment on board "Solo", provided by Findlay Electronics.

3. Time was so short after the purchase of "Solo" that not all of the radio installation work was finished before departure. Apart from the extra effort it took to complete the work at sea, the shortage of time also meant accepting some compromise on the position where the radios were installed. It would have been vastly preferable if the radios could have been mounted to allow the operator to sit securely, or even lie in a bunk, instead of standing.
4. In the cold and wet conditions of high latitudes at sea, it is essential to house non-marinised amateur radio equipment in a weatherproof cupboard with provision for heating. The better insulated the cupboard, the less power will be required for heating. Apart from attention to power supplies and aerials, nothing else will help so much towards enjoying good performance from amateur radio transceivers, and communications receivers in small ships at sea.
5. Radio-telephony is very convenient and preferable to use when conditions are good, but many of the contacts would have failed without telegraphy. Possibly as much as half of the traffic to Davis was passed by CW.
6. A long wire aerial works extremely effectively at sea over salt water, when properly tuned with an aerial coupler.
7. The precaution of taking alternative whip antennas and a reserve amateur transceiver was entirely justified, although no emergency arose requiring their use.
8. The legal restrictions on third party traffic through the amateur service seemed especially inappropriate at the time "Solo" was out of direct communication through commercial channels to Australia. When third party traffic did reach relatives and friends in Australia, the news was spread by cascades of trunk telephone calls in Australia. If radio relay rights were explicitly granted to the amateur service in Australia, the net result without doubt would be a further increase to the already handsome profits of Telecom.
9. As a newcomer to the amateur service, may I again acknowledge the friendly advice and useful information from "old hands", without which I should have been much less likely to have obtained the necessary qualifications and suitable equipment to operate a maritime mobile amateur station.
10. May I record my heartfelt thanks to all the radio operators who worked "Solo", whether in the amateur service, the OTC coastal stations or at Davis, Macquarie Island and Campbell Island. Their skills and persistent application contributed very much to the success and welfare of the expedition.

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QSP

IMPORT BAN ON "ILLEGAL" CB RADIOS CONSIDERED

The Federal Government may ban imports of "illegal" Citizens Band radio sets into Australia, the Minister for Post and Telecommunications, Mr. Staley, said. He said it was wrong that CB radios could be imported when they could not be licensed.

"I have had some discussions with the Minister for Business and Consumer Affairs, Mr. Fife, on what action could be taken to end what in general is an undesirable practice", he said, replying to a question without notice from the Deputy Opposition Leader, Mr. Lionel Bowen.

Mr. Bowen asked about a decision by Mr. Staley's department last December to license 20,000 CB sets imported from Taiwan for Australian General Electric. Mr. Bowen wanted to know who authorised importation of the sets, in view of their technical inferiority and the fact that they cause severe interference to normal radio and television reception.

Australian General Electric had made $1 million from sales of the sets, he said.

Mr. Staley said he was not familiar with the matter and would make enquiries.

UK LICENCE FEE

From 1.2.1978 the annual licence fees were increased by 16 per cent. The amateur licence becoms £6.40 which is approximately equivalent to $A10.40 at present exchange rates. Annual licence fees for some of the other services are now £2.80 for model control, £6.40 for ship licences, £4.60 for aircraft licences and £7.50 for each of the first two private mobile radio stations and £4.20 for each subsequent station. ■

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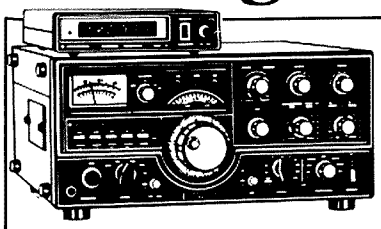

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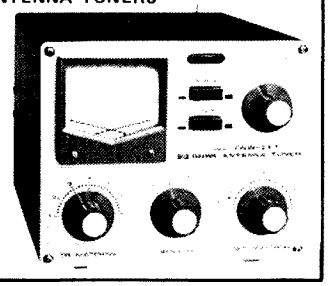

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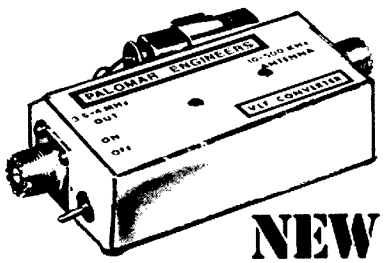

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EQUIPMENT REVIEW:
THE ASTRO 200 SSB TRANSCEIVER

When Peter Schultz of Sideband Electronics Sales, Loftus, NSW, offered us an ASTRO 200 transceiver to try out, we quickly accepted. In spite of quite extensive advertising in Amateur Radio magazine, the ASTRO seems to be almost unknown amongst active amateur operators. Introduced into this country with a full page advertisement in the November 1976 issue of AR and followed with a double page spread in the March 1977 issue, it must remain a mystery just why this is so.

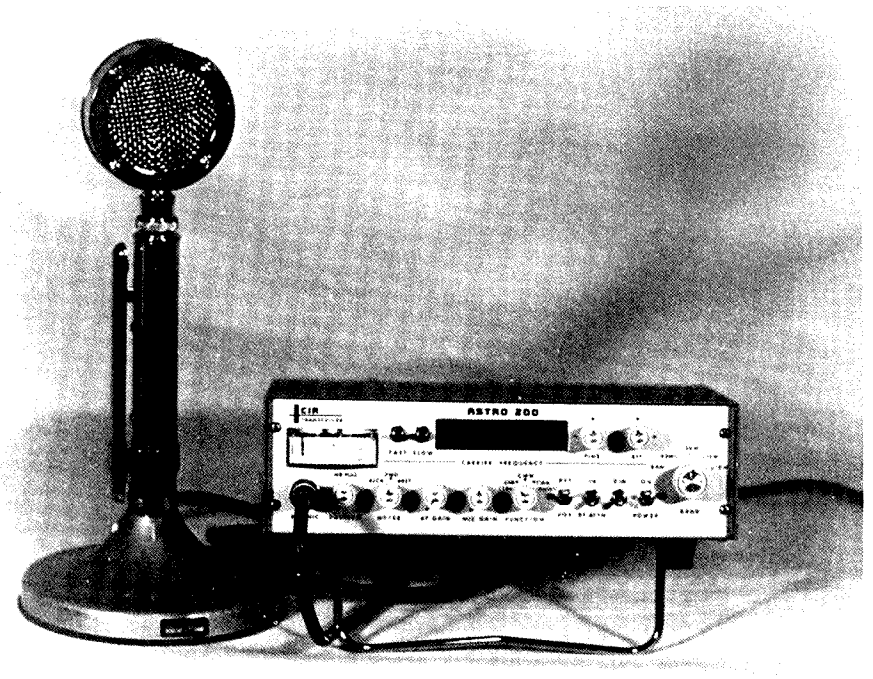
Well, just what is the ASTRO 200? In a few words, it is a miniaturised 100 watt output 80 to 10 metre transceiver with fully synthesized tuning. There is a lot more to be told, of course, but before that, let's go back a few years and look at the development of the amateur band transceiver as we know it today. One would be excused for thinking that the amateur transceiver was a Japanese Invention and had been developed to its present state in that country.

Not so. The transceiver was devised in the United States and to date every new development in its history has come from the United States. This of course infers that the ASTRO is a product of the United States, which it certainly is. The manufacturer is CIR Industries Inc., of California. However, let's get back to the transceiver itself and see just what sets it apart from the others. Two things stand out straight away. Tuning is fully synthesized, that is, the bands are covered in 100 Hz steps rather than continuously as with a conventional VFO system. The manufacturer claims that the ASTRO has 40,000 channels. He is probably right, but we didn't count them.

The next and probably the most revolutionary development is that there is no conventional tuning system. Tuning is accomplished by a scanning device operated by spring loaded switches. A fast and slow scanning rate is provided to enable either quick excursions from one portion of the band to another for easy SSB resolution.

Reference to the illustration will give a good idea of its relative size. The Astatic D-104 microphone looks huge in comparison. The actual dimensions of the ASTRO are 7.2 cm high, 30.8 cm deep and 24.13 cm wide and the weight only 3.6 kg. There is of course no AC power supply built in, the transceiver being designed primarily as a mobile unit or for home station use with an external high current DC supply. Nominal operating voltage is 12 to 14 volts.

As there is no conventional tuning system it follows that the frequency readout is digital. A six digit readout gives 100 Hz resolution. The brightness of the readout can be reduced for night time operation.



Most of the usual facilities we expect to find in modern transceivers are included in the ASTRO. These include: VOX or PTT, built-in SWR meter, noise blanker, RF attenuator on receive, fine tuning control or VXO to tune between the 100 Hz points, a separate receiver offset tuning control and an entirely separate WWV receiver on 10 MHz. Perhaps one of the more interesting features is the inclusion of an in-line RF power meter to actually read the output power in watts.

TECHNICAL FEATURES OF THE ASTRO 200

From the above it is obvious that the ASTRO is no run-of-the-mill transceiver, so a closer look at the circuitry is of great interest.

The set is made up with good quality plug-in circuit boards and the overall internal appearance is clean and orderly. At a guess it would seem that the manufacturers, CIR Industries, have a background of high quality commercial manufacture. The receiver is a single conversion design with a 5.6 MHz IF frequency. Gain in front of the 8 pole crystal filter is kept low with a dual gate MOS FET RF stage driving a double balanced mixer stage. PIN diodes are used in the AGC circuit and a dynamic range of greater than 100 dB is claimed. The switched RF attenuator increases this to over 120 dB. Perhaps an unusual omission, however, is a normal RF gain control and a strange inclusion is a squelch control. The eight pole filter has 1 : 8 shape factor with a 2700 Hz bandpass at the 6 dB points, and 4900 Hz at the 60 dB points. Diode switching is employed in selecting either the SSB or CW filter. The well known LM-380 is used as the receive audio output chip.

RF bandpass filtering is switched into the receiver front end with the transceiver band switch, and as is common with modern solid state design, no peaking or front end tuning controls are provided or needed for either transmitter or receiver.

The transmitter line up is straightforward and uses the same 5.6 MHz filter as used in the receiver. The power output section uses three stages with the last two in push-pull. All the transmitter stages are broadbanded with separate bandpass filters switched in for each band. Considerable attention has been given to TVI suppression and general spurious output. Double balanced mixers are used throughout both transmitter and receiver, and in addition to the bandpass filters in the transmitter output and receiver input, a three section low-pass filter is included at the transmitter output.

Some form of speech processing is considered essential these days, and the ASTRO uses a very interesting approach. Incorporated in the microphone is a logarithmic compressor followed by a 3 kHz filter. The design then allows the final

transmitter stage to be over-driven to produce a degree of controlled RF compression. We shall see later just how effective this is.

The heart of the whole transceiver is of course the frequency synthesizer. In effect the synthesizer generates crystal controlled frequencies in 100 Hz steps for each of the amateur bands. The basis of all this is a very stable 5 MHz crystal oscillator driving two phase locked loops. The major PLL generates the heterodyne frequencies to convert the received and transmitted signals to and from the 5.6 MHz IF channel. This loop also generates the 100 Hz steps from a programming code and an up/down counter. The up/down counter is in turn controlled by the front panel frequency selecting switches.

THE ASTRO 200 IN OPERATION

Sideband Electronics Sales kindly loaned us a heavy duty 20 amp 13.8 volt power supply to use with the ASTRO. For home station use a similar type of power supply would be needed.

Used in the car, however, the average current drain over a period of time would be quite low. At 200 watts peak input the drain would be something over 15 amps, but as this would only occur on absolute speech peaks, the drain as measured on a normal ammeter does not exceed about six amps. With full use of the speech processor this would rise to about ten amps. Even so, a normal car battery in reasonable condition would operate the ASTRO for the duration of the field day and still start the car after.

When the ASTRO is first turned on, it takes several seconds for the PLLs to actually lock. During this time signals rush back and forth in random fashion. Tuning the ASTRO is a new experience and certainly takes time to master. The tuning switches are three position spring-loaded with centre normal. Fast tunes at a rate of 10 kHz per second, ideal for hopping from one end of the band to the other. Pushing the switches up increases the frequency, while pushing down has the opposite effect. The SLOW switch tunes at the rate of 400 Hz per second. After a few minutes practice one becomes expert and the whole thing becomes easy albeit strange to operate. While all this is happening the digital readout is showing the exact frequency.

Received audio quality was excellent and strong signal handling first class. As mentioned earlier no RF gain control is included. As a personal choice I would swap the squelch control for one. When listening to strong signals I normally prefer to reduce the RF gain and benefit from the quiet background so obtained. The RF attenuator included in the set did not provide this effect. However in all other respects the receiver was pleasant to operate. The noise blanker was effective on ignition type noise but did introduce some cross modulation particularly on the eighty metre band at night when signals can be extremely strong. The WWV receiver built in is definitely a "Why didn't they think of it before". A separate direct conversion receiver is used. That is direct from RF to audio. It can be selected at any time by the function switch and appears to be most effective. An internal preset trimmer allows the master 5 MHz oscillator to set spot on with WWV.

Perhaps one question that will come up is, what is it like tuning in 100 Hz steps? Is it possible to get an SSB signal spot on? The answer is a definite yes — even a fussy operator when it comes to getting the pitch right will be quite satisfied. Nevertheless, the ASTRO does include a FINE and an RIT control but as both of these only has a range of ± 50 Hz it seemed perhaps a waste of time to include them.

Most of the transmit tests were carried out on the twenty and eighty metre bands. Using a fair degree of the RF compression all DX contacts reported on the excellent audio. At the time of the tests, conditions were only fair, perhaps the best time to check transmit readability.

Power output was right up to specification with the built-in power meter agreeing with my usual station RF watt meter. In short, 100 watts on all bands from 80 to 15 and 90 watts on 10 metres.

SUMMING IT UP

Just where does a transceiver like the ASTRO fit into the scheme of things? There is no doubt that it would be an ideal mobile unit and also an ultra compact home station with a suitable power supply. Why, then, is it still largely unknown? I am sure that if amateurs could see one in action they would find it hard to resist, even at the rather high price they are selling for. Perhaps in relation to the advanced technology tied up in that small box, the price is not high at all. But maybe at this point some criticism could be stated. Unfortunately, the overall appearance and external finish does not match the price. There is no doubt that this is the point where most manufacturers throughout the world fall short of their Japanese competitors. Perhaps a little more time spent on good industrial design might have paid off with the ASTRO. I am sure though that in time we will see many of its features incorporated in amateur transceivers.

The instruction book supplied is well produced, but as is usual these days, does not include much information for the home repairer. A complete circuit running to nine pages is provided but no circuit board layouts are provided. A letter from Peter Schultz states the following. The Warranty is for 90 days from the date of purchase for faulty workmanship and parts except power output transistors. However, they are protected in the usual manner — read user's manual. Please also note this is a highly sophisticated transceiver. I do have service facilities for complete alignment, but at the moment changeover boards available if major faults occur, supplied by the manufacturer.

Further details on the ASTRO 200 can be obtained from the agent, Sideband Electronics Sales, 24 Kurri Street, Loftus, NSW 2232.

Specifications ex March 1977 AR. ■

CLOSE FEDERAL LOOK AT CB

CLOSE FEDERAL LOOK AT CB

The following is a direct copy of a story published in the Townsville Daily Bulletin on May 24, 1978.

Further details on the Ministerial statement are at present unavailable.

The Federal Government is looking closely at the "problems" and "absurdities" of CB radio.

The Post and Telecommunications Minister, Mr. A. A. Staley, said this in Townsville yesterday.

A questioner had said that "everyone has CB radio, and we are told that in 1982 CB radio as such will cease to exist". Would there be a problem in regard to changing the law?

Mr. Staley said it was unreal to think that in 1982 the hundreds of thousands of people with CB radios would suddenly find it was illegal to operate them.

"You would need a policeman in every street, and even then they wouldn't catch them," he said.

Mr. Staley said the policy on introduction of CB radio in Australia had been well intentioned, but the "difficulties it would lead to" had not been foreseen.

He said he was trying to produce a new set of regulations governing the use of CB, "and we are looking at that 1982 date".

"CB has great advantages for certain people in certain areas, such as people on the land, or living outside cities," Mr. Staley said.

"It's a toy for some in the cities, a plaything.

"But it causes no end of interference to pre-existing services such as TV."

Mr. Staley said it was an "absurd situation" where you can sell a set which you cannot licence.

"I want something done about that," he said.

"You can import sets which you cannot licence. This is madness again. It only introduces a state of lawlessness.

"CB is here to stay, but we have to have sensible regulations so that the life we all lead can be made a little more comfortable and contended," he said. ■

IMPROVING THE ATLAS 210X TRANSCEIVER

L. J. Brennan VK4XJ
12 Cornhill St., Kenmore 4069

The Atlas 210X must be one of the best mobile transceivers on the market today due to its small size, light weight, and solid state final. It covers five HF bands with an output of around 90 watts and operates directly from a 12 volt supply. However, it does have some limitations and the following notes may be of interest to other users.

SENSITIVITY

Although the specifications for the Atlas 210X state sensitivity to be better than 0.4 microvolts for a 10 dB signal-plus-noise to noise ratio from 80 to 20 metres, about 0.4 uV on 15 metres and 0.6 uV on 10 metres, the set under test did not meet this specification on 10 and 15 metres. In comparison with another older valve transceiver it did not show up very well on these bands, so the problem was taken up with the manufacturer.

The Customer Service Manager suggested peaking the receiver input coils, making sure the VFO injection voltage was at least 0.4 volt, and if the sensitivity was still down, that a pre-amplifier would be found helpful, especially on 10 metres.

RF PRE-AMPLIFIER

No RF stage is used in the Atlas ahead of the mixer stage and a pre-amplifier will be found to be a worthwhile modification. The circuit suggested by Atlas is shown in Fig. 1. It uses a 2N3866 and really improves the sensitivity of this transceiver especially on 10 metres. The sensitivity on this band is now around 0.3 uV for 10 dB signal plus noise to noise ratio. The extra gain also improves the operation of the AGC system which now works in a much more satisfactory manner.

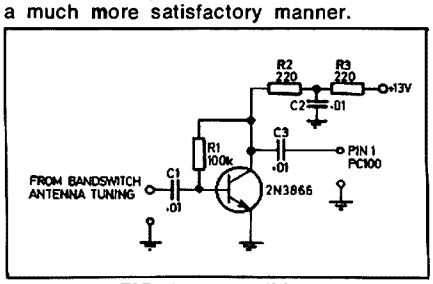
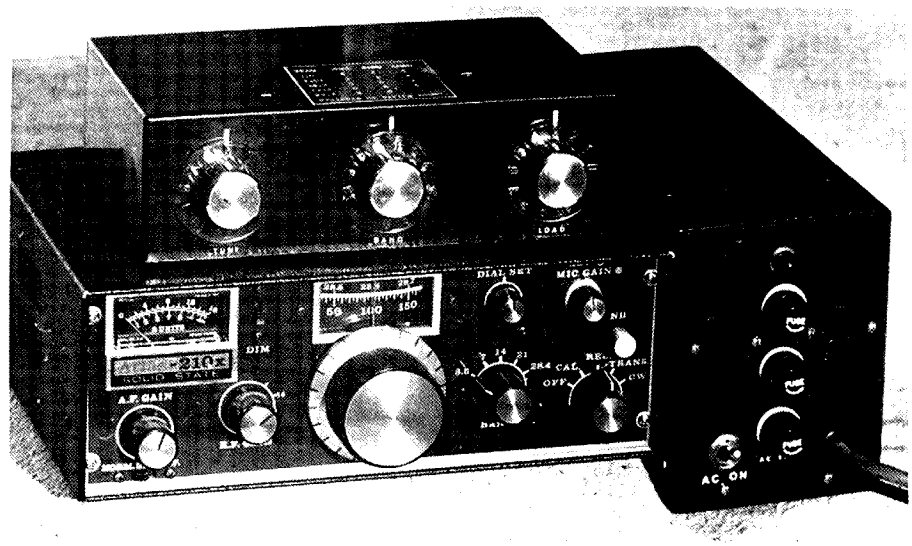


FIG. 1: Preamplifier.

The pre-amp was made on a small PCB by VK4UA and is about 2 inches long by 1 inch high. it could be made on a strip of Veroboard. It will fit the area of the Atlas PCB No 900, mounted at the top rear and using the two holes in this board to mount two 3/8 inch long stand-offs. The pre-amp fits neatly in place at the rear side of the dial drum.



ATU and AC Supply.

The pre-amp is connected into the circuit by mini-coax between the band change switch for the antenna tuning circuits and pin 1 of socket for PCB No PC100. Plus 13 volts is taken from pin 10 of the socket for PC100. The ground connection is to the chassis nearby.

Due to the increased RF gain a resistor of 2,700 ohms is connected between the RF gain control R6— 10k ohms and R7 (470 ohms). The additional resistor is supported on a small tag-strip near the gain control. The circuit alteration is shown in Fig. 2.

It was also found desirable to reduce the range of the audio gain control by disconnecting the lead from pin 22 on PC 300C and connecting it to the moving arm of a 20k ohm tab pot connected between pin 22 and ground. The desired audio level can now be pre-set to give a better range for the audio gain control. See Fig. 3.

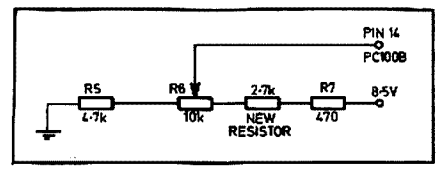


FIG. 2: Extra Raalstor to reduce gain.

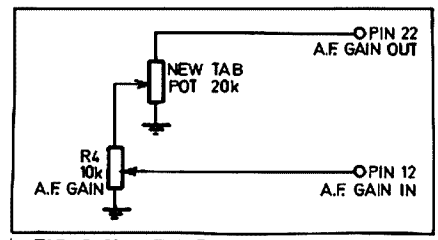


FIG. 3: Naw Tab Pot to reduce AF gain.

The gain was found to be too high on the lower frequencies. A pre-set mark about two thirds maximum permits adjustment for excessive RF gain and "S" meter readings on the lower frequency bands.

ANTENNA TUNER

The Atlas does not make provision for adjustment to various load impedances, and it will only deliver its maximum power when the load is between 50 and 53.5 ohms non-reactive.

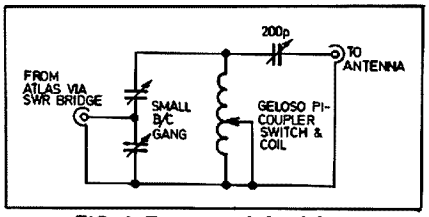


FIG. 4: Transmatch for Atlas.

Fig. 4 shows a circuit of a transmatch that has proved very satisactory, the inductance being a Geloso Pi-Coupler, C1, a small two gang broadcast tuning capacitor and C2 any single gang around 200 pF. Two of these units have been built for the Atlas, one installed in the boot of the car. All knobs have numbered scales making it easy to pre-set the antenna tuner to any band. The unit in the boot of the car is a more compact version. An SWR bridge is used to adjust the tuner which is set up for minimum SWR. With helical whips mounted on the rear bumper there is only a short length of co-ax to the tuner in the boot. The tuner should be adjusted with the boot lid closed. Thus it takes some time to arrive at correct settings for all bands.

PORTABLE 240V AC POWER SUPPLY

The Atlas portable power supply was not available at the time of purchase, so one was made from locally available parts for a considerable saving in cost.

The circuit shown in Fig. 5 is similar to that in the Atlas handbook. Many other designs were considered but this one is simple to get going and can be made very compact, yet is adequate for the job of a portable AC power pack.

This supply fits into a home-made metal box 3½ inches wide, 5 inches high and 9 inches long. On the front panel are mounted the three fuse holders, two DC outlet sockets, the mains switch, and mains lead into the supply. On the rear is the heat sink holding the 2N3055.

As with the Atlas supply the high current output is not regulated. A simple regulator is used for the low current circuits up to about 1 amp.

The two outlet sockets are a 6 pin Painton for the main supply with two pins in parallel for each circuit, the other a four pin Painton providing only the regulated 13 volts for other equipment (in this case for an IC502).

One suitable transformer is the Ferguson PF3788 which has two secondary windings each of 15 volts with a tap at 12 volt. Each winding is rated at 4 amps.

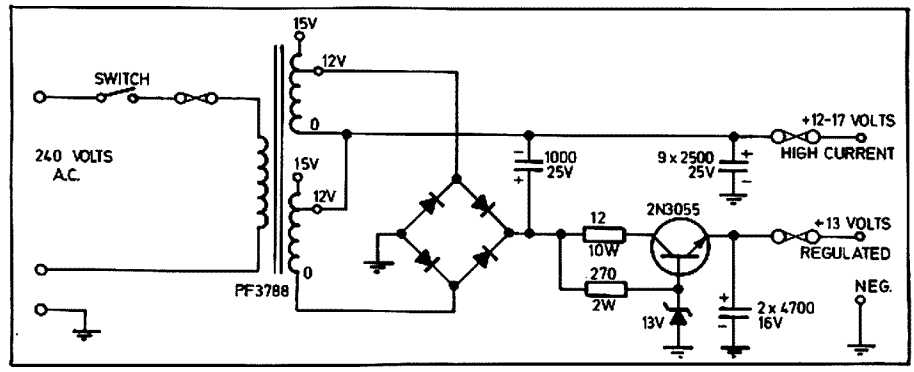
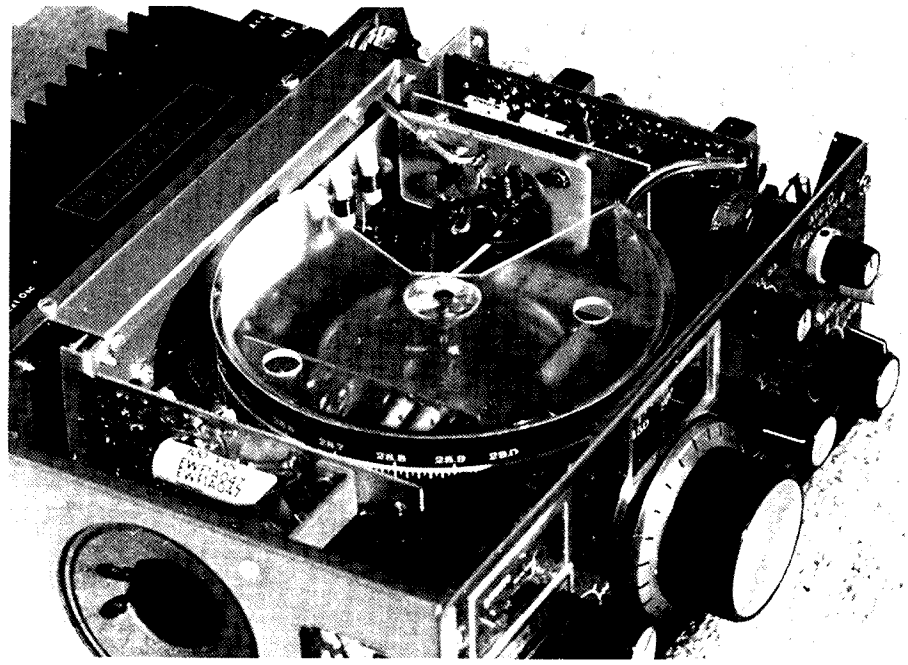


FIGURE 5: Power Supply.



View of RF Preamp installed.

The bridge rectifier is a PB40 rather than separate diodes. Nine 2500 microfarad capacitors were mounted on a plug-in Veroboard for the filter and the remaining parts were mounted on another piece of plug-in board.

The main high current circuit will supply about 10 to 12 amps at about 11 volts under CW conditions which has proved ample for portable use.

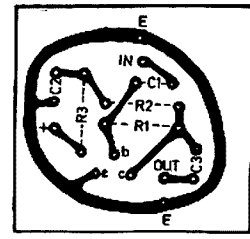
POWER SUPPLY LEADS

Several power supply leads have been made up to allow the Atlas to be used from various power supplies.

In all cases an automotive diode is connected across the plug in the reverse direction to take care of the Atlas should the connecting leads be connected to the wrong polarity. Another precaution has been to terminate all leads in a 4 pin connector and fit a suitable socket to the power supply source.

A small piece of aluminium bent into shape holds the two banana sockets and plug for connecting the Atlas.

Leads are used to operate the Atlas from a 12 volt 9 amp hour motorcycle battery. To operate the receiver section only from a small 12 volt 300 mA supply and also the main transmitter AC supply.



PCB Artwork.

PA COLLECTOR IDLING CURRENT

This is adjusted to approximately ½ amp by the trim pot R515, it is mounted on the component side of the heat sink and provided with an access hole from the rear of the heat sink underneath the transistor Q503-40582, this is mounted on the rear side of the heat sink.

A small plastic bolt 3/16 in. x ¾ in. long was filed down to fit into the slot, making a shaft for this trim pot, making adjustment more convenient as the idle current varies when changing to different supplies. ■

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AT-200. Antenna Coupler..... $174.

MONITOR RECEIVERS.

MR-2. Mini Monitor 12 ch. Pocket receiver VHF. $135.
MS-2 Mini Scanning Receiver 4ch. inc..... $185.

EMOTATOR.
Rotators still available from CHIRNSIDE ELECTRONICS

103LBX. Medium Duty. Suitable for VS-22 ..... $139.
502CXX. Heavy Duty. Suitable for VS-33 ..... $209.
1102MXX. Extra Heavy Duty..... $305.
1103MXX..... $329.
1211 Mast Clamp for 103LBX..... $18.
1213 Mast Clamp for 502CXX. ..... $28.
1215 Mast Clamp for 1102-3MXX. ..... $45.
300 Mast Stay Bearing..... $30.
VCTF-7. 7 Core Cable. per Metre..... $1.15
VCTF-6. 6 Core Cable. per Metre..... $0.95.

ANTENNA COUPLERS.

HC-75. Tokyo Hy-Power Labs. Transmatch 75W PEP. ..... $72.
HC-250. Tokyo Hy-Power Labs. Transmatch 250W PEP. ..... $85.
HC-500. Tokyo Hy-Power Labs. Transmatch 500W PEP. inc. 160M..... $112.
HC-2500. Tokyo Hy-Power Labs. Transmatch 2.5Kw. PEP..... $199.
AT-200. Kenwood. 200 Watts ..... $174.
KW E-Zee Match. ..... $108.
FC-301. Yaesu. Inc. SWR and PWR Meters. ..... $220.

MORSE KEYS.

HK-707. On standard base with dust cover and knob..... $18.
HK-710. De Luxe heavy duty morse key..... $42.
TC-701. Practice keyer with built in Osc. ..... $18.
EKM-1A. Morse Practice Osc. ..... $14.

MISC.

SWR-200. Large dual meter SWR..... $70.
FS-600A. Peak Reading Wattmeter SWR Meter. .. $73.
ME-11X. Twin SWR-PWR Meter. 3.5-150Mhz. ... $18.
RS-101. Small single SWR Meter. ..... $9.75.
Western 5 Pos. Coax Switch..... $35.
Diawa 2 Pos. Coax Switch..... $21.
TWS-120. 2 Pos. Slide Coax Switch..... $15.
VS-1. Mini Mic. Compressor. ..... $22.50.
VS-BN. Ferrite Balun 2Kw. for Beams and Doblets.. $25.
TV-42. Drake 3 Section Low Pass Filter. 1.5Kw..... $25.
Multi-band dipole traps and centre insulator 80-10M..... $35.
Porcelain Egg Insulators. each ..... $0.50.
Wide Range of Coax Cable and Connectors in stock.

VALVES.

6JS6C ..... $10.50.
6KD6 ..... $12.50.
12GB7 ..... $9.50.
572B ..... $52.00.
6146B ..... $13.50.

Most YAESU Equipment Ex-Stock and on Display at all Times.

Pre-Sales checking is carried out on all equipment before despatch.

All equipment comes with proper English instruction manuals as supplied by factory, complete with 90 days warranty and spare parts back up.

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APPOINTED YAESU AND HIDAKA DISTRIBUTORS.
DIRECTOR: FRED SWART – VK3NBI

YAESU FT-7

NOW REDUCED TO ONLY
$525.

RECEIVER

Sensitivity:	0.3 μV for S/N 10 dB or better
Image Rejection:	Better than 50 dB
IF Rejection:	Better than 50 dB
Selectivity:	−6 dB: 2.4 kHz, −60 dB: 4.0 kHz
Audio Output:	3 Watts @ 10% THD

YD-148
Desk Mic.
$45.

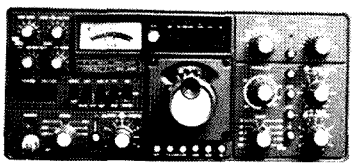
SPECIFICATIONS

GENERAL

Frequency Coverage:	80 m 3.5 - 4.0 MHz, 40 m 7.0 - 7.5 MHz, 20 m 14.0 - 14.5 MHz, 15 m 21.0 - 21.5 MHz, 10 m 28.5 - 29.0 MHz installed, any 500 kHz segment between 28.0 and 29.7 MHz available
Power Consumption:	13.5 VDC – 3 A transmit, 0.4 A receive.
Dimensions:	230(W) x 80(H) x 290(D) mm.
Weight:	Approx. 5 kg.

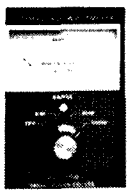
TRANSMITTER

Emission:	LSB, USB, CW
Input Power:	20 Watts DC
Carrier Suppression:	Better than 50 dB below rated output
Unwanted Sideband Suppression:	Better than 50 dB @ 1000 Hz
Spurious Emission:	Better than −40 dB
Distortion Products:	Better than −31 dB
Transmitter Frequency Response:	350 - 2700 Hz −6 dB
Frequency Stability:	Less than 300 Hz drift from a cold start; less than 100 Hz over a 30 minute period after warmup.



FT-901DM 160-10M
$1499.

YP-150



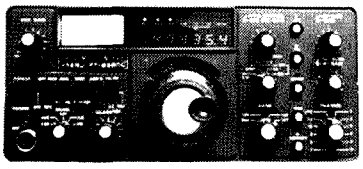
$108.

Dummy Load/Power Meter

Frequency Range: 1.8MHz – 200MHz
Impedance: 50 ohm unbalanced.
Power Scale: 0–6 watts, 0–30 watts, 0–150 watts.
VSWR: Less than 1.2 at 145MHz.
Maximum Error: Within 10% of maximum scale.
Size: 104(W) x 153(H) x 280(D) m/m.
Weight: 2 kg.

HC-500A **$112.**

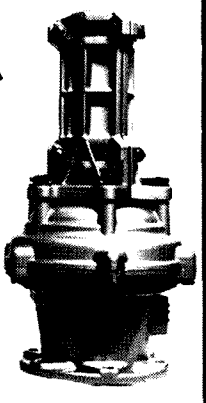
Antenna Coupler.
Extremely important, especially with modern all-solid state transceivers, is the maintenance of a very low SWR to avoid destruction of costly high-power P.A. transistors. An antenna coupler enables precise adjustment with almost any antenna.



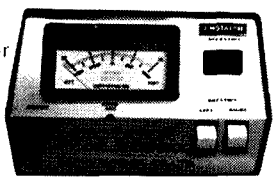
Yaesu FT-225R.Digital 2M.

Morse Keys.
$18.

EMOTATOR Rotators



103LBX Medium duty Rotator
502CXX Heavy duty Rotator
1102MXX Extra Heavy Duty Rotator
1215 Mast clamp for 1102MXX
1211 Mast clamp for 103LBX
1213 Mast clamp for 502CXX
300 Mast Bearing

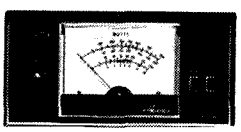


COUNTER-GENERATOR
$208

QTR-24
$32.

FT-227R FULLY SYNTHESIZED 2M FM TRANSCEIVER
$335.

SWR-200 Large dual meter.
Full 2KW rating. Individually calibrated to show power O/P. **$70.**



FS-600A **$73.**
Peak Reading Wattmeter SWR meter.

MOST EQUIPMENT IN STOCK AND ON DISPLAY.

CHIRNSIDE ELECTRONICS. 26 Edwards Road, Lilydale, 3140. Phone: (03) 726 7353.

SIDEBAND ELECTRONICS IMPORTS, P.O. BOX 23 SPRINGWOOD, N.S.W. 2777, WAREHOUSE 7b CHAPMAN PDE. FAULCONBRIDGE
TELEPHONE (047) 51-1394 after Hours (047) 54-1392

My $50,000.- order of HY-GAIN antennas, the first ocean-freight shipment to leave the factory since the new management re-activated the plant, should have arrived by now. Meanwhile, while it was still in doubt whether anyone would take over, I have managed to construct a satisfactory Chinaman's copy of the 204-BA entirely from locally available materials. I have also a design for a practical 40 Meter Yagi. Anybody interested can ask for details how to make a 204-BA for $125.-

This offer includes a Xerox copy of the 204-BA manual at cost for one dollar postpaid, copies of manuals of all other Hy-Gain antennas can also be made, may cost a dollar or so more for the 16 page ones.

As a further public service, copies of KENWOOD service bulletins can be supplied for a dollar each for the alignments etc. of the TS-820, TS-520/520S, TR-7400A, TS-700A and TS-520/820 30W power reduction conversions.
KEEP MY XEROX MACHINE BUSY!

A few more specials, No. 14 hard drawn copper antenna wire, new, 10c per Meter; One inch diam. foam insulation 50 Ohm coax cable, ideal for low-loss 430 MHz, $3.- per Meter, but collect only, it cannot be rolled in less than 1.5 Meter diameter!

HY-GAIN ANTENNAS:

18-AVT/WB 10-80M vertical 23' tall	$125.-
TH6-DXX 10-15-20M senior 6 el.Yagi 24' boom	$300.-
TH3-MK3 10-15-20M senior 3 el.Yagi 14' boom	$240.-
TH3-JR 10-15-20M junior 3 el.Yagi 12' boom	$175.-
204-BA 20M 4 el. Tiger Yagi 26' boom	$190.-
HY-QUAD 10-15-20M full size Cubical Quad	$260.-
11M 5 el.Yagi, reduce size slightly for 10M	$70.-
2M 5 el.Yagi with balun 7'3" boom	$25.-
2M 8 el.Yagi with balun 12'6" boom	$30.-
BN-86 balun, for beam buyers	$20.-

KENWOOD PRODUCTS:

TS-520S 10-160M SSB/CW transceiver 240V AC	$675.-
TS-820S 10-160M SSB/CW w/Digital readout	$1,050.-
DG-5 Digital display for the TS-520S	$175.-
TV-506 6M transverter	$200.-
TV-502 2M transverter	$235.-
AT-200 Antenna matchbox	$165.-
DS-1A DC-AC converter	$70.-
SK-520 adaptor for DG-5 to TS-520 use	$25.-
TS-700SP 2M all-mode transceiver	$750.-
LF-30A low pass anti-TVI filter	$30.-

All other KENWOOD accessories shortly available.

YAESU MUSEN PRODUCTS:

FT-101E 10-160M AC/DC w/speech processor	POA
FT-901D Deluxe AC/DC 10-160M digital transceiver	POA
FT-7 Mobile 10-80M 20W 12V DC transceiver	POA
FL-2100B 10-80M 1200W Linear amplifier	POA
FRG-7 .5-30 MHz General coverage receiver	POA

SPECIALS FOR NOVICE LICENSEES:

Transceivers for 10M coverage, AM/USB, 15W PEP

SIDEBAND SE-502 240V AC/12V DC 23 channels 28.300-28.600 MHz, SWR/RF meter	$150.-
UNIVERSE 224M 12V DC 24 ch. 28.480-28.595 MHz in 5MHz steps Clarifier operates on receive & transmit giving virtually continuous crystal controlled operation	$125.-
ATLAS 210X 10-80M Mobile trans. w/HD cable	$825.-
FDK MULTI QUARTZ-16 24 ch. 10W 12V DC 2M trans. w/xtals for repeaters 1-8 and ch. 40 & 50	$175.-
ICOM IC-202 2M SSB portable transceiver	$175.-
ASTRO 200 modified for latest circuitry including SWR/mismatch overload control	$750.-

COAX CONNECTORS:

PL-259's - all types - in-line splices - each	75c
SO-239 2 hole or single hole w/lock nut each	75c
Double male connectors	85c
3- & 4-pin mic sockets, 3- & 4-pin in-line plugs	85c
3 circuit microphone jack	85c
2'6" coloured leads w/crocodile clips - 5 for	$3.-

ACCESSORIES:

Ferris SWR/Field Strength meter	$15.-
SWR-50A 3.5-150MHz 1KW Twin SWR/Power meter	$22.-
Bumper mounts with 3/8" 24 thread ant. mount	$7.00
Gutter mounts with 3/8" 24 thread ant. mount	$4.50
5 metre lengths RG-58U w/PL-259 one end	$3.-
M-ring body mount	$3.-
GLP right angle RG-58U to SO-239 w/lock nut & weatherproof cap	$3.50
MLS right angle RG-58U to PL-259	.90c

ROTATORS:

KEN KR-400 Azimuth rotator w/28V AC control box	$100.-
KEN KR-500 Elevation rotator w/28V AC control box	$125.-

All prices quoted are net, ex Springwood NSW, cash with order, subject to change without prior notice. Be aware that the value of our dollar is going down all the time, except in exchange to the American dollar. Imports from Japan will continue to become dearer all the time, from 1/4/78 to 1/6/78 already close to 10%.
All risk insurance is free, freight by air, road, rail or post at cost, Comet/collect preferred. All orders cleared on a 24 hours basis after receipt with payment.

Arie Sles (VK2AVA) Proprietor
Roy Lopez (VK2BKL) Manager

MODIFYING CB TRANSCEIVERS ONTO THE NEW 23-CHANNEL SYSTEM ON 10 METRES FOR ONLY $24.00

Sam Voron VK2BVS
2 Griffith Avenue, East Roseville 2069

With the national adoption of a 23-channel system on the 10 metre band and the allocation of 28.1 to 28.6 MHz for novice amateur use, and with the cost of 23-channel AM transceivers dropping to $40 and 23-channel SSB sets reaching $130, many of our newly licensed amateurs are getting into amateur radio by modifying such inexpensive 11 metre gear onto 10 metres.

The versatility of many of these modified CB transceivers has contributed to the growing local usage of 10 metres in the areas of mobile, base, pedestrian hand-held and backpack radio operation on 28 MHz. This article describes how to modify a 23-channel Hygain V from 27 MHz to 28 MHz. This transceiver uses a circuit which is identical to the Midland 13-892, the Kraco 2355, the Kraco or Universe 2340, the Sideband Electronics SE502 and SE501. Just with 12 watts PEP and a ¼ wave ground plane antenna contacts with an amateur in New York city and another in West Berlin were made soon after modifying the transceiver onto 28 MHz.

Operating the unit in a shoulder carrying bag which also contained a small 5½ ampere hour sealed battery and a 4½ foot helical antenna, the author has had hours of fun, walking around the streets of Sydney, working the 10 metre DX around Australia, waving to the passing CBers and saying hello to a few police officers. Help publicize amateur radio by operating out in the community. This article will help you get a portable HF DX station going.

As from the 1st January 1978 only 18-channel CB transceivers are licenceable for the citizens radio service. 23-channel unit licences can be renewed if they were licensed prior to that date and are in the possession of the original licence. As a result, a large number of 23-channel transceivers which are excellent for modification onto 10 metres, are available very cheaply in the "Wanted to Sell" section of the daily newspapers and in CB magazines.

CB transceivers employ three types of frequency generation. (1) The old method of two crystals per channel (one for receiving and one for transmitting). (2) The recently popular method of frequency synthesising, for which much information currently exists for modifying such units onto 10 metres. (3) The increasingly popular phase-locked loop (PLL) system which offers exciting possibilities for 10 metre modification but for which currently I have not been able to obtain any details on modification of such systems onto 10m.

27 MHz transceivers using the frequency synthesised method of frequency generation can be modified onto the 23-channel system on 10 metres by locating the 10 synthesising crystals which are found in a bank of 4 and a bank of 6 crystals. A pair of crystals, one from each bank, is selected by the channel switch. This method allows generation of all 23 channels. Only one of these banks of 4 or 6 crystals need to be changed to modify such CB units onto 10 metres.

MODIFYING THE HYGAIN V ONTO 10 METRES

In the case of the Hygain V transceiver, the bank of 4 crystals in the 14 MHz range each have a series trimmer capacitor which would need to be readjusted if this bank were to be changed. It is therefore simpler to change the bank of six 23 MHz crystals. When changing the crystals in either bank for 10 metre use, this is easily calculated by adding 1.335 MHz to the existing crystal frequencies. This is obtained from the formula: Channel 1 on 10 metres (28.3 MHz) minus Channel 1 on 11 metres (26.965 MHz). The six new crystals required to cover the 23-channel 10 metre range for the Hygain V and similar transceivers are 24.665 MHz, 24.715 MHz, 24.765 MHz, 24.815 MHz, 24.865 MHz and 24.915 MHz.

All six crystals can be obtained for a total outlay of $24 (U.S.), ($4 per crystal, postage included) from Jan Crystals, 2400 Crystal Drive, Fort Myers, Florida, U.S.A. 33901. Simply state the make and model number of your transceiver and crystals will be made to the manufacturers own specifications, list the six crystals you require and specify these as "CB synthesised crystals" to obtain this special price. Delivery is by airmail within 3 weeks. Customs duty and sales tax may be payable in addition.

Remove the old 6 crystals and note which crystal went in which socket, then solder in the 6 new crystals.

TUNING THE RECEIVER FROM 11 TO 10 METRES FOR AM AND USB OPERATION

1. Set the signal generator onto channel 13 (28.450 MHz).
2. With the switch on USB and a heterodyne note beating with the signal generator tune —

L18 the front end input RF amplifier coil
L19 the input coil to the mixer
L20 the mixer output coil
L202 the 38 MHz amplifier input coil
L203,
L204 the 38 MHz amplifier output coils.

Tune all coils for maximum S meter readings.

3. Check that each channel is operative, if the highest channel is not oscillating or if two channels are receiving a common frequency (an interesting overtone problem) then the solution in both cases is to slightly turn L201, the main 24 MHz overtone oscillator output coil.

Both USB and AM receive should be fully operative on 10 metres. The S meter circuit appears to be frequency sensitive and reads lower on 28 MHz even though the receiver does not lack any sensitivity. Adjust the trimpot RV9 for reasonable relative S meter readings.

TUNING THE RECEIVER FROM 11 TO 10 METRES FOR LSB OPERATION

1. Set the signal generator onto channel 13 (28.450 MHz).
2. With the switch on LSB and a heterodyne note beating with the signal generator tune —

L15 the 16 MHz amplifier input coil.
L16,
L17 the 16 MHz amplifier output coils.

Tune all coils for maximum S meter readings.

THE 23 CHANNEL SYSTEM ON 10 METRES

Channel Number	MHz	Channel Number	MHz
1	28.300	13	28.450
2	28.310	14	28.460
3	28.320	15	28.470
4	28.340	16	28.490
5	28.350	17	28.500
6	28.360	18	28.510
7	28.370	19	28.520
8	28.390	20	28.540
9	28.400	21	28.550
10	28.410	22	28.560
11	28.420	22A	28.570
12	28.440	23	28.590

TUNING THE TRANSMITTER FROM 11 ONTO 10 METRES FOR USB AND AM OPERATION

1. Feed in the random noise from a 2 metre FM receiver or a constant tone through the microphone of the Hygain V.
2. Set the switch to USB and channel selector to 13 (28.450 MHz) and tune:

L2 the output from the 27 MHz mixer
L3 the input from the 27 MHz preamplifier
L4 the input to the driver
L5 the input to the RF power amplifier
L6,
L7 the output from the RF power amplifier.

Tune all coils for maximum power output into a dummy load.

Both USB and AM transmit should be fully operative on 10 metres. Alignment is best carried out on USB rather than AM to achieve the 12 watt PEP level on SSB. Trimpot RV8, the SSB microphone gain control, can be adjusted fully if desired. On AM trimpot RV7, the AM microphone gain control, can be somewhat increased with the effect of improving the AM transmit audio quality.

TRANSMIT LSB OPERATION

This should be fully operative on 10 metres, if not, then using the same procedure as above, tune L15, L16 and L17 for maximum power output on LSB.

MODIFYING CB UNITS ONTO 10 METRES

As well as being frequency synthesised systems, check that coils are easy to tune before specially obtaining a CB unit for modification. The Hygain V and similar units are very easy to tune, as all coils are freely adjustable.

A GUIDE TO MODIFYING SOME OF THE 23-CHANNEL FREQUENCY SYNTHESISED TRANSCEIVERS FOR OPERATION ON THE 10 METRE BAND

Compiled with the help of VK2BK, VK2BZJ, VK2NDS, VK2NDX, VK2NEV, VK2NEJ, VK3AIH and VK4NBL.

AM ONLY

Units employing the frequency synthesised generation method:
Seiki, Midland, Realistic, Panther, Cobra, Fairmate. Existing crystals: 37.6, 37.65, 37.7, 37.75, 37.8, 37.85 MHz.

AM AND SSB

Units employing the frequency synthesised generation method:

(674B) Hygain V, Hy Range V, SE502, Kraco 2340, 2355, Midland 13-892, SE501 (these units have proved especially popular on 10 metres). Existing crystals: 23.330, 23.380, 23.430, 23.480, 23.530, 23.580 MHz. Zodiac Torus, Panther-Pearce Simpson. Existing crystals: 11.805, 11.855, 11.955, 12.002, 12.055 MHz.

Midland 13-893 and 13-895. Existing crystals: 11.0035, 11.0135, 11.0235, 11.0435 MHz.

Tram XL5 and Belcom S-8655. Existing crystals: 7.4625, 7.4725, 7.4825, 7.5025 MHz.

UT122E, Gemtronics 2325 and 3325, Scooper 9000. Existing crystals: 11.000, 11.050, 11.100, 11.150, 11.200, 11.250 MHz.

The new crystals for these popular units are obtainable by adding 1.335 MHz to the existing crystals. The outline on how to modify the Hygain V should be a guide to modifying some of the above units. The above guide comprises only a small number of the frequency synthesised units which may be modified for 10 metres, following the basic ideas outlined.

ADDING AN ADDITIONAL CHANNEL

Most 23-channel selector switches are able to provide an additional channel on a blank position, usually between channels 22 and 23. When connected, the channel is known as channel 22A — 28.570 MHz. With three additional connections, this can easily be obtained on the Hygain V and similar units. VK3NAU shows how this can be done on his Midland 13-892 in fig. 1.

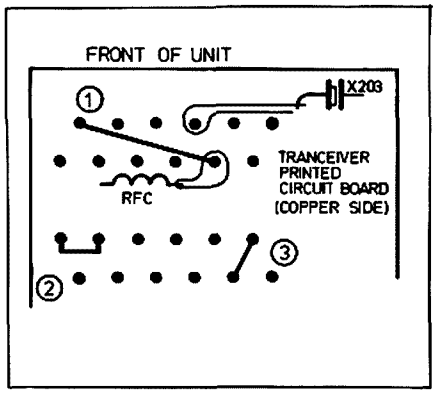


Fig. 1: Shows the three connections required between and within the six rows of crystal terminals on the copper side of the printed circuit board.

OPERATING ON 10 METRES

28.500 MHz is a popular listening channel in Sydney, Melbourne and Adelaide, with 28.550 MHz being monitored in Brisbane. Both these frequencies carry WIA broadcasts in various states. In Sydney 28.5 MHz is being used as an all mode calling channel. Contacts are established on USB, CW or AM and usually change to a lower channel to continue the contact. Worldwide DX communications is normally carried out in the channels from 28.5 to 28.590 MHz.

OPERATING HAND-HELD OR BACK PACK PEDESTRIAN

Many of the 1 watt and 5 watt hand-held AM units are easily modified onto 10 metres. Some hand-held units are frequency synthesised and can thus cover all 23 channels (e.g. Realistic TC101 5 watt, 23-channel, hand-held) other units use the two crystals per channel system and can be fitted with 28.3, 28.4 and 28.5 MHz crystals which are available. Using such a hand-held on 11m AM when that band was available, I was able to contact a station in Perth just by calling CQ. Such 2000 mile contacts on low power AM will often be easy to experience on 10 metres during summer and mid-winter sporadic E periods. Operating the Hygain V as an over the shoulder hand-held or as a back pack pedestrian, portable can be achieved by obtaining a 5½ ampere hour motor bike battery. These are light weight, only cost $14, and will supply power for a long period before recharging is necessary. A visit to a camping or disposals store should locate for you a small carrying pack to hold the rig, battery and an 11m helical which can be shortened for use on 10m. 5 foot helicals can be shortened to 4½ feet and mounted as high up in the carrying pack as possible. Some 7 feet of wire can be used as the ground plane. Connect one end to the earth connection on the helical antenna mount and make one loop around your tummy. Twist this loop some 6 times and tighten the loop around your waist. Let excess wire hang down by your side. To experiment with the SWR, change the position of the helical in the carrying pack and vary the number of twists on the loop. An SWR of under 1.5 to 1 should be obtainable after a bit of experimenting. Carry an SWR meter in the pack so that SWR can be monitored occasionally whilst operating. Using this kind of set up whilst walking up to my local hamburger shop with my 10 metre portable, I have been able to have some very good contacts into Tasmania, Queensland and South Australia. My aim is to work all Australian States while walking pedestrian hand-held back pack both on SSB and AM.

VFO FOR 10 METRES

Modified CB transceivers offer an opportunity for a whole range of experimentation in modifications and additions. VK3AIH has been successful in designing a VFO for the units similar to the Hygain V which he hopes to describe in AR soon. Work is also progressing on a 160 metre transverter which can take advantage of the portable and mobile nature of modified CB equipment. ■

QSP

CB TALK

The loop at the bottom of a CB antenna makes it a "Ringo".

SWR is important for CB but doesn't matter for FM.

UHF sets are no good mobile but have fantastic quality of speech on long contacts.

UHF is good and clear and will be good when the DX comes in.

From "The Lyrebird", No. 3 issue.

10m BEACON

Worldradio May 1978 includes a short article about a CW beacon on 28.888 MHz in North Hollywood, USA. Reception reports are requested to W6IRT, 7713 Wilkinson Avenue, North Hollywood, CA 91605, USA, as the licence for the beacon runs through to about November.

IARU R2 CONFERENCE

The IARU R2 triennial conference will be held in Panama from 3rd to 8th September, 1978. IARU R2 comprises the Americas, Hawaiian and near Islands and the Caribbean area. An invitation to attend the conference was extended to the Secretary-General of the ITU and he hopes to attend.

USA ISLANDS — PREFIX CHANGES

From 24th March, 1978, according to Ham Radio May 1978 the amateur call sign structure in the USA has been overhauled (amateurs moving from one call sign area in the US can retain their old call sign prefix) and this includes new prefixes as follows — KH1 Canton, KH2 Guam, KH3 Johnston, KH4 Midway, KH5K Kingman, KH5 Palmyra, KH6 Hawaii, KH7 Kure, KH8 Samao, KH9 Wake, KP1 Navassa, KP2 Virgin Islands, KP3 Serrana Bank, KP4 Puerto Rico. ■

DELAYED BRAKING ACTION FOR ROTATORS

Geoff Wilson VK3AMK
7 Norman Ave., Frankston 3199

In AR, May 1977, p. 18, in the "Commercial Kinks" section there was a very interesting circuit from P29KE showing how to modify the control unit of the Ham II rotator to delay application of the brake until the motor (and of course, the antenna) had stopped turning. As there was very little detail given at the time and this seems to be a very important subject, the following expands on the original article.

The Ham II control unit does not have separate brake and left turn/right turn controls but as supplied it is still very easy to operate these out of sequence when stopping the rotator and as a result damage can occur to either the rotator, tower or both. Most manuals supplied with large beams and rotators go to great lengths to stress the need to take precautions when a large beam is suddenly stopped. Although the speed of rotation may only be about one r.p.m., the momentum is quite large and for this reason it is desirable to let the motor slow right down before releasing the brake solenoid. The P29KE circuit does this by using a capacitor and relay with a time constant of about two seconds connected across the brake release switch. The capacitor is charged via diodes from the clockwise and counter clockwise control switches and discharges through the relay coil. When the relay coil discharges the capacitor, the relay contacts open and the brake is applied.

Having used a number of rotators with very long antennas the worth of the modifications was immediately apparent. After trying the circuit several points arose: (a) There is an error in the circuit as given, pin 1 as shown is actually pin 6, pin 1 is connected to earth; (b) Relays other than the type quoted may be used as long as the capacitor is altered in value to give a time constant of about one and a half to two seconds. I used a 7.6k ohm type with 100 uF across it but any combination that works will do, e.g. a 12 volt type may be used with series resistor etc.; (c) There was no provision for over-riding the delay circuit. This arises when turning the antenna into a strong wind and no delay is required as the antenna may then even be forced backwards by the wind. This was overcome by using a normally closed push button switch in the relay circuit. When an undeveloped stop is required the button is pressed; (d) Visual indication of brake release. Another minor modification, but well worth the effort, a LED, resistor and diode wired across pins 1 and 2 shows when power is applied to the brake release and the antenna is free to rotate. For these modifications refer to Figure 1.

Having tackled the Ham II control unit, I then tried similar techniques on another popular rotator, the Emotator Model 1100M. This was the earlier version, not the current series now being sold here. The existing circuit (as with the Ham II) was left intact and the circuit shown in Figure 2 added to produce the same effects as with the Ham II.

The only external changes to the control units were the addition in each case of a LED with mounting clip and a miniature push button switch. These were mounted as follows: Ham II — directly above each other over the words "Brake Release" on the front panel; Emotator — switch between "Left" switch and "On/Off" switch, LED between "On/Off" switch and "Right" switch. In each case sufficient space is available within the control unit for the additional components to be placed without crowding. The 56 ohm resistor shown in Figure 2 is essential, without this the "Left" and "Right" indicator lamps will flash brightly with switching surges and may even burn out. Note also the secondary voltages of the two transformers involved are 30 volts in the Ham II and 100 volts in the Emotator. Before cutting any holes in the panels firstly remove carefully the meter from each control unit and protect the transformers from flying steel chips which will result from any drilling. ■

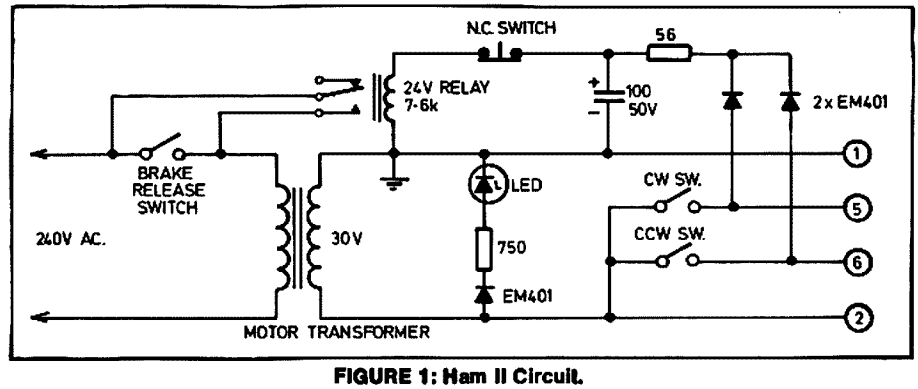


FIGURE 1: Ham II Circuit.

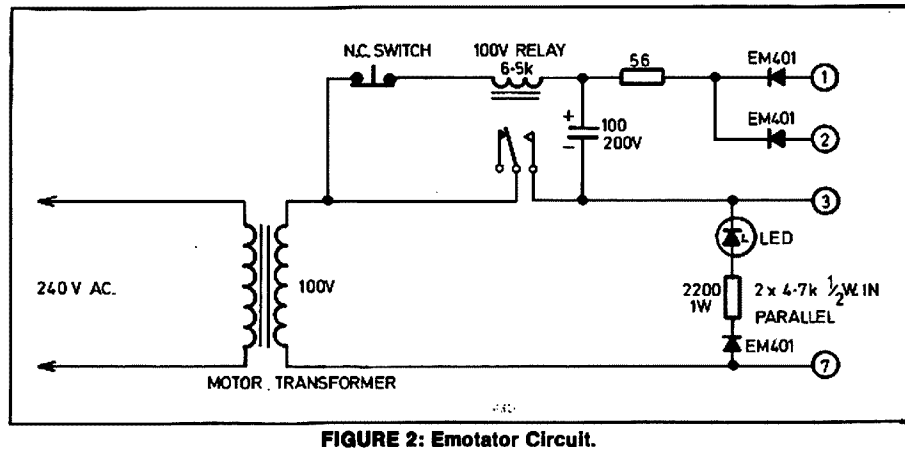


FIGURE 2: Emotator Circuit.

VIDEO GUNNPLEXER SYSTEM

Bob Cooper W5KHT

The fascination of amateur microwave application is unique. First of all, microwave systems have an exotic ring to them. Until the appearance of the Gunnplexer, getting into microwaves required either a six foot rack of surplus gear or a friend on the inside of a microwave hardware supply company. The Gunnplexer has changed all of that; you can hold the whole blamed thing in the palm of your hand and you don't need any friends in the microwave business. In fact it may be better if you don't have any prior microwave knowledge because the Gunnplexer pretty much throws away the book on standard microwave design practices!

An equal fascination is the wide band capability of the microwave region. The 10 GHz assignment, for example, has spectrum-space for 111 *simultaneous* video (4.5 MHz wide) channels. Try that even using SSTV in the 20 metre assignment.

Another fascination is the "security" of the spectrum. It is not likely that people will "stumble across" your signal at 10,250 MHz and that means you can do things there (legally of course!) which you would be ill-advised to attempt even at 440 MHz.

A fourth fascination is the challenge. For example, the Gunnplexer accessory horn antenna has a nominal gain of 17 dB. Unbolt the horn and replace it with a 2 foot surplus dish and you have just added another 16 dB of gain to your system. Put a two foot dish on *both* ends of the circuit and you have just added 32 dB of gain to the "system circuit". Do you know what 32 dB is? Run the 1 kW output of your rig down to 1.0 watt output. That's 30 dB.

Another way to look at the Gunnplexer system is to note that the nominal 20 milliwatt output power is around 17 dB below 1 watt. If the horn antenna has 17 dB of gain, the Gunnplexer has the rough equivalent of 1 watt into a 0 dB gain antenna. With that much established, if you run your 1 watt equivalent power into an antenna that has 16 dB of gain (a two foot dish at 10 GHz has "horn gain *plus* 16 dB" or approximately 32 dB), what you really have is the equivalent of your one watt two metre hand-held loading a 16 dB gain antenna. Not a bad system. It will certainly "talk" several miles, reliably.

The bottom line on microwave is simply that it will do much more communicating than you might first suspect; it is so wide band that you can shove video or data or lots of voice through it simultaneously, and thanks to the Gunnplexer, you can hold it in the palm of your hand.

Although I operate on 439.25 MHz with ATV system and therefore am not new to a reasonably state-of-the-art fast scan ATV, the thrill of ATV at 10 GHz is almost undescribable. First of all, with the system described here there is the "FM advantage"; which means that you have the extra system gain that FM modulation adds.

Next there are the really rock solid and noise free signals. With FM, while it is possible to have signals with some hint of noise (or snow in video) on them, between the point where there is sufficient signal voltage to drive the system into limiting, and the point where you have no signal at all, there is typically a fairly narrow "dB" range. In the real world you typically have lots of signal or no signal at all.

THE MARK II SYSTEM

The system described here is a Mark II version of the first attempt at getting video through the Gunnplexers. The first system proved it could be done, for very little cost, but the range left a great deal to be desired.

To get good range you need a high gain, low noise IF and considerable stability. The first W5KHT package selected a rather high IF of approximately 260 MHz where a pair of 180-degree-out-of-phase coaxial lines (¼ wave and ¾ wave) were utilized for the discriminator. The system worked but suffered from a very high noise figure; created by a CATV type hybrid chip amp selected for the IF amplifier. So back to the drawing boards.

The system shown here uses a 41.25-45.75 MHz IF. The reasons are simple enough; this is in the TV receiver IF range and circuits as well as relatively low cost components are readily available. Plus, by selecting an IF in this relatively low VHF range it is possible, using the J310 FET, to realise IF system noise figures in the under 3 dB region.

The transmitter modulator is about as simple as it is possible to conceive. The 1 volt peak to peak video signal is applied directly to the +1/+20 volt port on the Gunnplexer. A 500 ohm pot allows you to vary the modulating video signal voltage to prevent saturation. A 10K pot in the +8 volt Gunnplexer supply line allows you to walk the transmit frequency into the IF of the receiver. Ideally the walking should be on the receive end but that presents a new set of problems.

For those concerned about frequency stability, it has been our experience to date that for casual use you should not worry too much. At least not so much that it keeps you from getting on the air. The wideband video signal can move around quite a bit and still stay within the passband of the receiver. Remember that the stability is on the order of 350 kHz per degree C change; that if both units are in the same type of environment (i.e. both outdoors) then what affects one will affect the other as well. A pair have been run continuously for as long as 72 hours without touching the frequency walk control on the transmitter. For a sophisticated system that will run full time with 100 per cent reliability, some form of AFC is mandatory of course.

The simple modulator has been tested with various types of video sources for resolution and linearity. A 250-350 line camera will look as good through the system shown as it will directly through a local video loop system. There is some *measurable* phase change on a 4.2 MHz wide commercial signal (around 15-20 degrees) but it is not obvious to the eye if you run a colour video signal (such as you might *borrow* out of a colour TV set or from a VCR/BTR video output) through the modulator, Gunnplexer system and demodulator back into a colour monitor. To operate the transmitter, simply follow normal Gunnplexer set up Instructions, conect a 1 volt peak to peak (max.) video signal to the input coax. connector and using the companion Gunnplexer receiver adjust the frequency control and the video level control (in that order) for best picture. If you happen to have a 4.5 MHz composite signal source handy (where the TV audio is modulating a 4.5 MHz oscillator that is mixed with the "raw" video signal) you can feed the composite (video plus audio) signal into the Gunnplexer as well. Keep the aural sub-carrier down

around 15 dB, however, to ensure that the audio doesn't cross hatch the video.

THE RECEIVER DEMOD

The receiver demodulator is more complex than the transmitter portion, but for anyone familiar with TV receivers *and* FM (receivers) it should present no special problems. Basically you have a 10K pot at the Gunnplexer to set the receive unit Gunn oscillator to the proper point to slot the IF output into the low noise, high gain video bandwidth IF strip. The well regulated supply shown is considered good engineering practice (on the transmitter as well) since stability of the LO is of some concern.

There are five stages of 41.25-45.75 MHz IF starting with the first J310 FET and running through an SD1006 and three 2N3563 stages. "Tip to tip" HP 2800 diodes form a limiter, followed by another pair in a wide band discriminator. The discriminator approach shown was selected because of the bandwidth involved; you don't want to frequency limit in the discriminator after going to this much trouble to get video through the package.

Following this are two stages of video amplification; another J310 and an output 2N3563 stage.

There are two warnings for the builder:

(1) Unless you have access to a sweep generator, with markers, there is almost no way to align the five stage high gain IF properly. When you get all done you will have in excess of 45 dB of IF gain here (48-52 typically) and it needs to be flat within 0.5 to 1.0 dB across the IF bandwidth. If you don't care about composite audio (4.5 MHz separated from the video) you could narrow the IF bandwith to around 3.0 to 3.2 MHz and pick up a few dB more gain. But don't try to run colour through a narrow bandwidth; it will smear and "ring" on you.

(2) Because of the relatively high gain and tight packaging, RF feedback *can* be a problem. The answer is good bypassing of power leads, always short RF leads, and don't mount the two boards (if that is the way you elect to go) so their RF parts face one another, i.e. put the copper of a board between the two open IF circuits.

Finally, note the two shields shown on the schematic. Don't neglect them.

Alignment follows TV IF textbook alignment procedures. When you have the gain in the right range and the bandpass between 3.0 MHz (for low resolution black and white cameras) to 4.5 MHz (+) (for colour or composite) the 500 ohm pot in the "aft" end of the discriminator circuit is adjusted for best drive level to the J310 video amplifier. You almost have to do this (once, then forget it) with the Gunnplexer video transmitter as a source, at close range (where the signal level/drive is high).

Just as you connected a video source (vidicon camera, test signal source such as a set of colour bars or a transparency via a flying spot scanner, out from a TV receiver detector, etc.) to the transmitter Gunnplexer, at the receiver you come out of the last video gain stage through the coaxial fitting to a video monitor. if you are passing composite video/audio, you will have to locate a second (4.5 MHz) discriminator here to recover audio as well. Or you could feed a TV channel "modulator" (RF signal source that will accept a composite input) to tune in your received signal on a standard TV receiver.

The 17 dB gain horn antennas are small, simple to use, and fun to play with. For *line of sight paths* of a few miles, they work just fine. The commercial people who insist on 99.97 per cent reliability *have* to see 40 dB signal excesses at the full limiting point or they are not happy. For amateur application, anything that is into limiting is adequate and should be noise free.

But for serious work you will want to graduate to surplus 2, 4, 6 or 8 foot dishes. Just remember how much more gain you get with a 2 foot dish (typically 16 dB more gain per antenna or 32 dB circuit gain) over the 17 dB gain horn antennas. By the time you get to 8 foot dishes on both ends you have picked up around another 8 dB circuit gain *per antenna* or 16 dB total path gain. That's a bunch.

But whereas the horn can be considerably off heading (the 3 dB beamwidth is broad enough that 10-15 degrees off doesn't make much difference) by the time you reach an 8 foot dish you are looking at 3 dB beamwidths on the nature of a degree or so. That makes finding the other guy a little tougher than with a horn. But the trade off is worth the effort if long hauls are your interest.

There are a few warnings concerning surplus dishes:

(1) The Gunnplexer has a "WR-90" flange (where the 17 dB horn bolts on). Common antenna feed fittings can be either WR-90 or WR-75 and they are not directly interchangeable.

(2) If the surplus dish you spot is not round, but elliptical and it has a shallow concave shape . . . it is not a parabolic at all. It is a passive reflector. They are cheap, *and useless* for direct illumination for our purposes.

Perhaps the best trade for (1) transportability, (2) gain, and (3) ease of handling are two foot dishes. With the exact equipment described in these application note sheets I cover a 20.3 mile path (line of sight of course) with full reliability. At the moment this circuit is being utilized to feed an alternate remote video/audio source back to the W5KHT shack where after demodulaton it is patched into the 439.25 MHz ATV rig. I wouldn't guarantee it would stay reliable In a heavy rainstorm but then I'm not Ma Bell either! ■

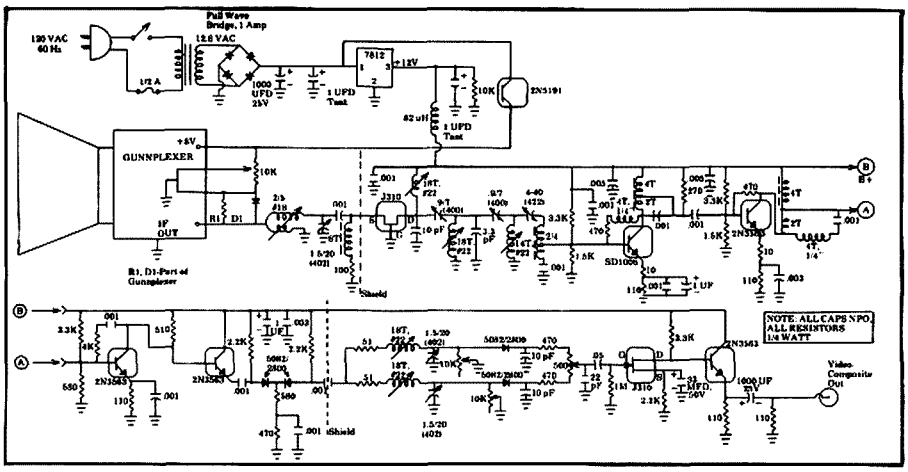


FIGURE 1: Video/Composite Demodulator.

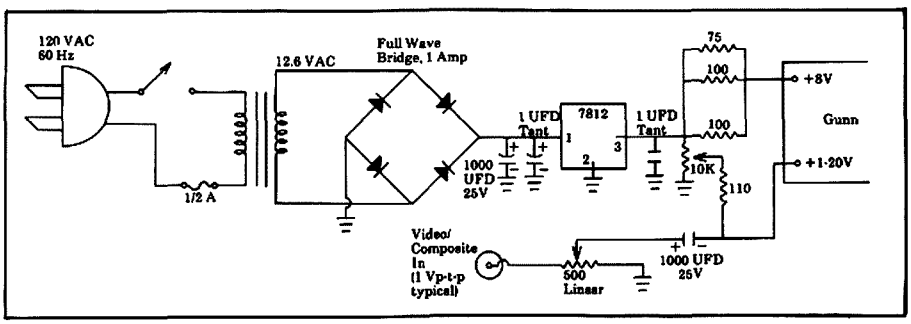


FIGURE 2: Composite Demodulator.

MIDLAND ZONE CONVENTION

Graeme Stevens VK3ZSQ
Publicity Officer Midland Zone WIA Vic. Div.

On Sunday, February 26th, over 120 amateurs, families, and enthusiasts attended the Midland Zone Division of the WIA's convention held at Strathfieldsaye.

The official dinner to be held on the Saturday night was cancelled when only three official registration slips were lodged by the due date. An "unofficial dinner" was held Saturday night when approximately 40 people turned up for the week-end.

On Sunday morning the trade displays totalling approximately $45,000 were set up.

Fred Bail, as usual, was there, with a magnificent display of Yaesu equipment and accessories. Vicom also had a wide display with a lot of interest shown in the Singer Test Piece valued at a mere $10,000; doubtless to say, everyone bought at least one. Sumner Electronics, agents for Bail, Vicom and Dick Smith, had something for everyone, including those hard-to-get 77 call books.

Local trade house Bruce Cutting Electronics put on a display of Akai home hi fi equipment and a very interesting VTR. This was borrowed by the Dick Smith display, who had a camera monitor set up taking film of all the displays for promotional purposes, or was it for VK2ZIP who, unfortunately, wasn't there.

Moving on to the contests themselves, everyone had a load of fun.

Allan VK3BAY won the 2m Scramble, supposedly on Ch. 40, but a few QSYd to 50. Ah well, everyone knew everyone after that, the whole idea of the game. Allan's prize was an aerial donated by Scalar.

Allan's YL, Bernie, a very nice and quiet person who had only used a microphone the day before, won the Unlicensed 2m Scramble. Well done, Bernie.

Frank VK2AKG from Sydney was awarded a prize for the longest distance travelled.

Rod VK3NCX and company won the 2m sniffer hunt and were awarded with a 2m power amplifier kit donated by Bendigo's Sumner Electronics. Now he's hoping Novices can come up on 2m along with many of the Z calls.

The XYLs came into their own next, with Joan, XYL of Graem VK3AGS, hitting the nail the most times, winning the nail driving competition.

Barrie VK3ACT was wandering around all day with a small trimmer and a paper clip type inductance soldered across it. Neville VK3ACN came out of the paintwork and was closest to guessing the resonant frequency at approximately 196 MHz. (I still reckon it was in the Gigs, but . . .)

Trevor VK3YJT found the hidden 2m Tx and collected a multimeter for his effort.

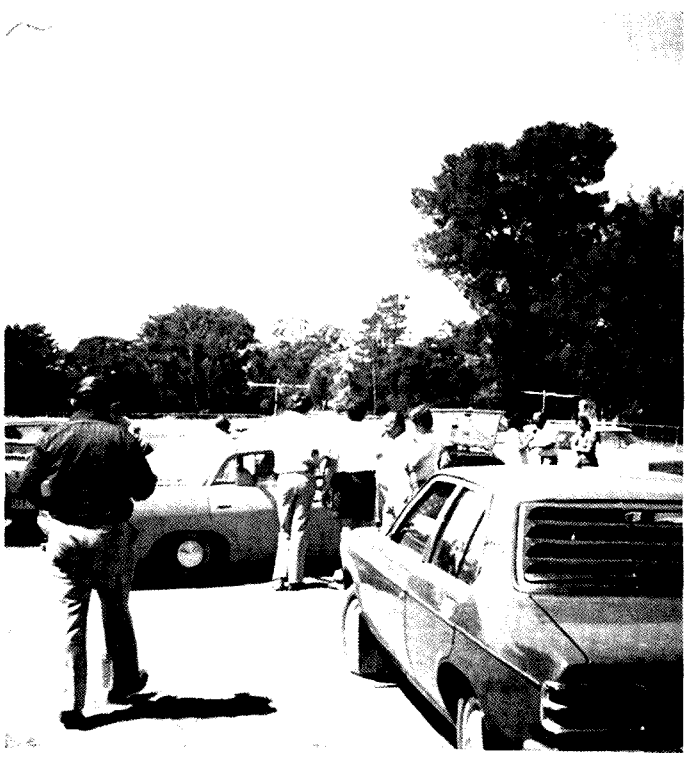
Allan VK3AER was awarded a capacitor and a rather large choke (20H) to help him overcome his 50 cycle type deviation. For guessing the inductance of this choke, VK3NAD was awarded a calculator donated by Bruce Cutting Electronics, Bendigo.

The hammer throwing (all 22s were hidden) for the YL and XYLs nearly came to a sticky end when I was taking a photo of the arm action of Joan (XYL VK3AGS) and the hammer was thrown at me. I'll forgive you. Raelene Lukies was the eventual winner and will be our entrant for the Olympics.

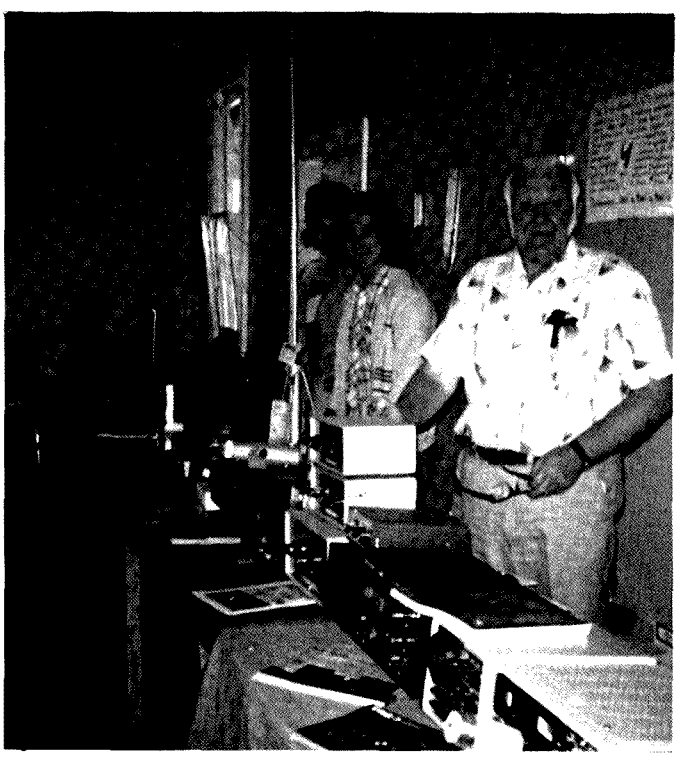
The 2m fox hunt was won by Trevor VK3YJT and was rewarded with a SWR meter donated by Sumner Electronics.

The 160m Mobile Rally was won by VK3CV and Fred Bail donated the prize of a SWR meter.

The Midland Zone would like to thank all those people who participated in the week-end, especially the business houses



Setting up for 2 Mx Sniffer Hunt



Bail Electronic Service with Fred and Assistants donated some Prizes

2 Mx Sniffer Hunt — VK3YJT with Hand-Held

Sumner Electronics Display — Donated some Prizes for Competitions

Bob VK3SD and Charlie VK3AUP and XYL's soaking up Sun, Dinner, and?

160 Mx Vertical and 3 el. 2 Mx Beam for talk in. Carol, XYL of VK3APB, unloading some of 800 Hamburgers consumed

who set up displays and donated prizes. A special mention for Bob VK3ZIM for the talk in, in which no one was lost, anyhow.

Daphne, XYL of VK3XO, was hard pressed taking the registration money and did a splendid job.

Carol, wife of Max VK3APB, the Club president, and the rest of the XYLs and YLs who supplied the cakes and the cuppas, and turned it on for everyone really made it a good week-end for those who attended.

Last but not least of all the Zone would like to thank Max VK3APB for all the work he did towards the running of the convention, storing the 400 odd hamburgers, etc., and attending to the BBQ, along with the secretary, Bill VK3FY.

MIDLAND ZONE WIA OFFICE-BEARERS

PRESIDENT: MAX VK3APB.

SECRETARY: BILL VK3FY.

TREASURER: BILL VK3XO.

MEETING PLACE: Club Rooms, Inglewood Street, Specimen Hill, Bendigo, 3rd Friday of the month.

ZONE REPEATER: Channel 4 VK3RAM, located Mt. Alexander.

ZONE NET: 2000 hrs. Mondays. Channel 4 Repeater.

ACTIVITIES: Lectures on AR every 2nd month. Possible AOCP and Novice courses. Tours of interest on AR are conducted also. ■

CAPE YORK SSTV DX-PEDITION

Stan Mudford VK3BHZ
Georges Creek Roadside, Tallangatta 3700

On 30th September, SWLs Reg, Les, Col, myself and son Steven set up camp on the Jardine River at Cape York, 600 miles north of Cairns. The three-day journey from Cairns had passed almost without incident despite the terrible pounding sustained by man and vehicle, the only mishap being the loss of the lid from the strawberry jam and the loss of refrigerant gas from the portable freezer, with the inevitable loss then of the rest of the meat supply. The purpose of the trip was to transmit the first ever SSTV video from the Cape.

During the setting up of our camp, we observed a thick pawl of smoke rising about 8 km to the south. Someone had been careless and started a bushfire. A decision was made to backburn the area on the southern side of the camp. This was achieved with help from a dozen or so other campers, and shortly afterwards the main fire reached the backburn area and subsided. Had we not taken this precaution, the fire would certainly have swept through the camp.

On Saturday morning a TH3JR triband beam with rotator was erected in a clearing some 30 metres from the operating tent. Reg and I then proceeded to string an 80m and 40m dipole between two trees. The wasps had other ideas but we eventually won.

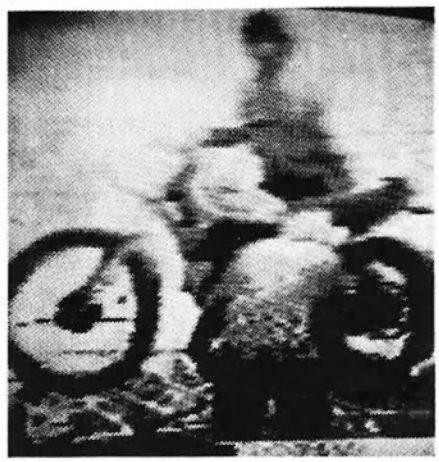
The equipment in the shack consisted of FT101, Robot 400 scanconverter, homebrew keyboard, fast scan camera, 14 in. fast scan monitor with outrigger for the polaroid camera, and a power distribution panel with voltmeter and frequency meter. The power source was a 2.5 kVA petrol driven alternator placed as far from the camp as the extension leads would permit.

Zero hour, the engine was fuelled and on the first pull kicked into life. A quick check revealed that all the gear was operational. At 1030 the words "CQ DE DXPEDITION CAPE YORK VK3BHZ" were typed up on the video keyboard and sent to air on 20 metres beaming south. The CQ was answered by John VK3LM in Melbourne who gave a 5 + 9 report. Video sequences showing our camp site and the Jardine River were received closed circuit by John. This contact was followed shortly afterwards with Mick VK6TV In Kellerberrin with good exchange of video.

During the two day expedition much interest was shown by the other campers, and at times the shack was full with visitors. Some of their XYLs agreed to sit in front of camera and have their picture recorded on cassette tape or transmitted to air. Video contacts were made with most VK States, ZL and JA.

The highlight being on the second day when I spoke to members of my family, who were on location at the VK3LM shack. We then posed in front of camera and were able to exchange good pictures of each other. Several polaroid pictures were made to record the occasion.

Technically, the expedition was a great success, with every piece of gear performing faultlessly (excepting the refrigerator). The low number of stations contacted was, however, disappointing. It was felt by the expedition members that the results achieved on the mission more than compensated for all the planning an deffort. My special thanks go to John VK3LM who publicised the event and assisted In so many other ways. ■



Off air photo of re-transmission by VK6TV of Yamaha motor cycle at Jardine River on 1.10.77.

Stan VK3BHZ on Closed Circuit on location

NOVICE NOTES

ETCHING CIRCUIT BOARDS

Roy Hartkopf VK3AOH
24 Toolangi Road, Alphington 3078

It is more than ten years since the writer first began etching circuit boards at home. It is amazing that many amateurs are still afraid to do their own and even more amazing that some leading radio books still publish misleading and even completely incorrect information. There are three basic ingredients for etching circuit boards successfully at home. First the correct materials. Second the correct method and then the correct finishing. We will deal with these in turn.

MATERIALS

The materials required are absurdly simple. Things like temperature controlled baths, mechanical agitators and the like may be all very well for laboratories — though unless you mass produce boards they are hardly necessary even there. But all that you will need at home can probably be found in the kitchen. One ordinary plastic bucket. A square plastic basin or baby bath large enough to stand the bucket in and finally some steel wool or an eraser (india rubber). The etching material is ferric chloride. In most cases you will be able to get a saturated solution of ferric chloride already made up. If not, then simply dissolve ferric chloride crystals in water until no more will dissolve and store it in a plastic polythene bottle.

The method of marking out the circuit board will not be mentioned here except to say that the writer has found that by far the best resistant material is what is called silk screen printers' ink. This is not really an ink, but a kind of flat paint which dissolves in turpentine and will wash off very cleanly and easily when the board is etched. It can be thinned down with turpentine — it is normally of a creamy consistency — until it flows without running and can be applied to the board with a draftsman's ruling pen. With this method lines from ⅛ inch down to less than 1/64 inch can be cleanly and easily drawn. The ink dries in a few minutes and if a mistake is made the ink can be scraped off the board with a sharp knife and no residue remains to prevent the copper being etched.

The ferric chloride is not deadly dangerous. You can pick out a board from the etch provided you wash your hands thoroughly immediately afterwards, but it should be treated with the greatest care just the same. If you are working near a stainless steel sink, remember it will etch and stain the steel. It will also cause your clothes to disintegrate in the same way that acid will. Treat it the way you would treat sulphuric acid — the acid used in automobile batteries.

METHOD

When the board is ready for etching, take the bottle of ferric chloride and carefully pour a small amount into the plastic bucket. I mean a small amount, just enough to cover the bottom of the bucket about ⅛ inch deep. Then half fill the plastic basin with hot water, the hotter the better, so long as it does not soften or melt the plastic bucket or the basin. Put the circuit board, copper side up, gently into the bucket in the etch. Don't drop it or you may get splashed. Then put a little hot water into the bucket so that the etch is diluted with about its own volume of water. Again the hotter the water, the better. If you wish you can add about a teaspoon full — a *plastic one* — of hydrochloric acid to the etch when you first put it in the bucket or alternatively after etching a couple of boards. It does help to keep the etch activated but the effect is not very great. Then letting the bucket rest, floating on the hot water in the basin, move it in such a way that the etch swirls round and washes over the circuit board which is lying copper side up in the bottom of the bucket. Use very much the same movement as you would when swirling the water round in a dish when panning for gold. There are two essentials for quick etching. The etch must be kept hot and it must move as quickly as possible over the surface of the copper. Using the method described you will begin to see the copper disappearing from the edges of the circuit board after a couple of minutes and after about five minutes or less the board will be completely etched. If you don't keep the etch swirling over the board it could take up to half an hour and you'll probably find the etch has soaked through the resist and the board is in a mess. But with the method described, you'll get a clean etch with even the finest lines with no undercutting and no marking of the remaining copper. A word of warning. Don't try to use Indian ink as a resist. It will probably wash off and ruin the board. Letraset can be used provided the copper surface is very clean and the Letraset is carefully burnished on. For large areas the copper can be covered with PVC adhesive tape.

If you follow the instructions about only using enough etch to just cover the board you will have no trouble in seeing when the board is etched. Take the bucket with the board in it outside and, lifting the board out, give it a good wash under the garden tap. Remove any PVC adhesive tape and rub both sides of the board to make sure all the etch is washed off. Then take the board and drop it into the plastic basin of hot water. Let it sit there for about five minutes while you put the bucket with the etch in some safe place where the baby and the cat can't get at it. There is no need to put the etch back into the bottle. If you cover the bucket with a piece of plywood or heavy cardboard and leave it in a safe place in the toolshed you can get it and use it any time. After it has been sitting in a fresh basin of hot water, the small amount of etch will soon get hot enough without having to add any more hot *water to the etch* itself. *The etch can* be used several times depending on the size of the boards and the amount of copper removed. A sign that the etch is becoming used up is that it will change from a brown to a green colour and the time for etching a board will increase. Used etch, by the way, makes a very good weed (and plant) killer.

FINISH

When you have taken the board out of the basin of hot water and dried it on a cloth, you can easily wash the silk screen ink off with a rag soaked in turpentine. Wipe it clean and dry and then give it a good rub over with steel wool or an eraser until the whole of the copper surface is shiny. Then *wipe it completely clean* with a lint free cloth and paint it immediately with a solution of resin dissolved in methylated spirits.

Resin is the stuff used in resin cored solder, for putting on the bow of a violin and by gymnasts to prevent their hands and shoes from slipping when they are doing acrobatics. You can get it from art and hardware stores and it is quite cheap. When the methylated spirits dries out (it is best to leave it overnight in a warm place) the board remains coated with a first class soldering flux and will never tarnish. Special preparations for coating circuit boards are available — some of them spray on — which will do the same job. They are equally effective but expensive.

And that is all there is to etching circuit boards. It is so quick, simple and inexpensive that once you have tried it, you will wonder why you did not do it years ago. ■

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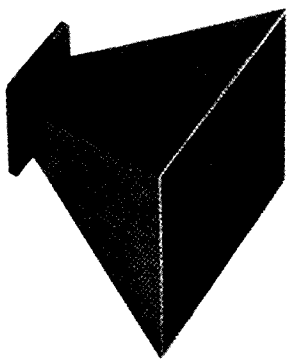

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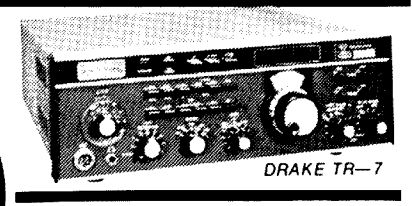

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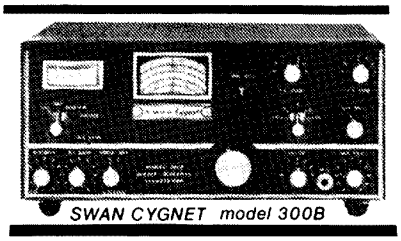

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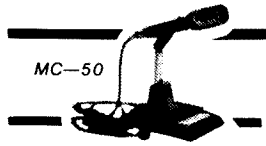

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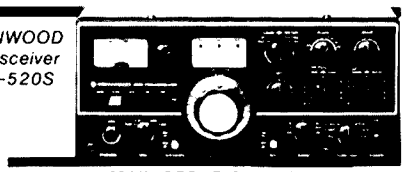

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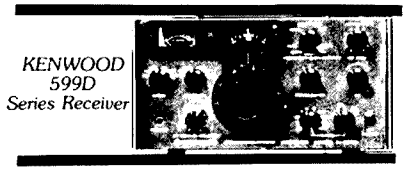

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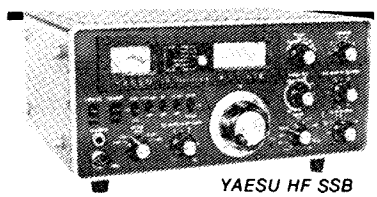

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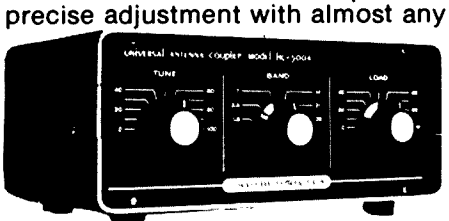

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TECHNICAL CORRESPONDENCE

LF COHERER RECEIVER

Dear Sir,

I was very interested in the picture of the receiver shown on page 13 of the AR for March 1978.

I had not seen this picture before, so decided to study it and analyse its set-up, to convince myself whether it is genuine or not.

I enclose a sketch with my identification of its components, suitably indicated.

From this I have deduced the circuit of the receiver as I see it.

The additional loading inductance may seem unnecessary, but it must be remembered that the aerial was to be used with a balloon or a kite, as high as possible, as Marconi had proved in his early experiments the higher the aerial the louder the signals.

It must also be remembered that Oliver Lodge and Alexander Muirhead in England, and Karl Ferdinand Braun, the inventor of the Cathode Ray Oscilloscope, in Germany, had all obtained patents before Marconi, in 1900, obtained his famous "Four Sevens Patent", so all were already using tuned circuits and loose coupling between the spark-gap circuit and the aerial circuit.

The installation of a receiving station at South Wellfleet, on Cape Cod, Mass., in the United States, was destroyed by a tremendous storm, so Marconi and his two assistants sailed to Newfoundland, where he improvised a receiving station on a plateau called Signal Hills, near St. Johns.

After two balloons had burst and one kite been blown away, the second kite took the aerial to a height of 130 metres.

To bring such a long wire into tune with the secondary circuit the approximate amount of inductance would be inserted in the aerial circuit and then resonance be obtained with the variable condenser.

Ambrose Fleming had been employed in developing the power supply and the transmitter at Poldhu, but it is doubtful if he had yet developed his Cymometer (wave meter), as there does not seem to be any record of the wavelength of the Poldhu signals. The power generator was designed to provide 10 kW output but my old friend Kemp, who was with Marconi at Signal Hill, told me it was probably overloaded to 12 kW and that was the chief reason that only dots were sent, as if long dashes were sent, the generator might burn out.

Although the actual wavelength employed may not be known, it must be taken that Marconi would have made certain that the closed circuit in the receiver would have been adjusted to that of the transmitter before it left Poldhu.

A very sensitive relay is shown in the picture to operate the morse inker (not shown), thus giving a permanent record of the received signals. However, it appears the signals received were not strong enough to operate the relay so the Branly coherer was replaced by an "Italian Navy Coherer". This consists of two plugs of iron or carbon separated by a gap of a few millimetres into which a drop of mercury was introduced. A small battery ("A" on the picture) was placed in series with this coherer and the relay and inker replaced by an ordinary telephone receiver.

Persons sceptical of the success of Marconi's tests were shortly afterwards convinced when, homeward bound, Marconi on the US liner Philadelphia received messages from Poldhu at nearly 3500 km distance, equivalent to the distance to Cape Cod.

It appears to me that the photo is either of the genuine receiver *used* or a *good* replica. I believe the former, as the absence of the morse inker, the presence of the telephone receiver and the single dry battery to operate the special coherer all add to enforce this belief.

Newton Wade VK4QW.

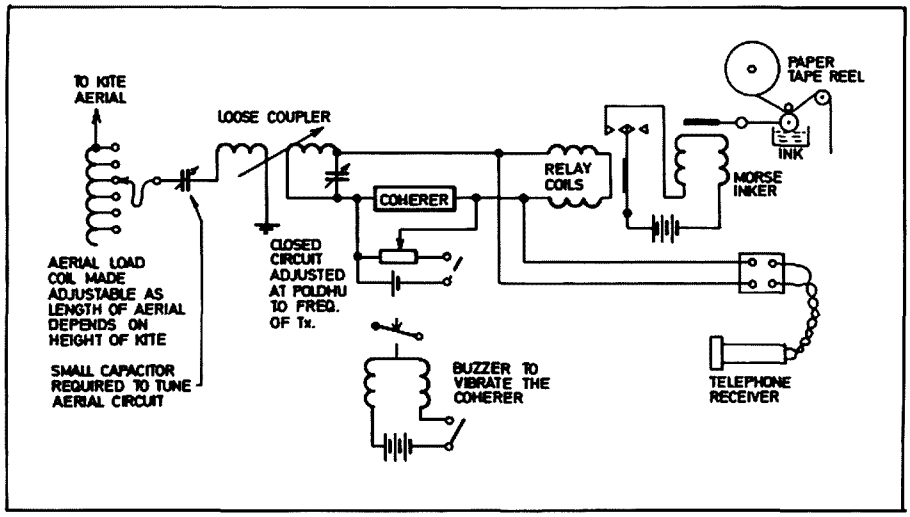

FIG. 1: Circuit of Marconi 1901 Receiver.

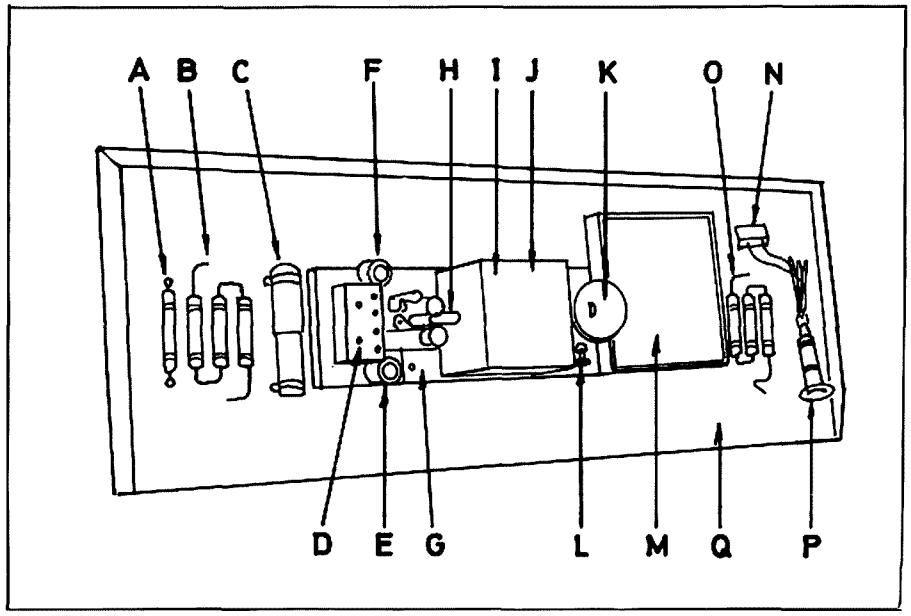

FIG. 2: Component Identification.

- A Single dry cell, for use with the Coherer.
- B Three dry cells in series to operate vibrator G.
- C Probably a variable capacitor using glass tubes.
- D Antenna loading inductance, with 6 tappings.
- E Antenna terminals.
- F Terminals to take the end of a tapping lead with clips to fit on to tappings of aerial inductance.
- G Buzzer vibrator to de-cohere the Coherer.
- H *Part of the Coherer.*
- I Screened box containing loose

coupler between the aerial circuit.
Note: The closed circuit will have been tuned to resonance with the Poldhu transmitter before leaving and this box protects it by "fiddlers" who cannot resist from being altered in transit or turning a knob if accessible.

J Probably a variable capacitor or inductance for the purpose of tuning the closed circuit.

K Sensitive polarized relay with adjusting screw L.

L To adjust the position and pressure of the relay contact.

M Empty tray — previously used for the "Morse Inker" worked by the relay contacts and battery O.

N Terminal block for telephone leads — connected across the relay coils. To be used if signals too weak to operate the relay.

O Three dry cells in series.

P Telephone receiver.

Q Table top — probably with folding legs or for use with trestles. ■

Dear Sir,

Subsequent to writing the article on phase modulation (AR June 1978) I have made several modifications to the circuits published to achieve improved performance.

These are as follows:

1. Fig. 2. Phase Modulator.
   (a) Replace the 100k ohm feedback resistors of IC1 and IC2 with 1M ohm resistors.
   (b) Change the 330 pF capacitor to a 33 pF capacitor.
   (c) Change a 0.0047 uF capacitor between VR1 and the microphone connector.
   (d) Change the 100k ohm resistor between IC1 and IC2 to 470k ohm and insert a 0.047 uF capacitor in series.
2. Fig. 4. Frequency Modulator Circuit.
   (a) Insert a 0.0047 uF capacitor between the microphone and the 250k ohm potentiometer.
   (b) Change the 100k ohm feedback resistors of IC1 and IC2 to 1M ohm resistors.
   (c) Change the 10k ohm resistor between IC1 and IC2 to a 270k ohm resistor.

Yours faithfully,

I. F. Berwick VK3ALZ. ■

428 Ligar Street,
Ballarat, Vic. 3350.
June 27, 1978.

The Editor,

Dear Sir,

In "Letters to the Editor" of June AR, reference was made by Bruce VK5OR to information missing from my article on 160m multiband antennas published in AR April 1978. The information Bruce requested is as follows:—

(1) The dimension missing from Fig. 1 is that for the 160m "tail". This dimension is approximately 40 feet or 12.4m. It was in the original MSS but did not appear on the diagram as published.

(2) Bruce draws attention to a point which I had overlooked completely: the reference points for the dimensions of the wire sections of the antennae in both Fig. 1 and Fig. 2 are not specified. I hasten to apologize for the omission but I fear that I am not now able to supply any exact information. The best I can do is to say that I measured the wire sections up to the ends of the traps, which were each about eight to nine inches in length. Again I stress that these dimensions are given purely as a guide and should not be regarded as a blueprint.

Yours faithfully,

Arthur Solomon VK3LJ. ■

AROUND THE TRADE

TRIO-KENWOOD COMMUNICATIONS COMES TO AUSTRALIA

Trio-Kenwood (Australia) Pty. Ltd. was established in August 1977 and commenced operations in October 1977 to distribute the Hi Fi products of its Parent Company, Trio Kenwood Corporation of Japan.

More recently Trio-Kenwood Communications (TKC) Division was registered as a subsidiary of Trio-Kenwood (Australia) Pty. Ltd. (TKA). Both are wholly owned by the Japanese manufacturer but managed and staffed by Australians with the aid of key personnel on loan from Japan, and on May 5th this new company launched into the Amateur Communications market with a dedicated objective of providing "Professional facilities to Amateur Radio Operators".

Administration and accounts will be through the main Australian Company (TKA) at 30 Whiting Street, Artarmon, NSW, but the Communications Company (TKC) has its own premises, including warehouse, showroom, offices, services department and spare parts store, across the street at 31 Whiting Street, Artarmon.

TKC is drawing on the world marketing and servicing expertise of its parent company and multi-national subsidiaries to establish stock, spare parts and servicing facilities which will adequately support the excellence of design and execution for which Kenwood Communications products are famous.

Any one of our staff members is waiting for the opportunity to prove that "Kenwood is the Pacesetter in Amateur Radio".

Just phone (02) 439 4322 — Heather will direct you to the right answer. ■

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REPORT *ALL* INTRUDERS TO THE INTRUDER WATCH CO-ORDINATOR IN YOUR STATE

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LARA

Ladies Amateur Radio Association

This month, apart from celebrating LARA's third birthday, at the end of July, we introduce another in the series of well-known YL operators, Clarice Adams VK3UE. Clarice formerly held the call VK3VB, which she obtained in 1948, but has changed her call to that of her husband, Stan, to carry on the daily "UE Net" after Stan's recent death. Until four years ago, Clarice and Stan had a Box Hill QTH, which must have been a busy place. Participants in the Jamboree of the Air will remember it, as will their many visitors, amateurs and others. Unlike Austine 3YL and Mavis 3KS, Clarice has not been active in the field of awards and competitions. She denies any proficiency in Morse other than as a means of impressing grandsons with one's own importance. An active career as an accountant, interrupted by arrivals such as two sons and a daughter, is now being followed by an equally active career as a grandmother and retired lady of leisure!

Clarice now lives in Eltham, next door to one of her sons, in a house surrounded by trees. As an amateur, of course, she lives on a hill with a spectacular view, and the house is easily identified by tower and aerials at one end.

During her life, Clarice has enjoyed radio a great deal. She points out that it is an ideal hobby for a house-bound young mother with toddlers, providing an accessible refuge from baby-talk.

Another rewarding facet of their hobby was the contact Clarice and Stan were able to maintain on 2 metres during Stan's long stay in the Austin Hospital. Yet another benefit comes with the host of radio friendships made over the years and visiting and being visited by these friends. Clarice points out that having been born in Mullimbimby and spent a hectic childhood travelling, she is immune to travel-itch and prefers to be visited rather than visit.

An amusing sideline to this history is that Clarice, who gained her AOCP by diligent study and memory work, starting as a complete novice, scored a higher mark in the exam than Stan — the family "technical expert" — an encouragement to all our novice YLs who are also starting at the beginning.

Good luck to all in the exams.

33s, Kate Duncan. ■

DIVISIONAL NOTES

VK2

TRIAL NOVICE EXAMINATION

It is the turn of the WIA (NSW) Education Service to conduct the next trial Novice Examination prior to the October, 1978, Official Tests by the Post and Telecommunications Department.

The date for the trial will be on Saturday, 16th September, 1978, starting at 2 p.m.

Course instructors and individual candidates are asked to indicate in writing their intentions to participate. Letters should be sent to:—

The Education Officer,
WIA (NSW) Education Officer,
P.O. Box 109, Toongabbie, NSW 2146.

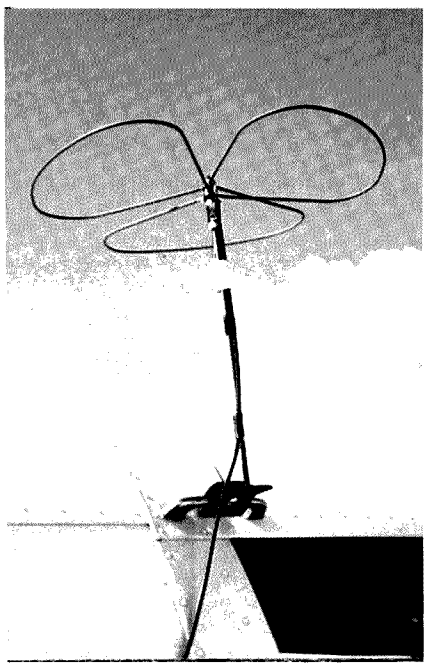
Clubs and courses are asked to support this trial novice effort, which will be the first WIA-conducted examination based on the new Novice Syllabus issued by the Department of Post and Telecommunications.

An examination fee of one dollar per candidate will be payable to meet the considerable costs of conducting this examination. Cheques, Money Orders and Postal Orders should be made out to "WIA (NSW) Education Service" — and not to any specific person. Full details of this operation will be sent in ample time to make adequate local arrangements. ■

ATV PICTURES FROM THE SKY

On Sunday, 11th June, listeners to the Wireless Institute morning broadcast in Melbourne were informed that they might expect to see fast scan ATV pictures emanating from a Piper Cherokee flying over Port Philip Bay. Indeed, reports of excellent strength pictures came pouring in from all over Melbourne. Aboard the plane, Alan VK3ZTV had his hands full manipulating the camera and handling reports coming in on the 2 metre ATV liaison channel Victor 1. He was aided by Graham, an observer, while Peter VK3YLK, whose camera and transmitter were used in the experiment, did an admirable job of piloting the aircraft.

Alan and Peter, both flyers, had thought of such a transmission many weeks before. It was envisaged that, as well as providing local viewers with interesting aerial shots, the experiment may also provide a method of transmitting ATV pictures on the 70 cm band over a great distance. Several problems had to be overcome. Firstly, how to provide a suitable power source in the aircraft to power simultaneously the camera, the 10 watt ATV transmitter and modulator, a 19 cm picture monitor, and the 2 metre transceiver. After land based experiments it was decided to run the 2 metre rig and the camera from the aircraft 12 volt supply, and the ATV transmitter, which draws 4 amps, from a car battery carried on board for the purpose. The camera and picture monitor, built for 240 volt operation, were modified for 12 volts.



The little "Big Wheel" Antenna used for ATV Transmission, mounted on the aircraft.

Next came the antenna. Since most ATV transmitters operate through high gain beams, it was thought that the low gain that would be afforded by an omni-directional antenna mounted on the plane might severely limit the signal available for ATV viewers. Some thought was given to a beam mounted on the aicraft but the idea was discarded as impractical. Alan suggested and built a "big wheel" (clover leaf) antenna which was to be mounted on top of the aircraft (actually clamped to the hand hold since it was not possible to drill or bolt any device on to the hired plane). A test transmission was made by Alan from a car atop Arthur's Seat at Dromana. Peter and Ken VK3NJ recorded the successful test transmission which was received at strength 2 in Springvale, nearly 40 miles away.

Final preparations were made on the morning of the flight and a zoom lens to replace Peter's fixed lens for his camera was hastily borrowed from Chic VK3YMA. Chic also organised some publicity for the event. Pictures were first transmitted at 1100 hours as the plane prepared to taxi on to the runway at Moorabbin. Ken, who recorded the event from his base station in Springvale, reported strength 2 pictures which quickly changed to strength 5 as the plane left the ground. Other ATV enthusiasts now realised that there were pictures on the air just before it was announced over the WI broadcast and other video recorders were switched on. Peter VK3BFG recorded some excellent pictures which he later re-broadcast.

It was unfortunate that several problems were evident. The major one was interference in the form of a venetian blind effect on the picture caused by the aircraft's alternator. Another was that the camera field rate, running without the aid of mains locking, was slightly off its normal 50 Hz rate which caused problems in some monitors and VTRs, and finally some RF feedback was evident at times. But notwithstanding, reports from the ground were excellent, most indicating reception of 4 to 5 strength pictures. Over 20 stations called the aircraft. Les VK3ZBJ went on the air for three minutes to provide pictures from the ground to the plane as it flew over his house in Frankston. Towards the end of the flight the plane's alternator was switched off, eliminating the horizontal band pattern which was somewhat spoiling the pictures. Peter landed the plane safely at 1205 and several ATVers found they could still receive pictures from the aircraft on the ground. In all, a very entertaining morning for Melbourne's ATVers and possibly a first of its kind in Australia.

A second aerial transmission on Sunday, 25th June, overcame the major problems

Alan VK3ZTV beside the gear used for the ATV Transmission.

of the first, however a new camera, this time with built-in electronic viewfinder proved to be susceptible to RF feedback due to the proximity of the antenna with the camera in the aircraft. ATVers gave good reports of the by now nicknamed "Flying Circus" as pictures were rediated from over Port Philip Bay near Mornington. Melbourne's ATV enthusiasts can look forward to future aeronautical mobile transmissions, as Peter and Alan have advised that the series is not yet over. ■

COMMERCIAL KINKS

RON FISHER
VK3OM

Tha new Kenwood TS-520 must be one of the most popular of the new transceivers. Mr. V. Kitney VK6VK is obviously an operator who takes advantage of many modes and has adapted his TS-520 to accommodate his special needs. I am sure that many readers will find them ot interest.

TS520S MODIFICATIONS

Having purchased a new transceiver, I found that some modifications would be necessary to make the unit compatible with my existing station layout. The following is a resume of the work undertaken.

MODIFICATIONS

1. To permit remote transmit-receive control.
2. To disconnect final filaments when transverter RF output is used.
3. To permit frequency shift keying of the VFO for RTTY operation.
4. To maintain receiver in USB mode while using CW mode for RTTY operation.
5. To change Xverter RF output to high impedance.

METHODS

1. Remote transmit-receive control is obtained by dressing a thin shielded lead from pin SS on VOX unit to pin 11 on the

Xverter multiway socket. Remote return to earth is via pin 9 on the Xverter multiway socket. Ground the shielded lead both at pin 9 and at the VOX board.

2. Remove the two filament wires from pin H on final unit board. Between the ground portion of the board and the freshly removed wires, use a .047 ceramic capacitor as a stand-off support. Obtain some lightweight twin flex wire and connect the pair one side to pin H and the other side to the "hot" side of the .047 capacitor. Carefully thread the twin flex along the loom towards the eight pin remote socket on the rear panel, and connect the ends to pins 2 and 7. It is now necessary to use an eight pin plug with a jumper lead wired between pins 2 and 7 to complete the filament circuit to the final for normal operation.

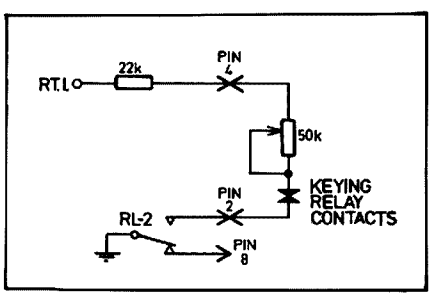


FIGURE 1

3. Frequency shift keying is achieved by connecting one end of a 22K resistor at pin RT 1 on the AVR board; the other end of the resistor has a thin wire threaded along an existing loom to the Xverter multiway socket pin 4. An external FSK control is made up using a small piece of veroboard glued to the multiway plug and mounting a 50K tab pot on the board to set the frequency shift. The return circuit for FSK is via pin 2 of the Xverter socket and the spare contact on RL 2. To gain access to RL 2 it is necessary to remove the exhaust fan from the rear panel. Carefully solder and sleeve the connection of a thin wire to the spare contact of the relay, and then thread the lead via an existing loom to pin 2 of the Xverter socket. FSK is prevented from affecting the received signal by the action of RL 2. (This is clarified by referring to diagram A.) Use the RIT function to offset the receiver during FSK reception.

4. For FSK reception refer to CAR unit. Remove the lead from pin CWR and reconnect to pin USB.

5. The Xverter RF output is changed to high impedance by removing the coaxial centre lead from the RCA socket. Connect a 10 pF creamic capacitor from pin 5 of the final tube socket to the centre pin of the RCA RF output socket.

CONCLUSION

The above modifications have permitted greater flexibility in the use of the TS502S in my situation. Perhaps these changes will give you some ideas to try.

THE KEN KP202

It's quite some time since we have discussed this little transceiver in Commercial Kinks. As I use my Ken mainly for monitoring the local repeaters on receive only, its low output on transmit did not become obvious until I was preparing the rig for an aeronautical expedition to the Northern Territory. The low output referred to is not low output from the transmitter, but the ability of the whip antenna to convert the transmitter output to useful RF. The problem seems to be that the whip or the short helical atenna has no ground plane to work against. Add a ground plane and the radiated RF increases by about 15 dB. Well of course it's just not convenient to attach a normal ground plane to a Ken, but it is easy to connect 48 cm (19 inches) of flexible wire to the earth side of the antenna connector. Just let this hang down and then note the improved reports. I have tried to reduce the length of this ground plane by introducing loading but so far without much success. However, this all explains why the ICOM IC-215 will outperform the Ken. The microphone lead on the 215 provides an excellent ground plane effect. Next month some modifications for the Yaesu FT-75. ■

20 YEARS AGO

Ron Fisher, VK3OM

AUGUST 1958

Justification was the theme of the Editorial page of the August 1958 Amateur Radio. Federal Executive questioned the old saying of "Use them or lose them". They point out that just because a band sounds dead at one particular location this does not indicate overall activity. Amateurs are using the bands all right, they said, and they will therefore be justified in expecting to maintain the bands they have after the next ITU Conference.

The CHL Modulation System. Don Haberecht VK2RS described a new form of carrier controlled screen grid modulation. Advantages claimed included simplicity of construction and setting up and more effective modulation. This was achieved by running the modulated stage to a higher than normal peak input. CHL modulation was not recommended for use on the HF bands as it could cause some splatter.

Remember the 288 MHz band? It was still with us in 1958, and J. Occolowitz VK3ZAI described a crystal controlled converter with 6 to 14 MHz output for use on that band. Four 6J6s were used.

Part six of Amateur Television by Eric Cornelius described the master monitor and its associated regulated power supply.

The overtone crystal oscillator was widely used in VHF gear during the fifties. Bob Winch VK2OA showed how they worked and how to get them working — not always an easy job.

An all band crystal converter with one crystal or 80 to 2 metres with an 8.8 MHz crystal and a receiver tuning range of 12 to 16 MHz. The author preferred to remain anonymous.

Meet the other amateur and his station featured Hans Ruckert VK2AOU. Hans was and still is well known for his antenna articles. All the gear was home built and, going on the list of achievements, worked as well as it looked. One full page was devoted to acknowledging donations to the ITU fund, with a total to date of over $2,000. ■

REPEATERS

MT. GINIMI REPEATER 7

As most amateurs will probably now be aware, the VK1RGI channel 7 repeater installation on Mt. Ginini was broken into some time early Saturday morning, 1st April, and the repeater stolen. The thieves stole the entire kit, including the duplexer assembly, and left only the antenna system intact. To gain access to the repeater itself, the thieves cut through a chain securing the compound gate and then cut a hole in the side of the building housing the repeater, thereby thwarting the existing alarm facilities. It was a very neat, professional job and care was taken to ensure that the repeater was removed as a unit — only two hardwired cables were cut in the removal operation. Co-sited University electronic equipment was not touched, which strongly suggests that the unit was not merely taken for stripping into parts. It would also appear that spite or malice was not the motive, as a much more dramatic demonstration of this would have been the unit's destruction in situ. In fact we can think of no rational reason for this theft. If the intention of the thieves was to re-use the repeater (suggested by its careful removal), whether on an illegal or legal basis, the number of scanning receivers around the place, and together with the amount of publicity this theft has and will continue to receive, then its operation must surely be detected in time. Additionally, the skill and sophisticated test equipment required to change the repeater's operating frequency would defeat all but a very few highly qualified people who may want to change its channelling. Maybe the problem is that we are looking for some sort of rational reason for this theft and are ignoring the fact that it could be some twisted person's idea of an April Fool's Day "joke". The police are continuing their investigations and any information, even rumours, regarding the theft should be passed on to them via Eric VK1EP, who is maintaining liaison with them.

Well, whatever the reason for the theft, we are now down one repeater. At the committee meeting held on April 3rd, it was decided that as a matter of priority another repeater be installed at the same site, this time with additional security measures. An appeal was also launched to cover the costs associated with the new repeater construction and genuine volunteers to help in the construction work have been called for Peter Smith VK1DS, the "father" of VK1RGI, selflessly insisted on designing and building a replacement rather than buying commercial gear. The VK1 Division already owes Peter an immeasurable debt thanks for his three and more years spent designing and constructing both (VK1RAC, VK1RGI), and we should all show our appreciation firstly in cold hard cash terms for the duplexer assembly and, secondly, by spreading the workload over more people — just because you don't have fancy qualifications doesn't mean you can't help — your contribution in hauling materials up to the site, etc., is just as important in getting the new repeater installed as wiring up the various boards. Please contact Peter if you can help in ANY way — but please be prepared to honour your commitments when the time comes.

From "Forward Bias". ■

TRADE HAMADS

For a very long time commercial advertising has not been accepted in AR Hamads, but as the result of discussions at the 1978 Federal Convention a decision was made to open up a "Hamads-Trade" section. The rate will be $10 for 4 lines plus $2 per line (or part thereof), minimum charge $10, prepayable. Copy is required by the first day of the month preceding publication. This will mean that in future 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 re-sold for merchandising purposes. ■

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Simply connect direct to your 2 metre rig, 12 volt supply, fit 70 cm antenna for instant SSB, FM, AM, CW operation, coverage 432-434/434-436 in two ranges.

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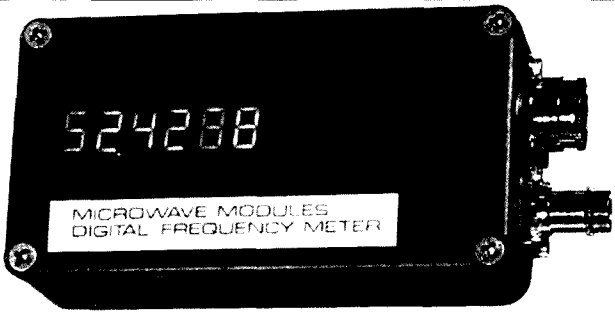
MODEL MMT432/144S Price $295

TRANSVERTER MODEL MMT 432/28S Features extended coverage for Oscar 8

Second Crystal Oscillator gives two ranges: Low 432 – 434 MHz – High 434 – 436 MHz. Programming available to either Transmit/Receive both Low, both High, or a mixture of the two. Adjustable Drive Level is now provided by an input potentiometer. Optional RF VOX. Power Output 10 watts minimum * 28 MHz IF * Drive 1 mW to 500 mW * Aerial Changeover by PIN diode switch * Modern Microstrip Techniques * Power requirements 12 volt nominal at 150 mA 2.5 amp. peak * Case size 187 x 120 x 53 cm * Spare 432 input socket.

MODEL MMT 432/28S Price: $245 **MODEL MMT 144/28 Price: $185**



500 MHz COUNTER Model MMD050/500

SPECIFICATION:

Digit Height	10 mm
Display Width	45 mm
Case Size	111 x 60 x 27 mm
Frequency Ranges	0.45 - 50 MHz, 50 - 500 MHz Better than 50 mV RMS over 0.45 - 50 MHz. Better than 200 mV RMS over 50 - 500 MHz
Input Connector	50 ohm BNC
Input Impedence	200 ohm approximately
Power Connector	5 pin 270 deg. locking DIN socket (supplied with plug).
Power Requirements	11 - 15 volts DC at 300 mA approximately

Model MMD050/500 – 500 MHz Counter. $175

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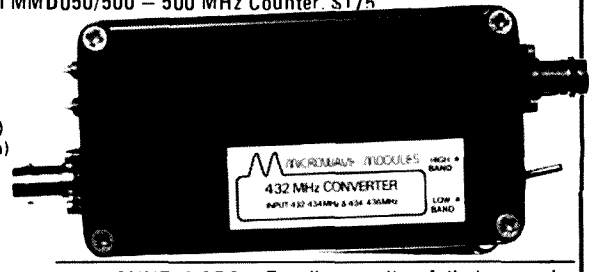
SPECIFICATIONS:

Input frequency ranges:	432-434 MHz (low) 434-436 MHz (high)
I.F. output frequency:	28-30 MHz or 144.146 MHz
Typical gain:	30dB
Noise figure:	3dB Maximum
D.C. Power requirements:	11-13.8 volts 12.5V nominal
Current consumption:	50 mA Maximum



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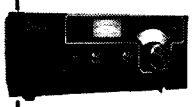

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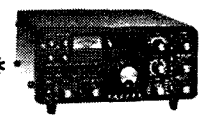

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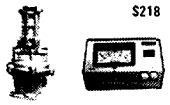

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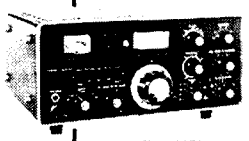

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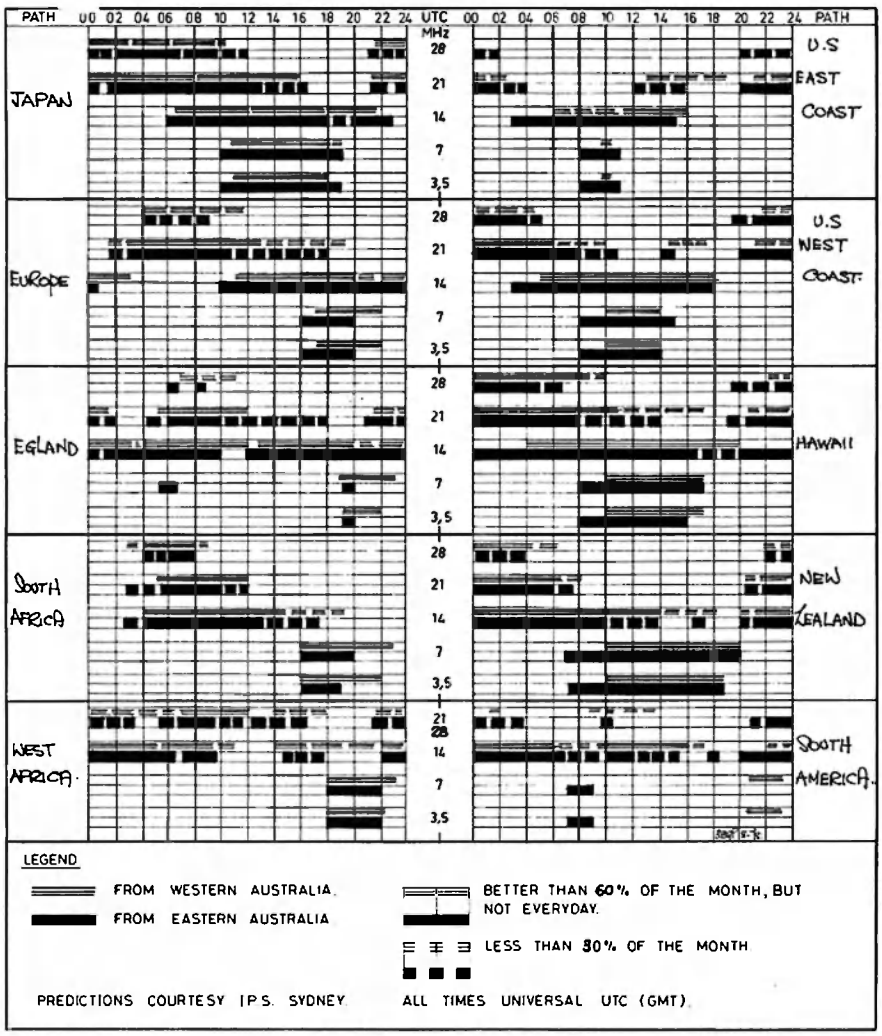
IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



QSP

AR ADDRESS LABELS

Your AR address label can convey much information to you. If any of it is incorrect write in at once to have it corrected, preferably write to the Executive office for changes in name, address and call sign and to your Division for other changes.

Firstly, are your name, initials, title, address, post code and call sign correct? If there is an error write in at once to have it corrected. If your letter reaches the Executive office before the middle of the month the correction will appear in next month's AR label. If, as often occurs, your letter is received later than mid-month, you will have to wait for one further month's AR label for the correction. The computer input goes in once a month shortly after mid-month.

Secondly, the coding which forms the fourth line of the label details. The first character is alphabetical to signify your grade. The various grades and subscriptions applicable to those grades usually appear in AR for December or January each year. The second character is a digit indicating the Division to which you belong, e.g., "4" represents VK4, etc. The next two are 00 digits indicating your subscription is due in December/January. The next is a single digit, being a distribution code for mailing purposes. The figure "1" is for continental Australia designated by post codes, the figure "2" for New Zealand mailings, the figure "6" for overseas air mail, etc. The postal regulations for Category "B" publications require that each AR for a particular post code must be mailed in one lot with all the other articles in that post code, and further, that certain groups of post code articles must be bundled together at the time of posting. The final two digits preceding the call sign are zone identification digits which, at present, will only come into use for Tasmanian addresses.

The call sign on your address label is the one which will go into the next call book. If you hold two call signs please send in the details if you have not already done so.

PENSIONERS

Members are reminded that only the Division can decide who of its members may or may not qualify for the lower concessional pensioner rate. Do not wait until you receive a subscription notice before deciding to claim a pensioner rate. Do it well in advance because you must allow time for various delays. It is better to do it now rather than have your AR cut off because of being unfinancial. Remember, if you wish to apply for pensioner grading do it now and send copies of your papers direct to your Division. ■

PROGRAMMES SPECIFICALLY FOR OXERS AND KEEN SHORTWAVE LISTENERS

SPAIN:
"DX Programme", Saturdays 2220-2225.

WEST GERMANY:
"DXer s desk", Saturdays 1730 GMT. Other DX programmes are transmitted by the "Voice of Germany".

JAPAN:
"Tokyo Calling" (DX news and programme guide), Sundays 10000.

ECUADOR:
"DX Partyline" with Helen and Clayton Howard, Mondays, Thursdays and Saturdays at 0900. A different half hour each day!

NEW ZEALAND:
"Arthur Cushen's DX World", on the First Sunday of each month at 1015 GMT; "Mailbox" on the 3rd Sunday of each month also at 1015 GMT (during the day-light saving months, these programmes are transmitted one hour earlier — 0915 GMT).

BRITAIN:
"World Radio Club", Wednesdays at 0815, 1330 and 2315, and on Fridays at 2100 (Saturday morning in Australia).

HOLLAND:
"DX Jukebox", Thursdays approx. 15 minutes after the start of each broadcast. It's a weekly session for shortwave listners and DXers the world over. First Thursdays: SW propagation predictions by Maarten van Delft and Arthur Cushen's Pacific Report. Other Thursdays: regional DX reports from Jan Tuner (Sweden); Glenn Hauser (USA); and Victor Goonetilleke (Sri Lanka). Also technical mailbag in each programme. Ask for the free DX Information Service Catalogue. Technical information by Wim van Amstel. Produced and presented by Dick Speekman. The address: "DX Jukebox", Radio Nederlands, PO Box 222, Hilversum, Holland.

SOUTH AFRICA:
"DX Corner" with Gerry Wood; Wednesdays and Saturdays during the last half-hour of the transmission.

SWEDEN:
"Sweden Calling DXers", the 30-year old programme from Stockholm is a must for the active DXer. Each Tuesday, 15 minutes is devoted to the programme. Also host George Wood will be presenting "Shortwave Corner", every Thursday during June, July and August, featuring different facets of radio, especially in Sweden.

AUSTRALIA:
"Club Forum" is the DXers programme on our own international service. Each Saturday the programme is repeated several times at 0240, 0840 and 1440. The programme is aired at 8 am Melbourne time on 6150 (7.30 am in South Australia). Also featured on the programme are the latest tips in the "DXers Calling" segment.

AUSTRIA:
"Austrian Shortwave Panorama" is aired each Sunday at 0300 and 0915.

SWITZERLAND:
"Swiss Shortwave Merry-go-round" is aired on Saturdays but only on the Second and Fourth Saturdays. Bob Thomann and Bob Zanotti will keep you up-to-date on international radio around the world. Why not ask a technical question?

CANADA:
"DX Digest" with host Ian McFarlane host the programme transmitted on Sundays.

Check the World Radio and TV Handbook for further information.

Information from "DX Post", June 1978, the publication of the Southern Cross DX Club. ■

CONTESTS

VK/ZL/OCEANIA DX CONTEST 1978 — RULES

NZART and WIA, the national amateur radio associations in New Zealand and Australia, invite worldwide participation in this year's VK/ZL/Oceania DX Contest.

WHEN?

Phone — 24 hours from 1000 GMT, Saturday, 7 October to 1000 GMT, Sunday, 8 October.

RTTY — Same times as for phone.

CW — 24 hours from 1000 GMT, Saturday, 14 October to 1000 GMT, Sunday, 15 October.

RULES

1. There shall be five main sections in the contest —

(a) Transmitting Phone, Open.

(b) Transmitting CW, Open.

(c) Receiving — "Phone & CW" combined. For VK and ZL only — QRP Sections, 5 watts Argonaut rating.

(d) Transmitting Phone — QRP.

(e) Transmitting CW — QRP.

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 section must submit separate logs.

5. Only one contact on CW and one contact on phone per band is permitted with any one statalon for scoring purposes.

6. Only one licensed amateur is permitted to operate any one station under the owner's 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 licences.

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, e.g. if the number chosen for the first contact is 021, then the second must be 022 followed by 023, 024, etc. After reaching 999, restart from 001.

9. SCORING: (a) For Oceania stations other than VK/ZL — 2 points for each contact on a specific band with VK/ZL stations and 1 point for each contact on a specific band with the rest of the world.

(b) For the rest of the world other than VK/ZL — 2 points for each contact on a specific band with VK/ZL stations and 1 point 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 points, 10m — 3 points, 40m — 4 points, 80m — 5 points, 160m — 5 points. Score for EACH BAND will be the total points score for that band multiplied by the total prefixes worked. 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 five 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 five 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 his 160 metre section.

10. LOGS:

(a) Overseas Stations: (a) Logs to show in this order — date, time in GMT, callsign of station contacted, band, serial number sent, serial number received. UNDERLINE each new VK/ZL 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 call areas worked on that band. "SINGLE BAND" score will be QSO points for that band multiplied by total VK/ZL call areas worked on that band. "ALL BAND" score will be total QSO points for all bands multiplied by total VK/ZL call areas worked on all bands.

(b) VK/ZL STATIONS: (a) Logs must show in this order — date, time in GMT, 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 scorers 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 in ZL.

QRP SECTION —

(a) Top three scorers in VK and in ZL.

(b) Others depending on activity.

14. ENTRIES FROM VK/ZL STATIONS should be posted direct to —

NZART Contest Manager ZL2GX,
152 Lytton Road,
Gisborne, New Zealand.

To arrive before 31 December, 1979.

ENTRIES FROM OVERSEAS STATIONS — posted to the above address or the Headquarters, Box 1459, Christchurch to arrive not later than 31 January, 1979.

SWL SECTION

1. The rules are similar to the transmitting section but it is open to all members of any SWL 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 GMT, 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.

RTTY SECTION RULES

WHEN

7th to the 8th October. (The same week-end as the VK/ZL Phone section of the contest.)

TIME

10.00 GMT Saturday to 10.00 GMT Sunday.

BANDS

All amateur bands 3.5 MHz to 28 MHz.

CLASSES

Single operator, multi operator, SWL operator. Logs of multi operator stations must be signed by all the operators, together with their call signs. Logs of SWLs must contain both number sent and the number received by the station logged. Incomplete loggings are not eligible for scoring.

NUMBER EXCHANGE

Number will consist of RST, Zone Number and time in GMT.

SCORING

As per CARTG Zone Chart, multiplied by the number of countries worked, multiplied by the number of continents worked (maximum six). World stations add 100 points for each VK and ZL station worked after the above calculations.

Example: 720 points from zone chart x countries worked x 5 continents worked, equals 90,000 points, plus six (6) VK/ZL stations worked (that is 600 points), giving a total of 90,600 points. A station may be worked only once on each band, but may be worked on another band for further multipliers.

COUNTRIES

Country count as per ARRL list of countries, plus each VK/ZL, JA, and W/K districts counting separate countries. Contact with one's own country count zero points for multipliers.

LOGS

Logs must show in this order: Date, Time (in GMT), Call Sign of station worked, Serial number received, Serial number sent and points claimed.

CLOSING DATE

Logs must be received by the contest committee by the 1st January 1979. The address for the RTTY Section of the VK/ZL/OCEANIA DX Contest is S. E. Molen, 13 Pendle Way, Pendle Hill, 2145, Sydney, NSW, Australia.

SUMMARY SHEET

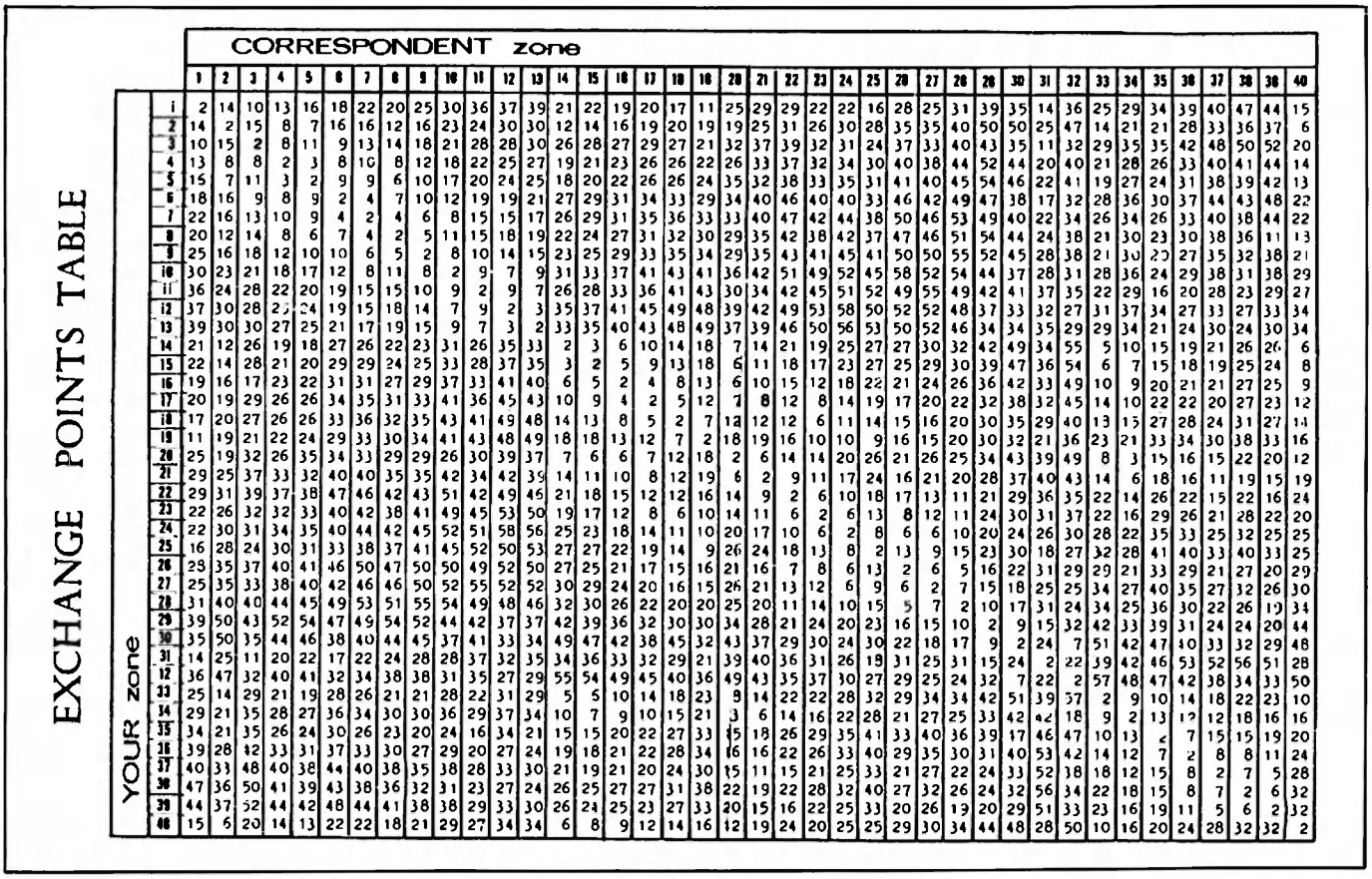
Summary sheet must show call sign of station, name of operator/s and address of same, bands used. (A separate log is required for each band.) The points claimed for each band, number of VK/ZL stations worked, total points claimed and signature/s.

Multi operator stations' logs must contain the signature and call sign of each operator.

AWARDS

Certificates will be issued for 1st, 2nd and 3rd place on a world basis, and 1st, 2nd and 3rd place on a country basis.

The judges' decision with regard to the placings in the contest will be final and no correspondence will be entered into with regard to same. The logs become the property of the contest committee on completion of checking. ■



RTTY SCORING CHART.

Confirmation has been received from the WIA NSW Division that the Federal Contest Manager is Mr. Wally Watkins VK2ZNW henceforward.

Wally will be assisted by a small committee of Club members. Best wishes are conveyed for the ensuing nominal 3 year period.

Members please note in your log or other convenient place the address for future contests matters. This is —

Federal Contest Manager
Orange and District Amateur Radio Society
Box 1065
Orange, NSW 2800.

The Federal Contest Manager is involved with the Remembrance Day Contest, Ross Hull Memorial VHF Contest, John Moyle Memorial National Field Day Contest and Contests Champion Trophy. The VK/ZL/0 Contest is managed separately by Mr. N. R. Penfold VK6NE, 388 Huntriss Road, Woodlands, WA 6018 (alternating with NZART) and the RTTY part of the VK/ZL/0 Contest by the WIA NSW RTTY Group, C/o 14 Atcheson Street, Crows Nest, NSW 2065. ■

INTRUDER WATCH

Alf Chandler, VK3LC

INTRUDER WATCH

It has recently been reported that Japanese fishing boats have been operating in the 1.8 MHz band.

Apparently the Japanese administration has been doing its homework lately and taken them from the 3.5 MHz band, because the following regulations apply:—

ITU allocations are as hereunder stated —

In Region 3 (that is, the Pacific area) 3500-3900 kc/s are allocated to the Amateur, Fixed, Mobile Services, but a footnote specifies — "In Australia, the band 3500-3700 kc/s is allocated to the Amateur Service; the band 3700-3900 kc/s is allocated to the Fixed and Mobile Services".

Also, ITU regulations state in all Regions — "The band 1800-2000 kc/s is allocated to the Amateur, Fixed, Mobile except aeronautical, Radio navigation".

Thus, Japanese fishing boats operating in the 1.8 MHz band are perfectly legal and, although a nuisance there, nothing can be done to move them.

We are very appreciative of reports which alert us of the phenomena. However, further reports are not necessary.

We would appreciate reports on all other Intruders, and I am pleased to note that these reports are starting to be more prevalent.

Keep it up! ■

WICEN

PARKES WICEN EXERCISE, 24-25 MARCH

This exercise was to provide communications for a car rally held at night over a total distance of 1,100 kilometres.

FRIDAY, 24 MARCH

Cars left Parkes at 1800 hours and moved off into sparsely populated area to the west. The frequency used was 3.5 MHz and conditions on this band were excellent. The checking of cars in and out of each section and the reporting of lost or damaged cars reduced the work of the rally officials to a minimum. Mobile 80 metre stations, complete with generators, etc., were erected and dismantled and then re-erected at the next control in fine order. The location of some controls was not known until about 40 minutes before we were required, but all stations opened on time. The Novice operators performed very well, but did lack WICEN experience. The lack of correct message forms also inhibited procedure. The net closed at 0430 on Saturday.

SATURDAY, 25 MARCH

Same operators as on previous day and all stations opened on time. Conditions on 80 metres were awful!!! At times CW was the only mode which could be used. However, every message got through, and without any errors (including some police traffic). The final leg of the rally was not covered due to the lateness of some cars in clearing the first section. Weather conditions very bad also. Much of the second day traffic would have been better worked on VHF as distances were much shorter and within range of the repeater. The net closed at 2400 hours.

The exercise tested all those involved in setting up stations in a hurry and operating portable at night and in poor weather.

The control station was VK2BPK — Parkes club station, and the operators involved at the control station and in the field were: Jack VK2BMJ, Brian VK2NNS, David VK2NNC, Tom Darcy VK2N—, Kim VK2ASY, Ron VK2NQV, Peter VK2NIQ.

QANTASTIC MOTORCYCLE TRIAL

WICEN was asked to provide radio links between Towac Park HQ and the control points for the Qantastic Two Day Motorcycle Trial over the long week-end in June. The links were to relay information from controls to HQ to assist in the tabulation of scores and to provide other communications as required between control captains and officials at Towac Park.

Preliminary tests confirmed that the net could be established using low power FM and SSB 2 metre equipment. About 20 amateurs (including some from Sydney) took part. Communications to all stations was excellent on both days and the reliability of the information sent back to Towac Park was of great assistance for scoring and for determining the locations of "lost" riders.

The exercise was organised by Orange WICEN co-ordinator, Wally VK2ZNW. ■

VHF-UHF
AN EXPANDING WORLD

Eric Jamieson, VK5LP
Forreston. 5233

AMATEUR BAND BEACONS

VK1	VK1RTA, Canberra	144.475
VK2	VK2WI, Sydney	52.450
	VK2WI, Sydney	144.010
	VK2RHR, Milltagong	144.120
VK3	VK3RTG, Vermont	144.700
VK4	VK4RTL, Townsville	52.440
	VK3RTT, Mt. Mowbullan	144.400
	VK4RBB, Brisbane	432.400
VK5	VK5VF, Mount Lofty	53.00
	VK5VF, Mount Lofty	144.800
VK6	VK6RTV, Perth	52.300
	VK6RTU, Kalgoorlie	52.350
	VK6RTW, Albany	52.950
	VK6RTW, Albany	144.500
	VK6RTV, Perth	145.000
VK7	VK7RNT, Launceston	52.400
	VK7RTX, Ulverstone	144.900
	VK7RTW, Ulverstone	432.475
VK8	VK8VF, Darwin	52.200
JA	JA2IGY, Nagoya	52.500
KG6	KG6JDX, Guam	50.110
KH8	KH6EQI, Hawaii *	50.104
TI	TI2NA, Costa Rica	50.080
W	WA6JRA, Los Angeles, USA	50.091
ZL1	ZL1VHF, Auckland	145.100
	ZL1VHW, Waikato	145.150
ZL2	ZL2VHP, Palmerston North	52.500
	ZL2VHF, Wellington	145.200
	ZL2VHP, Palmerston North	145.250
ZL3	ZL3VHF, Christchurch	145.300
ZL4	ZL4VHF, Dunedin	145.400

* The VKOMA beacon has been deleted from listing. There seems no evidence to support that it is operating — perhaps the quickest way to find out for sure will be to remove it.

The frequency of the KH6EQI beacon is relisted as 50.105 MHz, and the calling frequency is 50.110. Confirmation of this comes from Ross VK4RO, who also worked KH6JSI and WA8GUB/KH6 on 27-5-78 between 0737 and 0930Z. Ross has also indicated a listing of his six metre activities will be sent when the 6 metre season finishes! Ross, it may never finish in your area, at least maybe not for several years anyway!

P29 NEWS

George P29HV sent along the last issue (March) of "Garamut", the newsletter of the PNG Amateur Radio Society. Included in this is news of net operations on Tuesdays on 14170 kHz at 1930Z and 3620 kHz at 1000Z, with the HF calling frequency being on 7050 kHz on Saturdays and Sundays. So if you want to raise P29 for a VHF contact try one of the above!

George further reports the first P29 to VK4 Es contact on 146 MHz on 22-1-78 has now been confirmed as being between VK4ZSH and P29ZWW. On 4-2-78 PNG changed over from Channel 40 as calling frequency to Channel 50. On 20-5-78 P29~~RPM~~ Port Moresby became an operational working repeater on Channel 8, and so far has been working well.

Also forwarded to me is a copy of a letter sent to all PNG amateurs from their Administration on the subject of "Changes to Licensing Condition", viz.:

"1. From 5th May, 1978, all Novice Amateur Operators will be permitted to operate VFO (Variable Frequency Oscillator) control of their transmitters within the Novice Bands, which are: 3.525-3.575 MHz; 21.125-21.200 MHz; 28.100-28.600 MHz.

"2. From 5th May, 1978, all Full and Limited Amateur Operators will be permitted to operate between 50 MHz to 54 MHz within the 6 metre band. This temporary extension applies until further notice." Oh, well! To live in some areas has its advantages it seems, and the PNG boys have not been slow in making use of their extended allocation as the following extracts from the P29HV log indicates.

"1-5-78: JA1, 2, 3, 4, 5, 6, KG6, KH6EQI, plus East Malaysia, Hawaiian, Chinese and Korean TV. 3-5: JA1, 2, and KH6EQI, plus above TV reception. 6-5: KH6JSI, WA8GUB/KH6, KH6HI, KH6EQI beacon, JA1, 2, 3, 5, 7 and 0, plus Malaysia, Hawaii, China and Japanese Ch. 3 TV at 2020Z on 107 MHz. 8-5: KH6EQI, HL9, JA1, 2, 3, 4, 5, 7, 8 and 0, plus TV from Hawaii, Malaysia, China and Korea. 10-5: KG6, KH6EQI beacon, JA2 and 6, plus Chinese TV. 12-5: ZL Ch. 1 TV, 2045-2145Z, mixed (2 or 3 channels). 13-5: ZL Ch. 1 TV, 1415 to 1430Z, and KH6EQI, 2007 to 2100Z. 15-5: KH6EQI beacon, JA1, 2, 3, 7 and 8, plus 8J9ITU Toyama special station at 2005Z, plus Hawaiian and Chinese TV.

"16-5: KH6EQI, JA1, 2, 3, 4, 5, 7, 9 and 0, plus KG6JDX and Chinese TV. 17-5: JA1, 2, 4, 5 and 7, plus Russian and Chinese TV. 18-5: KH6EQI, JA1, 2 and 7. 20-5: KH6EQI, JA6, plus Hawaiian TV. 21-5: JA1 and 7, Chinese and Korean TV. 23-5: Channel 4 and 6 in colour from Mackay, Qld., but no amateur signals. 24-5: KH6EQI, Hawaiian TV, plus JAs. 26-5: JA1, 7 and 0, Russian and Korean TV. 28-5: KH6EQI, and HLKA on 49.3 MHz, plus Russian and East Malaysian TV. 29-5: KH6EQI, KH6JSI and JR1. 31-5: Chinese TV test pattern and school programme on R1." And so it goes on. If this is the type of reception possible at present what is it surely going to be during the next two years! . . . 5LP.

SIX METRES

This does seem to be the band with the greatest continuing interest. I have received another letter from Graham VK8GB in Darwin with the happenings in that area. Readers may care to compare notes between P29HV and VK8GB, so here is the listing from Graham.

"18-5: 1105Z KG6JIH. 19-5: 1015Z JH2VHL, 1023Z JA9OMU. 22-5: 1112 to 1212Z JA1, 2, 3, 4, 5, 6, 7 and 0. 26-5: 1117 to 1420Z JA1, 2, 3, 4, 7, 8, 9 and 0 for 40 contacts, plus HL9WI. The contact with JE1CCD in Yamanshi was the last prefecture required to give WAJD on six metres. 27-5: 1033 to 1110Z JA6 YAP, JH6YDN, JA8EIA, JA8RRD, KG6JIH and KG6DX. 28-5: 1140 to 1203Z JA4HPU, JF3DWO, JH6TEW and JH1WHS. 29-5: 1120Z KG6JIH, 1125Z KG6JDX.

"2-6: 1130 to 1150Z KG6JIH, JA2DON, JH6TEW and JA2BZY. 3-6: KG6JIH, KG6DX, JA1 and 2 for 6 contacts. 4-6: 1055 to 1157Z KG6DX, KG6JIH, JA1, 2, 3 and 6 for 6 contacts. 7-6: 0945Z JF3AKI. 18-6: 1110Z KG6DX, 1120Z KG6JIH, 1132Z JH6TEW and 1200Z JR1AUW."

Readers will note that when lists of districts worked are mentioned without actual call signs, this numbering of JA1 to 5, etc., really means 1 to 5 call areas, the actual prefixes could be JA1, JH1, JE1, JR1, etc. etc.

Graham goes on to say that he hears TV signals on 49.75 ± .010 nearly every day and JA signals on the low end every second day on the average. Weak signals on two metres coinciding with six metre JA openings but no contacts.

"I (Graham) spoke to KL7FBI on 15 metres on 26-5. The operator is Mike Celmer, Box 643, APO 98736, Seattle, USA. KL7FBI is a military club station on Shemya Is. and WA4TNV/KL7 operates out of the shack on six metres. They have a dual 6 metre rhombic with 26 dB gain pointed at JA. I'm not sure of their equipment otherwise, but they suggested that because of the antenna direction VK contacts may be very difficult.

"HL9WI advises he is running skeds with LU3EX on 50.104 210 to 2230Z, 0030 to 0345Z daily, and 0900 to 1400Z every week-end. Apparently Alfred LU3EX holds the world record for six with a contact to JA6FR on 24-3-56. A contact HL9 to LU3 would break this record. Bill HL9WI also advises that W technicians have all VHF privileges now and that WA6JRA beacon is on 50.085. The ARRL beacon segment is now 50.070 to 50.080. VP2LAW has 36 countries confirmed on six!

The following information also came from Graham VK8GB and originated from JR1AVW: "7-6-78: UAO worked JA6 on 144 MHz Es. 11-6: UAO to JA3, 4 and 6 on 144 Es. Also JA6 to JA8 on 144 Es. Also heard W6XJ, K6MYC, K6MEP, WA7BJU, N6NR, W6TVZ, K6AUQ and K6HPC between 2200 and 2240Z. JR1AVW same date worked KH6XX and VS6FX (both new stations), KH6EQI, VS6BE, HLGWI, HL9TG and HM2HS. 12-6: HM2 and P29ZDU. 13-6: Worked WA7BJU, WA7AEV 0520-0650Z. 14-6: KH6XX, KG6, P29 and JD1. 15-6: KH6XX, KH6IAA, JD1, KG6 and P29. 16-6: KH6EQI. 0455 to 0540Z worked WA6MMJ, WA7BJU, K7TUO, K7KV, WB6NMT and K6HCP. 18-6: KH6XX and heard KH6 working W via Es.

"The details of KH6EQI beacon are that it is definitely on 50.104 zero beat (1 kHz tone on 50.103). Bert KH6HI can key the beacon and listen from his own QTH on 50.104. On establishing contact he will ask stations to QSY to 50.110 and then continue the contact from his own gear and set the beacon running again.

"The P29s are finding their newly allocated 2 MHz from 50 to 52 MHz a great advantage, and making full use of it. On two metres three teletype stations on 146.780, 146.800 and 146.810 MHz are good beacons into JA." Thanks again, Graham, for your news and information, it makes good reading. . . . 5LP.

SPORADIC "E"

John Allan VK5UL sends a page from "Wireless World" April 1978, headed "Mysteries of Sporadic E". As this is something which has no doubt intrigued most VHF operators for a long time, I feel it is worth printing for your interest, and I thank you, John, for your kindness in sending it along.

"Pat Hawker wrote in your February issue about the mysterious Sporadic E. Readers might like to know what has been learned, from a combination of ground-based and rocket observations.

"Sporadic E was first seen to occur in the way it does, that is, as very thin intense layers of ionisation, by a British Skylark rocket flown from Woomera in 1958. By 1966 an association between these layers and sharp reversals in wind direction at high altitude had become recognized. Wind measurements in the very rarified atmosphere up to 150 km or so revealed that a surprising pattern of wind reversals with height can occur; what is more, the measurements showed that the pattern often descends slowly over a period of hours, with, for example, a sharp wind sheer first appearing above 150 km height then moving downward to below 100 km before fading. The cause of this rather unexpected wind structure appears to be the propagation of atmospheric waves horizontally over great distances.

"The sharp wind shears are at the roots of the sporadic E layers, though in rather a complicated way. The winds, tenuous though they are at such heights, act to move the ions and electrons in the ionosphere across the Earth's magnetic field, but interactions then occur in such a way as to displace the plasma vertically. Where strong wind shears of the appropriate sense exist, the plasma is squeezed into a thin concentrated layer, being moved downwards from above, upwards from below. As the wind pattern descends the layer descends, too, into an even more dense atmosphere, until finally at a height of about 100 km it is brought to a halt.

"In a very productive experiment at Woomera in 1971 a Skylark rocket was launched with a ground-based ionsonde showing a strong layer overhead. Instruments on the rocket measured the exact position of the layer and, something of a novelty, the ambient electric field as well; the wind structure was also charted, in better than usual detail. A very strong wind shear was found, but the layer was not quite where theory required until a correction was applied for the additional constraint imposed on the electrical charges by the electric field.

"Sporadic E, then, owes its transient character to interactions between atmospheric waves, the ionospheric E layer and magnetic and electric fields. All but the magnetic field are constantly changing so that the right conditions for layer formation to occur — well, sporadically. If the question is asked why the explanation has been so long in coming — I should explain that physicists the world over have contributed to the solution — the answer is that the region concerned, roughly 100-200 km above the Earth's surface, is inaccessible to satellites and therefore to regular on-the-spot measurements.

"One final point: Were the sporadic E layers to be composed simply of ionised atmospheric

gases they wouldn't persist. They are, in fact, composed of ionised metallic atoms, mainly magnesium, silicon and iron, probably the remains of burned-up meteorites. The descending wind shears sweep up the metallic ions and bring them down as Sporadic E layers out of the thermosphere into the lower regions where atmospheric turbulence then churns them away into oblivion. Sporadic E layers seem to be the product of Nature's vacuum cleaning! . . . E. B. Dorling, Mullard Space Science Laboratory, University College, London. Holmbury St. Mary, Surrey."

So there you have it. I would think most of the above will be news to many, and may fill in some of the gaps in your former thinking.

HF NET FOR VHF OPS

During discussions recently with Robert VK3AUR in The Grampians, moves were finally made to get the workings of an HF net off the ground for the purpose of the exchange of information between various VHF and UHF operators. At the time of writing it has been operating for two weeks on 3560 kHz, plus or minus QRM, with Robert VK3AUR as the co-ordinating station. The reason 3560 was chosen was to give Novice operators a chance to also join in if they desired, as one of their ultimate goals could well be operation in VHF. The net commences at 1930 EST, and will continue for as long as required each Wednesday night until decided otherwise.

If your interests *are* largely orientated towards VHF/UHF, then you are invited to join in the discussions or listen as you choose. Maybe something will be gleaned from the conversation which will be of help or interest to you. Changes to operating times and procedures will no doubt be made from time to time; if you don't *hear* the net at 1930 EST maybe it is running later for the benefit of VK6 operators, so look around the frequency a bit later, Robert VK3AUR is bound to be there!

NEW ZEALAND

I note from the pages of "Break In" that some consideration has been given in that country to a six metre band plan! However, it was decided that, as the band was a DX band and shared by many, that it should not become a "channellised" band. Some regular 6 metre operators felt with likely increased band openings in the future there should be no restrictions on where one should operate. After discussion, two spot frequencies were decided upon, 52.525 for FM and 51.600 tor AM simplex operation. Repeaters were to be discouraged.

Also from "Break In" comes news of a new 2 metre "Internal Record" set by ZL1AM and ZL4TCA during last December. The distance was 993.3 km. :o Steve KH6IHP has written to ZL1BBZ seeking contacts over the 4,400 mile path on *144* MHz in an attempt to beat the present 3,940 mile record. He runs 160 watts to a 16 dB gain antenna over a complete water path, so he could possibly have a chance if he can get anyone interested at the ZL end. The fact that nothing seems to happen across the Tasman between VK and ZL on 2 metres doesn't lend much comfort for an upsurge in interest either there or here in VK for a similar attempt. What about a Sydney to ZL contact on 2 metres for starters, chaps? Why not a VK7 to ZL contact as well? Both these paths should be possible on Es at least at the right time of the year, and possibly rarer occasions by other propagation means.

SERG CONVENTION

The South East Radio Group in Mt. Gambier held another very successful convention on the weekend of 3rd June with more than 100 amateurs registering. The winner of the SERG trophy for the second time was Peter VK3AWY, a well deserved win, as Peter really enjoys himself and enters most of the events. Once again the weather was kind and cleared of the earlier rain. The ladies are to be congratulated on their great evening meal on the Sunday. I am sure all who were present for the week-end will be looking forward to the 15th Convention next year.

During the Sunday evening at Mt. Gambier a discussion was initiated on the proposed extended use of Ch. 5A TV throughout Australia and in the Hamilton, Victoria, region in particular. Whilst the words of the speakers did not actually fall on deaf ears, the subject did not arouse a lot of discussion at the time, but it is hoped amateurs will be thinking of the total implications of what this non-international channel will do to the 144 MHz band. It is well known that we amateurs are a confounded nuisance in the eyes of the various administrations and something they have tolerated to a degree so far, but I doubt if any tears would be shed at their level if we did not exist as an operating body — there would be more spectrum space available to be sold at a higher figure than we pay for it. Anyway, I am not going to prolong discussion on the subject ust at the moment, as I am in the course of preparing an article on the subject which I hope will be in AR next month for you to read.

Instead I will close with the thought for the month — a month which has slipped into a quieter form of activity as winter approaches and the VHF bands take up their usual quietness for the time of the year: "When Grandma was a girl she didn't do the things girls do todey. But then grendmas didn't do the things grandmas do today."

The Voice in the Hills. ■

AMATEUR SATELLITES

Chas. Robinson VK3ACR
(VK3ZBB is temporarily overseas)

A letter has been received from Harry JA1ANG, our AMSAT Asian Pacific Net Co-ordinator. Harry has just returned from a three week trip to Europe and the United States. He wishes to thank all those who kept the net going during his absence.

When in the US he had the pleasure of having dinner with W3PK Terry Klein (Prexy of AMSAT) and his family, and while in West Germany spoke to Karl DJ4ZC, who built the Mode B transponder for Oscar 7 and at the present time is building the hardware for the Phase III-A Satellite. Harry said they all send their very best 73 to all out here in this part of the world.

Included in Harry's newsletter were a number of interesting items such as the update on orbital elements (AMSAT Oscar 8); these are as follows:

Period: $P = 103.231836 - 1.117 \times 10^{-6}N$.

Increment: $dL = 25.80870162 - 2.325 \times 10^{-7}N$.

N = orbit number.

As of May 8th, 1978, the period was 103.230755 minutes, and the increment was 25.608615 degrees/orbit.

Do not worry, AO-8 is not falling down to the earth! And, for all practical purposes, we can use 103.23 minutes and 25.806 degrees/orbit.

Please note that Mondays are ORP days and Wednesday are reserved for special experiments. AO-8 will be in Mode A on Mondays, Tuesdays, Thursdays and Fridays. Wednesdays will depend on the special experiments that happen to be conducted on that day, but usually will be left in Mode A. On Saturdays and Sundays AO-8 will be in Mode J.

It is interesting to note that Sporadic E and "firm" F_2 layer has been interfering with down-link signals from AO-8 recently. Especially on Mode A, both the 29.402 MHz telemetry beacon and all down-link signals within the 29.4 and 29.5 transponder passband suffer from weak to practically no signal, with severe fluttery QSB due to sporadic E and F_2. However, do not give up! Under these "funny" conditions signals from AO-8 have been heard at very far away places. Although no two-ways have been recorded yet, signals from the satellite when flying over Siberia, for instance, have been heard in the East Coast of the USA!

Who knows, if we keep on trying, maybe a two-way QSO from Asia to the USA may happen. Again, please do not give up during these "funny" conditions.

I have had a number of queries concerning a print-out for Oscar 8 similar to that which was published in AR November 1974, which gives the ascending modes, the azimuth and elevation. As mentioned previously, any satellites put into the same orbit as AMSAT Oscar 6 and 7 would use this existing AR chart. A satellite placed in any other circular orbit would require its own perpetual print-out. There are indications that all four of the Soviet RS Series satellites will have the same orbital characteristics (though considerably different from AMSAT Oscar 7), so a single perpetual print-out would serve all of them. Since Oscar 8 is in a different orbit than Oscar 7, it requires its own perpetual print-out. These, we hope, will be available in the near future. Unfortunately, other satellites in non-circular (i.e., highly elliptical) orbits do not lend themselves to this type of perpetual print-out. The reason for this it that the apogee and perigee process around he earth and a pass with a given equator crossing longitude will not have the same azimuth and elevation angles as a pass with the same equator crossing longitude, say, four months later.

PHASE III FUNDING STATUS REPORT

John Shew N4QQ, via the AMSAT newsletter, states: "Hardware costs for the Phase III project are expected to be in the neighbourhood of $250,000 for two satellites. A complete Phase III satellite requires:

2400 Solar Cells at $10 each	$24,000
12 Battery Cells at $20 each	$2,400
1 Kick Motor	$10,000
2 Transponders at $5,000 each	$10,000
2 Cosmac Computers at $8,000 each	$16,000
	$62,400

A viable Phase III programme requires at least two complete satellites ready at *any* launch date, the unused back-up hardware available for a later launch.

We have passed the first milestone in our fund-raising campaign. As of February 6, 1978, donations have been received for 2,637 solar cells and 36 battery cells. Thus, we have received donations for more than enough solar cells for the first Phase III satellite and three complete battery systems. According to the last regional tally, submitted by Larry Papke WB5MPU, who handles printing and distribution of solar cells certificates, contributions have been received from all 50 States, all Canadian Provinces and over 42 foreign countries. A significant number of the contributors are non-amateurs, testifying to the universal appeal of the amateur satellite programme.

All contributors to the Phase III programme receive a handsome certificate, acknowledging the exact numbered component sponsored. Contributors of $1,000 or more will be honoured by having their name inscribed on a plaque to be placed on board the first Phase III satellite.

If you can make a donation to this worthwhile venture please make your cheque payable to AMSAT (in US funds) with accompanying note stating your sponsorship and address to AMSAT, PO Box 27, Washington, DC, 20044."

ORBIT PREDICTIONS — SEPTEMBER 1978

OSCAR 7

Date	Orbit	Time	Long. °W
1	17355B	0012	61.9
2	17368B	0106	75.5
3	17380A	0005	60.3
4	17393B	0100	73.9
5	17406B	0154	87.5
6	17418A	0053	72.3
7	17431B	0146	65.9
8	17443B	0047	70.8
9	17456A	0141	84.4
10	17468B	0040	69.2
11	17481B	0135	82.8
12	17493A	0034	67.7
13	17506B	0128	81.3
14	17518B	0028	66.1
15	17531A	0122	79.7
16	17543B	0021	64.5
17	17556B	0116	78.1
18	17568A	0015	63.0
19	17581B	0109	76.6
20	17593B	0009	61.4
21	17606A	0103	75.0
22	17618B	0002	59.9
23	17631B	0057	73.4
24	17644A	0151	87.0
25	17656B	0050	71.9
26	17669B	0144	85.5
27	17681A	0044	70.3
28	17694B	0138	83.9
29	17706B	0037	68.8
30	17719A	0132	82.4

OSCAR 8

Date	Orbit	Time	Long. °W
1	2501A	0012	42
2	2515J	0018	44
3	2529J	0023	45
4	2543A	0028	46
5	2557A	0033	48
6	2571A	0039	49
7	2585A	0044	50
8	2599A	0049	51
9	2613J	0054	53
10	2627J	0100	54
11	2641A	0105	55
12	2655A	0110	57
13	2669A	0115	58
14	2683A	0121	59
15	2697A	0126	61
16	2711J	0131	62
17	2725J	0136	63
18	2739A	0141	64
19	2753A	0003	40
20	2767A	0008	41
21	2781A	0013	43
22	2795A	0018	44
28	2809J	0023	45
24	2823J	0029	46
25	2837A	0034	48
26	2651A	0039	49
27	2665A	0044	50
28	2879A	0050	52
29	2883A	0055	53
30	2906J	0100	54

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Fabulous FRG-7 Communications Receiver

* 0.5 to 30MHz continuous reception
* Wadley loop circuitry for stability
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* BFO for sideband or CW reception
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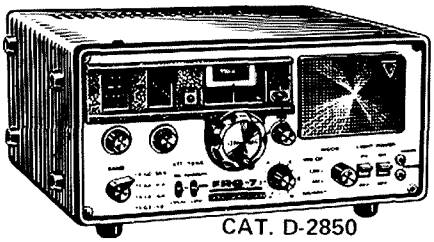
* 2 IC's, 22 transistors and 16 diodes
* Comes with full instructions plus guide

EXCLUSIVE! With every FRG-7 from Dick Smith or dealers, you receive this exclusive 6 page guide to short wave listening – written by Arthur Cushen, MBE – world famous short-wave correspondent and broadcaster.



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See the review in MAY 1978 E.A.

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$9.50

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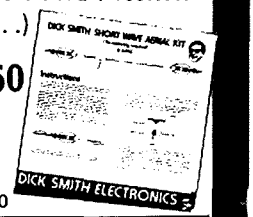

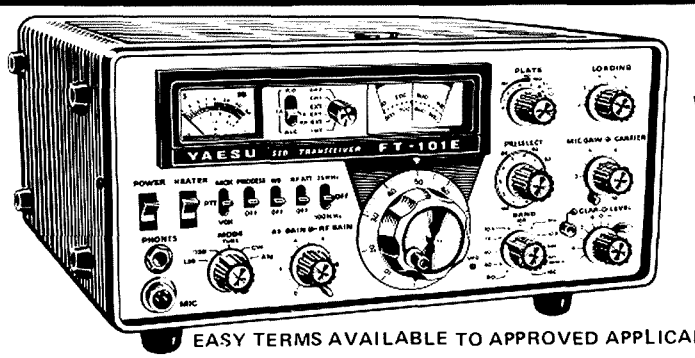

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(* QST May 1978 comparison)

(Left) The QTR24 world clock. Work out at a glance what the time is in all time zones. Every ham should have one.
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(Right) YD-844A desk microphone. 500 ohm/50k switch makes this ideal for all Yaesu transceivers. Complete YOUR base station with a Yaesu microphone.
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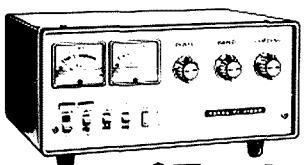

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FT-901 D – ALL MODE ALL HF BAND TRANSCEIVER $1275

Tomorrow's transceiver today . . . All mode operation – yes, even FM! This beautiful Yaesu has to be seen (and heard) to be believed. It's got features others just dream of!
Basic unit: $1275 . . . Add the optional memory unit (Cat D-2858 @ $149.50) and the DC-DC converter (Cat D-2856 @ $75.00) and still pay less than $1500.00 . . .
The acc plug features switchable 12V coupled to the band switch. Use our co-ax relay (Cat D-5210) to automatically switch antennas. WHY PAY MORE?

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COMPLETE UNIT — Rotator, control unit and approved power supply:

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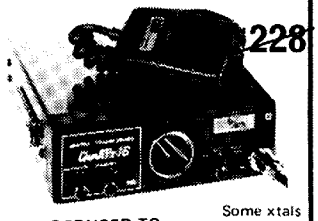

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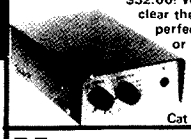

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Safety and ease of operation for all mobilers. Headset mic/earpiece suits most rigs — 600 ohm mic, 8 ohm 'phone. Wire to suit your rig (plug extra).

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Yes, that's the right price. Only $1.80 for a bargain key that's ideal as a first key. Excellent value for money. Cat D-7105

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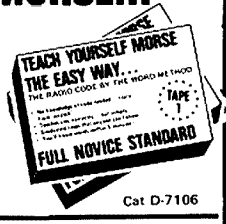
Here's value: two cassettes recorded with easy-to-learn Morse. Starts off simple, goes to full novice standard. Completely aural course — no printed matter to slow you down!



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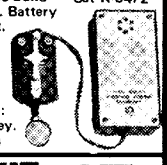

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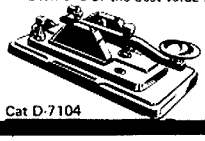

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KEYER KIT $37.50

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PADDLE only: Cat D-7103 .. .. $17.50

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The ULTIMATE in low-pass filters!

Precision built, 4 section filter. Massive power rating — 5000W PEP on SSB. Maximum attenuation is on TV channel 2 — 75dB. Insertion loss is less than 0.5 dB, has SO-239 connectors. 52 ohms.

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New! Wilson HF antennas

SYSTEM ONE BEAM

* 5 element
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* 8.5d8 gain
* 5.6m boom
* 8m longest element
* 5m turning radius

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BOTH ANTENNAS 50 OHMS IMPEDANCE, SWR LESS THAN 1.5:1
HUGE POWER RATING — KILOWATT PLUS . . .
Maximum strength and minimum wind resistance

Optional recommended toroidal balun for either system: Cat D-4334 .. $19.95

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Cat D-4336

$59.50 PER SECTION

Introducing: the Wilson Tetra Tower system: You can buy one section at a time, or you can buy a complete mast. Each section is 3.5 metres long when assembled, yet is supplied in a carton only 1 metre long. No need to hire a truck!

You can assemble as many 3.5m sections as you like — 4 give you a 14m mast, (45'4") etc etc. Accepts a 2" o.d. mast at top. Extremely strong (will support the system one at 68 ft suitably guyed)

It's the painless way to buy a world-class tower.

Tower top & rotor plate option: Cat D-4338 .. .. .. $29.50

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AT LAST! THE YAESU FRG—7000

Yes! It's been a long time coming — but the wait was well and truly worth it . . . The Yaesu FRG-7000 offers the serious SWL the ultimate in a communications receiver

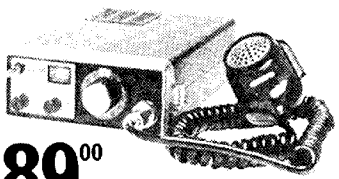
- Digital frequency readout for accuracy (and allow absolute certainty in returning to a previously logged station)
- Full band coverage — from 0.25MHz (yes, 0.25) up to 29.9MHz — with provision for AM, SSB and CW reception
- Digital clock built-in displays local OR GMT (at the flick of a switch) plus allows the receiver to be turned on at any time (eg for recording when you're not there!)
- Wadley Loop circuitry for rock-solid stability plus FET front end for sensitivity
- Operates from 100 to 240V AC 50/60Hz (easy modification allows portable 12V use)

Cat D-2848 **$695**

Terms are available on either unit to personal shoppers • from a low 10% deposit and easy payments.
Mail order customers: We'll send this unit or the FRG-7 to anywhere in Australia for $5.00 — by Comet.

Magnificent SCOOP PURCHASE

KENWOOD TR-2200 2m portable

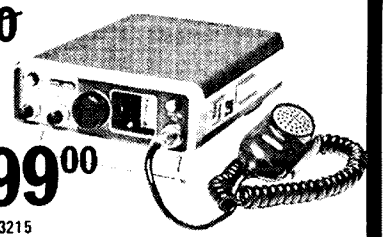


$189.00 Cat D-3210

We've bought the entire Australian stock of the famous Kenwood TR-2200 2 metre portable. Never again available at this price! Two years ago it was selling for $199.50 — todays price is even lower. Now is your chance to buy a versatile portable at a never-to-be-repeated price. DON'T MISS OUT!

KENWOOD TR-7200 2m mobile TOP VALUE

~~$260~~



$199.00 Cat D-3215

Fabulous 2 metre FM mobile transceiver features hi/lo power switch (1/10W) to save battery, reverse polarity protection, provision for 22 channels, diode RF switching, etc etc etc . . . Hurry in for this special — they're reduced to clear. Only a few left and this price lasts only while stocks last.

EXCLUSIVE TO DICK!

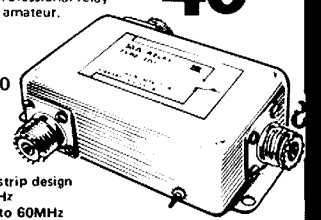
FABULOUS NEW HEAVY DUTY

CO-AX RELAY

Save the high cost of an extra length of co-ax. Make instant antenna comparisons. Instant horizontal to vertical change-over. A truly professional relay for the serious amateur.

$49.50

Cat D-5210



- waterproof
- latest micro-strip design
- 1.5 — 500MHz
- 2500W PEP to 60MHz
- 1500W PEP to 500MHz
- 9 — 18V control voltage
- 52 ohm impedance
- insertion loss less than 0.1dB
- insertion noise 'too low to measure'

DON'T SETTLE FOR INFERIOR UNITS!

EASY TERMS AVAILABLE TO APPROVED APPLICANTS ON ALL ITEMS PRICED $111 OR MORE.

$375

FT-227R — FULL 2M RIG

As reviewed in the March issue of Electronics Australia. Full 2 metre, synthesised FM unit with memory. Ideal for repeaters and duplex operation. Best value rig available today!
Cat D-2890

$380

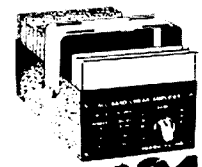
YC-500S — 500MHz COUNTER

Fabulous professional quality — 500MHz counter. As reviewed in April E.A. 240V or 12V operation. And it's even cheaper if you have a sales tax exemption!
Cat D-2892

$539

FT-7 — NEW HF MOBILE RIG

Here it is! The new HF solid state 80 — 10 metre mobile transceiver. It's ideal for novice use, too. The best mobile unit going!
Cat D-2866



$210

FL-110 — 200W LINEAR

Use the FT-7 or FT-301S as a full-power unit with the 200W linear amplifier. One knob band switching, no tuning required.
Cat D-2884

DICK SMITH ELECTRONICS

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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 publishers.

Dear OM,
The Editor,

Dear Sir,

A month ago, I reactivated my second QTH callsign DL3FMA. I use a TEN-TEC "Century/21" at about 60 watts input power and a 3-element rotary Yagi.

Results obtained so far have been so promising that I would like to have schedules with stations Down Under.

I have worked a lot of Australian stations thus showing that the long path can successfully be used by my relatively low power rig.

I think that there is a special Australian amateur radio magazine. May I ask you to put into this monthly that I am anxious to get in contact with any Australian radio amateur who, like me, would be interested in a schedule. He may drop a line to the following address:

Prof. Dr. Karl G. Lickfeld, DL3FMA
Inst. f. Med. Mikrobiologie
Hufelandstr. 55
D-4300 Essen 1
W. Germany (FRG)

I thank you in advance for your kind help. Letting you know that I very much enjoyed a stay in Australia in 1974, I am sincerely yours, Karl Lickfeld. ■

The Editor,
Dear Sir,

Leaving Australia after a most pleasant holiday, we, the XYL and myself, wish to say that we agree 100 per cent with Art Linkletter who says in his book Down Under: "Nothing in Australia is king-size, everything is giant-size!"

So has been the hospitality we found everywhere in your wonderful and interesting country.

Cuagn sn frm PA0-land, 73, A10

C. Valkhof, VK3BLZ/PA0ALO, 6 Anna Court, Sale, 3850. ■

7 Norman Ave., Frankston, 3199
10 June 1987

The Editor,

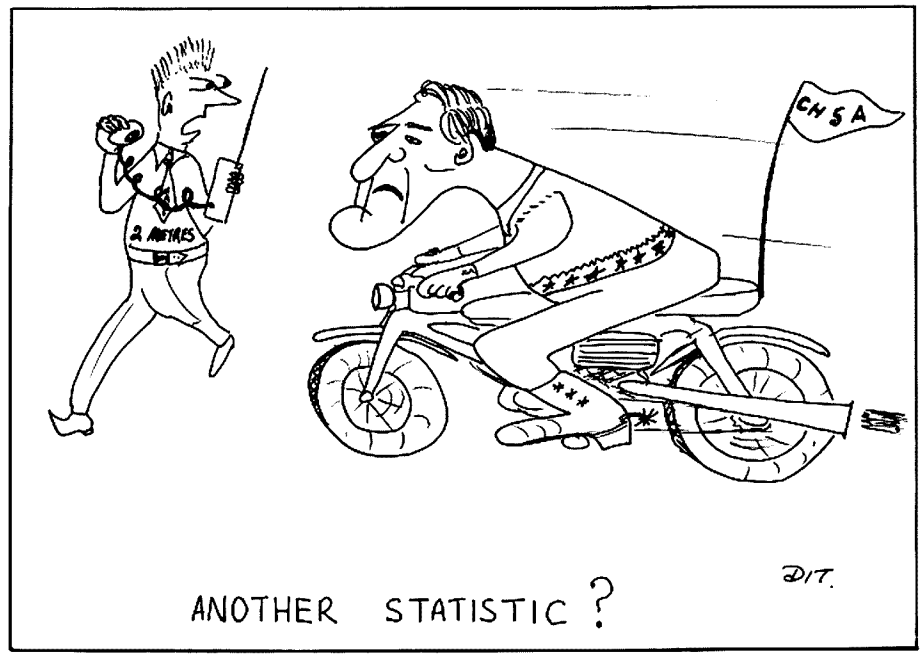
Dear Sir,

I would like to make a plea to all Amateurs and prospective Amateurs to carefully read through the correspondence from Steve Gregory VK3OT and Robert Wilkins VK3AUR in June 1978 "Amateur Radio" relating to the new channel 5A TV allocations, particularly in Western Victoria. If these two Amateurs are the only ones who are going to protest at the rape of yet another Amateur band, than all I can say is that we thoroughly deserve to lose the 2m band.

The apathy shown by the vast majority of Amateurs, both within the WIA and outside it, is incredible.

At the time I was first licensed in the early 1960s there was an attitude which prevailed among many Amateurs that we should never rock the boat, treat the P. & T. (then P.M.G.'s.) Dept. as a holy cow above reproach, ask for favours in a cap in hand fashion and all would be well with the world. Unfortunately, I feel that with many people this attitude still exists even today, but it's totally unrealistic.

On a number of recent occasions the extent to which the P. & T. Dept. care for Amateurs' interests has been clearly demonstrated. When raporting a case of very blatant pirate operation on 10m by a Melbourne station claiming one day to be a ZL4 and on another day to be a VK1 (same name, equipment, voice, beam heading), I was told by a P. & T. official, "Frankly, we just aren't interested". When the local monitoring and frequency measuring station was advised and given details of frequency, beam heading and callsign being used, I was asked "What kHz is that?" and after a few minutes' apparent search for the signal I was told there was no trace of any 10m signals at the station. This



despite the fact that at the time thsra ware dozens of S9 plus signals on the band! The fact that we accept being lobbed off in this manner is our fault and does our cause harm by not pursuing the matter.

Recently, when Eric Jamieson VK5LP tried to stir up interest in making an approach to regain the Six Metre band, the number of people who even bothered to show support was pathetic. Congratulations to those who did bother to write with your ideas and encouragement, but what about the rest of you? I feel sure had Eric's campaign brought the band back immediately there would have been a multiude of operators active — after someone else had done the spadework!

For many years now we have had it drummed into us that the spectre of WARC '79 looms over us but those who have made the greatest noise about it have given little it any lead to the individual member as to how he or she can do their bit to help. I feel the WIA has fallen down in its duty (perhaps unknowingly and with the best of intentions) in getting the message across. Those closest to the problem may sulfer from a lack of ability lo communicate adequately to the general membership. The obvious measures we can all take are to: If not already a member of the WIA, join and add YOUR support to the only organziation that can represent your interests. If you don't agree with WIA policy, fair enough, at least be part of the WIA and show how it might be improved, from within instead of from the sidelines. Use the bands that are available to you (whether a Full, Limited or Novice licensee) as often as possible and ensure you play your part in maintaining activity. When you do operate, do so in a manner befitting a member of the Amateur Service, show that you know how to operate properly, this will make the CBers and HFers in our bands a lot easier to spot.

To return to the matter of channel 5A, we now have the prospect that in many areas there will be no operation possible on either the 6m or 2m Amateur bands. To those of you unfamiliar with such a situation, ask any 6m operator from Brisbane, Melbourne or Wagga how funny it has been trying to operate OR EVEN LISTEN on 6m since 1964.

I would like to ask one very important question. Why is it that in Australia those in charge of frequency planning are unable to produce anything other than an utter shambles?

In the USA, which has roughly the same area as Australia, but with a population of well over 200 million plus many millions more in surrounding areas such as Canada, Mexico, Central America and the Caribbean, they enjoy the most generous Amateur frequency allocations anywhere. Here we have the ludicrous situation of Australian stations on 80m and 40m being limited to 3.500-3.700 MHz and 7.000-7.150 MHz while stations as close as New Zealand operate as strongly as any locals in the full allocation on both bands. In the USA full VHF and UHF Amateur allocations co-exist with TV services with little if any trouble. Here we have the 6m band reduced to half (52-54 MHz) and virtually unusable in two major metropolitan areas because of TVI. On 2m the same sad story has been repeated in both Wollongong and Newcastle with worse to come.

The letter from the Prime Minister to Steve VK3OT states (in part) "The Minister advised that, bearing in mind the number of services that will be provided in the area and the lack of available frequencies, it is considered that there is no suitable alternative available". We all know of the problems with frequencies for TV but what effort has been put into working out a proper solution? Why aren't the UHF frequencies available being utilised? Are these being held back until after WARC '79? If so, why are other countries heavily involved in UHF TV?

Surely UHF would be an ideal answer to the 5A problem. Every day the number of old monochrome TV receivers grows less and all new TV receivers either have UHF tuners or provision for them. Certainly VHF may give better coverage from one station but this is what channel 0 thought in 1963, but really, do they want to have viewers in Alaska and Japan? The intelligent use of UHF and tha number of channels available could easily solve the 5A problem. Sooner or later we must go UHF so why not now?

To say there are no suitable frequencies available is too stupid for comment. How do the cities of the eastern USA seaboard fare with the enormous number of transmitters in use there?

Before it is too late we must all do SOMETHING to try and save our VHF bands, if we lose 2m, there will be NO VHF Amateur bands for many, even most, Australian Amateurs, contemplate this situation! As things stand at the moment there seems little if any likelihood that this situation will not come about.

Yours faithfully, Geoff Wilson VK3AMK. ■

5 Cahill Street,
Strathpine 4500.
29th June, 1978.

The Editor,

Dear Sir,

You published two articles for me in the December 1977 edition of AR. At the end of the articles I mentioned that I would supply PCBs for the units. I have supplied boards in dribs and drabs for the last six months and would now like to put an end to it. Could you please publish in some appropriate place in your magazine that the Christmas tree lights boards are $5.00, plus postage (40c), and the Two Tone Oscillator boards are

$4.00, including postage. No more boards or enquiries will be supplied after the end of September this year.

Yours faithfully,

N. Cooper VK4ZNC. ■

179 Bridge Street,
Benalla, Vic. 3672.
29th June, 1978.

The Editor,
Dear Sir,

I have just received my first copy of Amateur Radio, which I read with great interest and enjoyment until I read a letter by Stephen Gregory VK3OT referring to the "OX and You" column.

I was very disappointed with the vicious criticism displayed in the letter, and felt it rather unnecessary. I must point out that the writer of that column is prepared to contribute more for Amateur Radio in a practical way than simply to sit back and write over-critical letters of someone else's efforts.

I trust that this attitude of apparent total intolerance is not a general one among amateurs otherwise all the effort I have put into working for an amateur licence has been a complete waste of time.

Yours faithfully,

D. G. Laity. ■

1 Hillside Crescent,
Epping, NSW 2121.
June 23rd, 1978.

The Editor,
Dear Sir,

Granted the fact that there are a lot of Novices (and lots more to come!), could we have more articles in AR that are down to our level?

I'm sure that the Full Call members wouldn't mind a bit. All the Full Call folk I've met are falling over themselves to help the half-baked types like myself.

A couple of cases in point. On page 21 of June AR I find a paragraph on how to make a DVM adapter. Now I have no doubt that many Novices, and probably all Full Call members, will know what "DVM" means. But I just don't, and I suspect that quite a few Novices don't know either. Why not use a little more ink and spell the whole three words out!

Further. On page 15 of the same issue there is a "Two tube phasing rig" which I would like to make up. But I simply don't know enough to even attempt this project on the emaciated data supplied. I know that some reading this letter will nearly have died laughing by now . . . but maybe those who are laughing may have forgotten that they were once half-baked, too. Mayday. Mayday. I'm sinking in a sea of superior technology and unnecessary abbreviations. Such a little difference would be a big help to others like me.

Yours faithfully,

Norman Blake VK2NDG.

(Editor's note: Our "Novice Notes" column will be a regular feature (every 2/3 months at the moment). We would appreciate some Novice-oriented articles from readers in this regard. Incidentally, a DVM is a "Digital Volt Meter".) ■

6 John Street,
Cootmundra, NSW 2590.
24-6-1978.

The Editor,
Dear Sir,

Hamads is a marvellous service to all amateurs, yet it is possible to get caught.

Last year I advertised a piece of equipment and received a few replies. The main interested buyer was $100 cash short of the agreed price. As I believed all amateurs to be honourable gentlemen (he is a full call), I sent the set to help him out, and received his bank cheque.

The verbal agreement was that he would pay the balance when he could. After a month, I wrote a friendly reminder, but received no reply. Several more letters and a couple of attempted phone calls (he was not in) followed, during about five months, to no avail. Finally, I had my solicitor draft a letter to him. His solicitor replied on his behalf, denying a balance existed!

Therefore I lost $100 and he gained a cheap set with a full complement of spare tubes. Possibly this happens often, so I have written this letter in the hope that it may prevent someone else getting caught.

The next time I sell an item I will have cash in hand before despatching it!

Sincerely yours,

Geoff Barron VK2AZT. ■

13 Salisbury Avenue,
Bexley 2207.
26-6-1978.

The Editor,
Dear Sir,

A few lines about the National Field Day, which I think is both enjoyable and a very valuable technical exercise, because it forces one to prepare the gear available and to make it work under emergency conditions.

For about 25 years I have entered the NFD using low power and on CW only. The number of CW stations is low, worse luck, but I think the section should be maintained while it is viable.

Here I have a confession to make, in that I wandered off and went SSB on relatively high power this year (1978).

Receiving the results in a recent AR seems to show that the CW sections were supported even less than usual.

Therefore, I intend to go back to CW in 1979 and I wonder if you could publicise the need to maintain a CW activity in Amateur Radio and the reasons for doing so, particularly the good effect obtained on low power.

This presumes that you agree with me.

I feel that going SSB after so long on CW in NFD was like deserting an old friend!

Yours faithfully,

J. A. Mead VK2JM. ■

WARC 79 — NEXT YEAR

20/6/78.

The Editor,
Dear Sir,

I refer to page 46 of AR June 1978, wherein is reference to "Why should ITU standard morse be the standard for examinations when you're rarely likely to hear it on air anyway?".

Apart from the fact that the second half of the quoted statement is nonsense and far from the truth, I think that the question concerned is one which the Editor of "Radio ZS" (SARL magazine) answered in his Editorial in February 1978. His statement applies just as much to would-be Australian radio amateur operators as it does to South African counterparts, and I ask, sir, that you kindly give space to printing it, as follows:—

"Editorial:

CW TELEGRAPHY QUO VADIS?

One of the less satisfactory sequels to the advance of technology, so far as the radio amateur is concerned, is the approaching demise of manual telegraphy as a mode of direct communications. It is clearly defined in plans made in the maritime service and elsewhere that CWD telegraphy shall be superseded by teleprinter and data communications. With the passing of Morse will go the ship's 'Sparks'. The aeronautical operator has already succumbed.

Some ZR licensees may feel irked that they will have to pass an examination, albeit at 12 w/min. in an almost outmoded code, which will not be in use whilst they are still young and active hams. However, radio amateurs are members of an exclusive society, and part of the exclusivity is proficiency in telegraphy. It may be that the authorities share in this point of view, and in an effort to keep the numbers of amateurs within economical bounds, have used the examinations in regulations, theory and the Morse code as a means to this end. Should we complain? Of course not — we had to come up the hard way — if others wish to join us let them join us as peers.

It is encumbent on those who have received the accolade of the ZS call, to encourage our ZR members to advance to full participation in amateur radio: To this end ZS1HQ is sending the Headquarters Bulletin on 7.050 kHz on Sundays from 07h45B to 08h15B, and Branches are exhorted to supplement Technical Colleges and private tutors' lessons by on-the-air Morse tuition.

It is necessary that the ZS licence be seen as a challenge and a hurdle to be surmounted, but the means to overcome the obstacles must be provided for the enthusiastic.

73 de Peter **ZS1U.**"

It is my honest opinion that, unlike what is being pedalled around today, CW telegraphy will continue to provide countless contacts, with a wonderful means of two-way communication, especially in amateur radio circles, just as it has done for millions of men, women, boys and girls, 5 years to 95 years, during the past century, the world over.

Eric Trebilcock L30042.
Thornbury 3071. ■

Technical Articles Always Needed

3 Maxwell Street,
Lalor, Vic. 3075.
VK3WW.

The Editor,
Dear Sir,

On the 5th of June I was unlucky enough to be involved in a five car pile-up on the Hume Highway, south of Wangaratta.

After clearing the road I called on two metres and established contact with Bruce VK3ZSR in Wangaratta. Bruce then contacted my son in Melbourne on the 600 ohm line, passed relevant details and arranged for him to come and pick us up.

This quick and efficient action was not only a relief to me but more so to my XYL who was suffering from shock.

Through the pages of Amateur Radio I would like to offer my sincere thanks to Bruce, whose action can best be described as operating the true spirit of amateur radio.

Mike O'Burtill VK3WW,
Assist. Secretary WIA Vic. Division. ■

The Editor,
Dear Sir,

Morse Examination Standard.

I believe that I am only one of a large number of amateurs who was quite disillusioned and disappointed by the quality of the 10 w.p.m. morse tape offered by the May Section L telegraphy examination.

Apart from a rather weird audio tone the speed of the transmission appeared to be quite variable and character and word spacing somewhat inconsistent.

After 8 errors at the previous examination I felt confident of success, but would not be surprised if I amassed 30 to 40 errors!

Surely the matter should be taken up with P. and T. so that examinations present morse of a suitable quality to give everyone a reasonable chance of achieving their aim — the full licence.

Maurie Hooper VK5ZMA/NMH. ■

Join a new Member — NOW —

AWARDS COLUMN

Brian Austin, VK5CA
P.O. Box 7A, Crafers SA, 5152

BUDAPEST AWARD

The Budapest Award was founded in 1963. This was a long time ago, and the rapidly increasing number of the Budapest radio amateurs made it necessary for the Radio Amateur League of Budapest to establish certain modifications concerning the rules of the award. The new rules we present here comply with the following requirement: a ham or SWL certificate should be given only and when you make a great performance in amateur radio communications.

1. In order to have a possibility of acquiring our Budapest Award contact (or listen to) different HA5 or HG5 stations as follows:
   EU stations — 75 different HA5 stations.
   DX stations — 25 different HA5 stations.
   VHF stations — 50 different HG5 stations, or 5000 kms summarised distance.
2. Contacts are valid from 1-1-1959. The same station may be represented only once in your application.
3. Any amateur bands and modes may be used. Active (land or air) VHF/UHF repeaters may be used as well. VHF/UHF contacts by satellites or via the Moon count with 500 kms/QSO value.
4. After 1-1-1976 the certificate is issued in one class and may be received only once. So there are no endorsements either.
5. The Radio Amateur League of Budapest is entitled to issue a unique special class of Budapest Award to acknowledge some particularly remarkable amateur radio achievements.
6. Apply with certified list of your contacts (listenings) and send it with 10 IRCs to the Award Manager of BRAL, Dezso Tarcsay HA5HA, H-1553 Budapest, P.O. Box 2, Hungary.
7. Please note: There are two activity week-ends of Bundapest radio amateurs, one for HF bands during the second full week-end of May, and one for 2m band a week after that.

THE CQ TV AWARD

To mark the 100th issue of CQ TV, BATC is introducing an operating award scheme whose aim is to encourage activity in amateur television by providing an incentive in the form of a certificate.

This award is available to both transmitting and receiving amateurs and SWLs in any part of the world, whether they are members of the British Amateur Television Club or not.

The award is for contacts made using fast scan high definition television systems only.

Consideration has been given to the advantages achieved by stations in high activity areas or with exceptional geographical locations, therefore qualification for the award is on a points basis as detailed below:

TRANSMITTING AWARD

For pictures transmitted which have been successfully identified by another station claim two points per kilometre; if the contact becomes a successful two-way exchange of pictures then 10 bonus points may be claimed by each station regardless of distance.

Careful logging of transmissions is essential.

RECEIVING AWARD

For any picture positively identified claim 2 points per kilometre.

POINTS

Points are claimed as above, however if the contact is on 23 cm or above, the points should be doubled.

The award is divided into three grades — for the Bronze, 1000 points; for the Silver, 5000 points; and for the Gold, 10,000 points.

CONTACTS

A station may be worked once only per day for the purpose of this award. It is quite possible for the award to be gained by working the same station many times, but the aim is to promote activity of any sort. Points may only be claimed for contacts made from 1-11-1977.

THE CERTIFICATE

Upon qualification for the Bronze award a certificate will be issued together with the Bronze seal; the certificate may be upgraded later with Silver or Gold seals. No charge will be made for the award, but please send return postage with each application.

APPLICATIONS

Applications should include log details consisting of call sign, date of QSO, band, location of the station worked and points claimed. Contacts made from other than the home station should be clearly marked. QSL cards are not required, but the application should be checked and signed by one other licensed amateur. Send to Award Manager, John L. Wood G3YQC, 54 Elkington Road, Yelvertoft, Northampton NN6 7LU.

BEGONIA AWARD

The Bellarat Amateur Radio Group, Victoria, Australia, has initiated the "Begonia Award" Certificate which is available to Amateur Operators or SWLs who can show confirmation of working or hearing Ballarat Amateurs.

As from January 1 1978, the requirements for issue of the certificate are:

1. **DX STATIONS OR SWLs:**
   Work or hear 5 Ballarat Amateur Stations. Any Band, Any Mode. Cost 8 IRCs.
2. **VK STATIONS OR SWLSs:**
   Work or Hear 10 Ballarat Amateur Stations. Any Band, Any Mode. Cost $2.00.
3. **LOGS:**
   Send a list of Stations worked stating Call Sign Name, Date, Band, Mode and Time in Zulu. Do not send QSL Cards.
4. **SEND LIST TO:**
   Award Manager, R. E. Barker, 22 Pauls Crescent, Wendouree, Victoria, Australia, 3355.
   From: Brain Stares VK3ZBS, Publicity Officer. ■

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Syd Clark, VK3ASC

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The Micro-TO Message Keyer; A Long-Delayed Echo Revisited; More Reflections on LDEs; The Long-Boom Ouagi; BC-Band Energy — A Rejection Filter; A Spectacle Mounted Code Blinker; A Universal Crystal Oscillator; Calculating Capacitor Values; Tracking the Next OSCAR; Blackout Spawns Amateur/Police Emergency Network; RFI Assistance List; La Scala of Milan Cures some Virginia Hams; The Lure of 2 Metres; The Honour Roll: Not for the Faint Hearted; Results, 1977 IARU Radiosport Championship; Frequency Measuring Test; Contest Disqualification Criteria and Club Competition Rules; Ham Activity and Solar Activity: Going Up; FCC Drops 220 Restrictions; Public Relations, German Style.

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RADIO COMMUNICATION March 1978
A 144 MHz FM Black Box; The AMSAT-OSCAR D Spacecraft; The Satellite Band Plan; The Robot Model 400 SSTV Converter; Technical Topics.

RADIO ZS January 1978
The ZS6U Minishack Special; Getting the Most out of Your Yaesu FT75-B; The AMSAT-OSCAR D Spacecraft; VHF Meteor Scatter Propagation.

OST March 1978
How Visual Displays Work; A FET Volt-ohmeter with Linear Ohms Readout; New Tasks for the Digital Voltmeter; Locating Geo-synchronous Satellites; A Permeability Tuned Variable-Frequency Oscillator; The Flagpole Deluxe (Antenna); Microwave Mobile Propagation; Microwaves, Mozzarella Burgers and Mountains; The Lure of Two Metres; From Russia with Love; PR Group — NYC Marathon; Dr. Glen: An Uncommon Man; Quiet Progress; 1977 Can-Am Contest Results; Rules, ARRL International EME Competition; April CD Party — All ARRL Members. ■

IARU NEWS

The Federal President, David Wardlaw VK3ADW, and the Immadiate Past President, Michael Owen VK3KI, visited New Zealand over the Queen's Birthday week-end at the invitation of NZART.

They attended meetings of the NZART Council as well as the annual Conference of the Society. The visit was reported as being extremely useful and a free ranging exchange of views occurred, especially in relation to preparations for WARC 79. ■

QSP

DID YOU KNOW?

That NASA has launched the world's most powerful communications satellite? Jointly developed by the USA and Canada, the Communications Technology Satellite boasts 200 watts of power to transmit written messages, television pictures, and voice communications. "Marisat" satellites were positioned over the Atlantic, Pacific and Indian Oceans to facilitate maritime communications.

That Ham signals above 80 metres frequently reach the moon at enough strength to be quite readable? If a receiver up there using a decent antenna was tuned to the frequency, most moderately powered transmitters that use dipoles, which radiate appreciable power straight up, reach the moon when it is high in the sky, providing the ionospheric critical frequency is low enough to permit the signals to punch through at high radiation angles.

"Ham Radio", December 1977. ■

HAMADS

- Eight lines free to all WIA members. $9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

EVENTS

CAPRICORNIA AMATEUR RADIO FESTIVAL, conducted by WIA Central Queensland Branch, will be held in Rockhampton, 16-17 September. Interests for everyone. For details write: Secretary, Box 496, Rockhampton 4700.

FOR SALE

Kenwood TR7400A, 800 ch. 30W FM Txcvr., ex. cond., in original carton, instr. bk., mic. and mobile bracket, incl. serv. manual (worth $20), $350. VK5ZCW, QTHR. Ph. (087) 25 2407.

Tape Recorder, Phillips 5¾ in. reel/reel and mic., as new, $50; Osker Bloc SWR 200 SWR and power meter recalibrated to give accurate power readings to 146 MHz, $50; AWA MR15 6m FM car phone with preamp, as new, must be sold to license holder only, $60, ONO; 430 MHz ATV convertor from Microlink, brand new, $25, incl. post; Pye Mk. IIIA Tcvr., 53.866 AM, $20; Pye Mk. IIIA Tcvr., 52.100 DSB, $20. Steve VK2ZSC. Ph. (02) 674 2104, after 5.30 p.m. EST.

110 Voll Drake 2B Rx with handbook, has SSB, CW, AM and WWV facilities, requires 240/110V transformer and speaker, $140, ONO; Heathkit reflected power and SWR bridge meter, $15. Both in A1 condition. VK2QL, QTHR. Ph. (02) 76 6861.

Uniden 2020 and remote VFO, immaculate, $750; IC 202 with crystals covering 144 to 144.6 plus Oscar, $170; Heath monitor scope, $100; Stolle rotator, control box and cable, $70; 8Y/2m Jay beam, $35. VK3AZM, QTHR. Ph. (052) 52 1884.

Barlow Wadley Rx, good condition, no FM, $150. VK3AXA, QTHR. Ph. (059) 42 7248.

Uniden 2020 Transceiver, complete with mic., instr. book and service manual, all as new, $595. Heathkit SB600 speaker, $10; Mini Products 20/15/10/6 metre vert. antenna, 9 ft. overall, $25; Powerband 2m solid state power amp., 55 watts out., $35. VK3QM, QTHR. Ph. (03) 560 9215.

Kyokuto Tone Encoder/Decoder, SC-12A 12-channel Selcal units, suit any rig, cost $120 ea., sell $75 ea. (2 only). Mark Webster VK2BAK, QTHR. Ph. (02) 48 6241.

Icom IC202E, SSB, 6 months old, mint condition, in original packing with standard accessories, $170. Ian Cousins VK5IK, QTHR. Ph. Eudunda (SA) 252.

Uniden 2020 HF PLL Transceiver, ext. VFO, matching speaker, manuals, $700; Yaesu FL2000B linear amplifier, 1200W SSB, 572B triodes, $400; Yaesu Y0100 monitorscope, $225; Clegg 27B FM 2m transceiver, 145-147 MHz, synthesised, mobile mount, $125; Teleprinters, mod. 15 page printer, mod. 14 typing reperforator, series motors, both overhauled, $50 ea. VK2BOA, QTHR. Ph. (049) 61 1580.

Yaesu FT75B HF Transceiver with 9 xtls, AC and DC power supplies, external VFO, VC 75 external VOX unit and speech processor and mobile mounting bracket, $550; FT200 with all 10m crystals, plus 11m, $375; Ken KP202 2m FM R2, R6, 40, 50 with nicads and charger, $160. Jim Hendrickson. Ph. (03) 726 5060.

Freq. meter, 0-30 MHz, $150; counter, 0-100 MHz, HP 524 OR, $110; sig. gen., 10-300 MHz, $140; R210 Rx, 24V, 2-16 MHz, $60; C-11 Tx, AM/CW, 60W, 2-18 MHz, xtal cal., etc., $30; C-42 Tcvr., 38-60 MHz, $20; Scorpion transverter, 28 MHz, 2m, 100W, $120. Doug Johnson VK3YMG, Shepparton. Ph. (058) 21 2309.

FR-101 Rx, all bands to 2m, excellent condition, $700, ONO. B. G. Roche, 103 Sig. Sqn., Lavarack Bks., Milpo, Townsville, Old., 4813.

Power Transformer, 230V 50 Hz primary to 115V secondary at 2000W, in good condition, $120; also power transformer, 240V 50Hz primary to 110V secondary at 1000W, in excellent condition, $85. Both transformers in steel boxes with 240V leads and 3-pin plugs and have a number of American 2-pin socket outlets built in. VK4XT, QTHR. Ph. (074) 62 2389.

Coaxial Remote Control Switch for 2 antennas, $10; audio filter for CW F-520, $20; frequency marker, 5-400 kHz and 5-120 kHz, $20 ea.; auto-level solid state compressor, $30; line filter, 100V 5 amp., $5; amperex tubes, 2 6LF6, $5 ea.; amperex tubes, 2 5894B/8737, $30 ea.; Toyomura 2m Rx amplifier RB-145, $22; Vanguard RF pre-amp 28.6 MHz Rx only, $20. VK1BH, QTHR. Ph. (062) 65 5385 Bus., (062) 88 6082 A.H.

Ch. 40 xtals for AWA MR Series, 4055.55 and 10285.71 kHz, never used, made by AWA, $10. VK2BAD, QTHR. Ph. (02) 72 1107.

Communications Rx, realistic DX160, as new cond., perfect order, with instruction manual, $120. Keith Long VK2NII and VK2BYL, 1 Moola Pde., Chatswood. Ph. (02) 428 5354.

Yaesu FT901DM, the ultimate status symbol transceiver, new and complete with mic., AC and DC plugs, etc., English language instruction manual (not photocopy), will demonstrate "on air" this QTH and air deliver any capital city, $1,400. VK3SB, QTHR. Ph. (03) 550 3521.

Teletype Machines, type 15, excellent cond., with h'books, $65 and $75; SSB, AM, CW transceiver, 3-band, 80 and 40m coils fitted with provision for 3rd band, suit novice, 25-30W PEP, with VFO, $165. VK2ZHS, QTHR. Ph. (02) 59 5390.

Solid State Forrest-Phone, suitable for 160 or 80m, $40. McLeod Transceivers, $30 ea. 144 MHz — AC Rx, converted, $50. Car phone w. crystals, 7 ch. VK3NCF. Ph. (055) 62 2162 or (055) 62 7140.

SSTV Monitor, kit includes 11 in. tube, W0LMD circuit completed, EHT supply, 460V CT and 6.3V AC, A and R 6672 transformer and 2 off A and R 2155A transformers, plus 2 off 40 mFd 450V, 2 oil 2500 mFd 63V, 1 off 1000 mFd 63V electrolytics, $150, ONO; Quad, 2 element spider commercial unit, hub spreaders, etc., $120. VK4AAT, QTHR. Ph. (07) 208 7898.

Collins KWM2 and power supply, $1600. Kenwood 820, $835. Yaesu FT301, $835. All in perfect condition. VK7AZ. Ph. (002) 44 1165.

TV measuring CRO, Marconi TF1277 C/W markers, delay, single or differential I/P, in-line monitor facility both channels. Sync section requires some work, $275 firm or swap for TF995A/5 generator or similar or Kyokuto FM mobile. Also Marconi TF142E distortion meter, $70, and Telemax frequency meter 85 to 1000 MHz incl. mains PSU and charts, any offers, cash adjustment on swaps if needed. Ian Foster VK3BLF. Ph. (051) 56 8311 anytime.

Immaculate FT101 Mk II inc. manual, factory packing, Ian mod. only, magnificent condition, $540 ONO. Heathkit SB610 monitor scope kit, complete, only $300 inc. manuals. TR2200G FM carry portable, nicads and AC powered, 7 repeaters and 3 simplex ch. fitted — value $220. IC22A, ch. 2, 4, 6, 8 repeaters and anti repeaters; 3, 5, 7 repeaters and 7 simplex channels (an IC22S at IC22A price) — $240. FT75B including AC and DC PSUs, FV50C ext. VFO, 3 ch. all bands, immaculate condition and performance, $550. FTDX401 & FV401 ext. VFO & "Magnum Six" RF speech processor, combination for the serious Dxer, excellent condition, all manuals, $700 (will not separate). VK3ATR, QTHR. Ph. (03) 336 1054 AH.

Complete station, deceased estate. Collins KWM-2 unmarked with PM2 power supply, instruction book and homemade amplifier to suit, all in proper working order, $1850. Also tilt-over tower, approx. 40 ft. with 3-el. 20m and 2-el. 15m yagi and 2m antennas. HAM-II Rotator control unit and cable antenna to be dismantled, Kew Vic. VK3AHR, QTHR. Ph. (03) 836 4203.

6m Transverter, almost comp., uses 3/12 in final, $20. Two 813s and sockets, $20. Trans. dip meter HB, not cal., $15. Two 80m Novice band xtals, $15. Assorted MC meters — offer. Heavy current/high voltage power supply, suit linear amp., $80. Doug Margetts VK3NGG, 29 Bolinda Rd., Nth. Balwyn, Vic. Ph. (03) 857 8475.

R2553 Communications Rx, 29 1 MHz bands, 1 kHz dial calibration, 1.5 to 30.5 MHz, manuals, phones, excellent condition, $250 ONO. Also available — spare modules, Collins mech. filter, 500 kHz BW 3.1 kHz for above. Allan VK2GR, QTHR. Ph. (02) 47 4344.

Kenwood UHF Transceiver, 700A all-mode unit, 12 months old, in excellent order, $495. Kenwood 7200G mobile, xtals, reptrs. 2 to 8, simplex 40, 49, 50, 51, 52, $195. Swan 500 HF Tcvr., excellent order, only $295. VK3GM, QTHR. Ph. (053) 49 2028.

1 Crystal Lattice Filter, XF-30B, made by Yaesu for AM, give 6 kHz band-width, ideal for FR101 and FT101, with instructions, $35. VK6CO, QTHR.

Collins KWM 2 SSB Tcvr. with Collins AC power supply, Collins speaker, Collins samsonite case to suit above, new Shure 404C mike, as new condition; had very little use, $1,695.00. James VK2JO. Ph. (02) 36 7756.

QR666 Gen. Cov. Rx, exc. cond., with handbook $160, ONO. B. Bathols VK3UV, QTHR. Ph. (03) 90 6424 A.H.

WANTED

DV21 or DV21A in good condition (matching synthesised VFO for Icom IC21A). VK3ARZ, QTHR. Ph. (03) 232 9492.

Webster "Band-Spaner" or similar antenna, suitable for portable work. Also roller inductance (ceramic), approx. 30 turns 2 in. diameter, for aerial tuning unit. VK2ARK, QTHR. Ph. (083) 86 2709.

FT-200 Transceiver with AC power supply. Details to VK3QM, QTHR. Ph. (03) 560 9215.

Transceiver or Transmitter to suit Novice, in working order and reasonable condition, up to $100. Contact Warren Brown. Ph. (03) 570 6729.

Transformer, 240V primary, 350V sec. ±15 volts, at 40 mA or more. VK3ZRO, QTHR. Ph. (03) 92 2834.

SILENT KEYS

It is with deep regret that we record the passing of —

Mr. G. K. PARKER	L50916
Mr. J. C. GUTCHER	VK3APU
Mr. D. E. BURGESS	VK3YAX
Mr. G. N. MARKS	VK6AI

FV401, also matching transmitter to FRDX400 for collection of 400 series equipment. Ian Foster VK3BLF. Ph. (051) 56 8311 anytime.

Circuit of ex-Army A510 Radio Set wanted. Also want sockets for 2AP1 CRO tube. VK4NS, QTHR. Ph. (07) 59 1945.

WANTED KNOWN

Reserve the date — Trial Novice exam — Saturday, 16th September, 2 p.m. Club Instructors please note: Details WIA (NSW) Education Officer, Box 109, Toongabbie, 2146.

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Icom IC-22S, Serial No. 6209943 with Scalar mag. base and ¼ whip. Ribbon cable attached to diode board; other end unterminated. Pioneer KP-4000, Seriel No. 06889 car/cassette. Also model aircraft accessories and other items. Any information to VK5ZLL, 2 Ruddock Avenue, Hilton, S.A., 5033. Ph. (08) 43 6496.

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- The antenna switch has four outputs. Two of these are for coaxial fed antennas, one is for a wire antenna and one is for connecting a dummy load.
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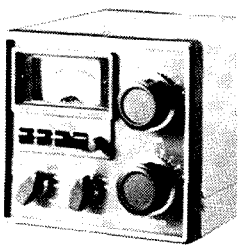

SPECIFICATIONS

Frequency Range	160 meter band – 1.8 to 2.0 MHz
	80 meter band – 3.5 to 4.0 MHz
	40 meter band – 7.0 to 7.3 MHz
	20 meter band – 14.0 to 14.35 MHz
	15 meter band – 21.0 to 21.45 MHz
	10 meter band – 28.0 to 29.7 MHz
Mode	SSB, CW, RTTY
Drive Power	80 Watts or more for full output
RF Input Power	SSB: 2,000 Watts PEP
	CW, RTTY: 1,000 Watts DC

The new KENWOOD TS-700S is the all-mode solid state transceiver that provides you with versatility plus over the entire 2 meter band. It's feature-packed design puts you on SSB, FM, CW, and AM. The AC and DC power supplies are built in which allows you to operate the TS-700S just about anywhere. Equipped with a VFO that enables continuous tuning from 144 – 148MHz, the TS-700S comes complete with built-in digital frequency readout, receiver preamplifier, VOX, sidetone, and microphone.

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amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

VOL. 46, No. 9 SEPTEMBER 1978

CONTENTS

COVER PHOTO

Jenny Wicks VK2NTJ, first licensed lady Novice of the Summerland Amateur Radio Club.—See "The Lady Behind the Microphone", page 25.

Registered for posting as a Publication — Category "B".

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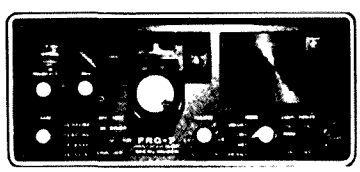

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amateur radio

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QSP — 6 METRE BAND

The amateur frequencies involved in the second of a proposed frequency table for inclusion in the International Radio Regulations, by the Australian Preparatory Group, has been released by the Minister for Posts and Telecommunications and has been fully reported in AR.

An area of particular concern to us all, is the proposal for broadcasting to be allocated from 47 to 68 MHz, with the amateur service allocated 52 to 54 MHz on a secondary basis by footnote.

The importance of an amateur band at 50 MHz is obvious to the Institute. We all know the achievements of amateurs on this band in the DX field, particularly at the right time of the year when international contacts are common. Of course, for an amateur band to be of any use for international communication, it is desirable for it to be a common allocation fn all countries.

At present the 50 to 54 MHz band is allocated to the amateur service exclusively in Regions 2 and 3, but not at all in Region 1. Australia, because of the non-standard nature of its television channels has footnoted tha television service into the table at 45 to 52 MHz. New Zealand has also eroded part of the regionally-exclusive amateur band.

In the early days of TV the whole of the regionally-allocated 50 to 54 MHz amateur band was to be used for TV, and the amateur band moved to 56 to 60 MHz, a band that had been used prior to the shutdown of all amateur stations in 1938 and was used in Europe for a while after the war.

The Australian allocation eventually, at least, now coincides with part of the international band. The Institute has felt for some time that In areas where no Channel 0 is allocated the amateurs should be allowed to operate in the full Regional 3 allocation, and has approached the Department attempting to obtain this permission, but without success to date.

In Region 1, although there is no amateur band in this part of the spectrum, a number of countries have indicated that they will phase out some of their Band I TV channels. A significant number have licensed 50 MHz amateur beacons, thus indicating a recognition of amateur investigations in this band.

All this gives weight to the Institute's view that the 50 to 54 MHz exclusive amateur allocation should be maintained in Region 3 even If, in Australia, we have to put up with our non-standard TV allocation by footnote until Band IV TV broadcasting is opened up.

The Institute feels strongly that an exclusive amateur allocation at 50 MHz is of the utmost importance to the amateur service and is working to this end.

D. A. WARDLAW, VK3ADW, Federal President. ■

QSP

RTTY

Reports have been received that amateurs have been causing severe interference to amateur RTTY stations. Whilst keenness to monitor our bands, and do what we can to remove any intruders, is most commendable, it is an extremely poor operating habit to give ORM to our own amateur stations in the bands. if you believe a RTTY station, is an amateur band, is an Intruder, first get an identification from your local Intruder Watch Co-ordinator, or local RTTY operator, before deciding to chase it away.

SOLOMON ISLANDS

Keith Roget VK3YQ, VR4AV and H44AV, has now returned from the Solomon Islands and advises that the new prefix lor radio amateurs after Independence is H44.

PR VIDEOCASSETTES

The WIA now possesses three amateur programmes on U-matlc videocassettes. These are: The ARRL publicity lilms, the "This Week Has 7 Days" programme and the copyrighted G6CJ aerial circus programme, now fully edited and runs for an hour in black and white. The first two are half hour programmes in colour, with sound tracks. It has been suggested to Divisions that each should acquire copies of the colour programmes for use within each Division. If any club secretary or anyone else wishes to obtain the loan of one or more of these tapes, please address your enquiries to your Division. The Federal Videotape Co-ordinator is John Ingham VK5KG, QTHR, from whom, and only from him, can be obtained the loan of the G6CJ cassette. This is a copyright programme and will only be loaned out to well recommended Division or club officers under certain conditions, which includes postage and packing paid by the applicant in advance (weight is 1 to 4 kg, plus cost ol jilly bag), written undertaking that the tape will not be copied by anyone whilst it is in the applicant's possession, and that the tape will be returned within the period specified. Here now is a wonderful opportunity for the Institute to obtain good publicity and exposure through the efforts of keen amateurs. The production of videocassettes for other programmes is being looked into.

HISTORICAL MATERIAL

Quite by chance, access was had recently to a press cutting book belonging to the late Vic Nightingall XKK. His daughter, Mrs. Linon, kindly allowed photo copies to be taken ol many of the interesting items going back as far as 1910. Another example of obtaining and preserving historical material.

SEANET 1978 CONVENTION

The 8th Seanet Convention is due to be held in the Marco Polo Hotel, Singapore, from 10th to 22th November. For anyone interested in this and the necessary travel and other information, write to VK6NE, QTHR.

RED FACES ON 6

Some Australian 6 metre operators will have red faces following the publication of full details of 6 metre DX contacts. A large circulation overseas magazine recently published full details of recent DX contacts including the frequencies used.

APOLOGY TO ARRL

In the May issue of AR reference was made to a report in "CQ" magazine relating to an alleged threatened law suit said to arise under the US anti-trust laws and involving the American Radio Relay League.

Any inference that the report related to anything more than an empty threat is incorrect. In fact, the person responsible for raising the matter has been charged by the Attorney-General of the State of California with false and misleading representation, and cannot now be located.

The WIA regrets that the item was published and apologises to the American Radio Relay League. ■

STOP PRESS

WIA OBTAINS ANOTHER PRIVILEGE FOR AMATEURS

Novices are authorised to use 3525-3625 kHz effective 8th August, 1978. Letter from P. and T. Dept., Ref. RB4/11/30, will be published in the October issue of AR.

EDITOR'S DESK

Bruce Bathols VK3UV

Since the last time I put pen to paper and wrote a few thoughts on current happenings within Amateur Radio, a lot of interesting items have occurred.

Novices have been granted the use of VFOs.

WARC 79 preparations are beginning to liven up.

Ch. 5A problems have arisen again.

Some people have said to me that WARC has been "Flogged to Death"—but in your own interests, don't you think it should be?

You will no doubt have read the report on the Australian Preparatory Group No. 2 (APG 2) published in the July issue (or have you??).

This month we have an excellent article by Michael Owen VK3KI, giving a complete resume of the whole business.

It is pretty solid stuff and most thinking amateurs will certainly take heed—WARC 79 needs to be "Flogged to Death" to make the majority of amateurs become aware of what is happening and to gain more support.

It is your hobby, too, you know!!

. . . .

One sometimes becomes a little tired of certain non-constructive criticisms from some non-members. Criticism I want, lots of it, providing it is not waffle and helps me to produce a better magazine.

One certain VK3 "Z" call WIA critic (no names or pack drill) cannot apparently see the wood for the trees — is a non-member and proud of the fact (it is his prerogative), but I cannot understand why he delights in putting down everything the WIA says or does. Same gentleman doesn't mind using at least three WIA supplied repeaters though.

. . . .

Well the Channel 5A beast has now certainly raised its head with a vengeance, and what is required now is a united approach to the problem—not piecemeal misinformed statements and belting of chests.

For those in States who have Ch. 5A already, the problem is already known, but for others, particularly Melbourne, Brisbane and Adelaide, watch out!! — the worst is yet to come.

Some meaningful negotiations have already taken place at Ministerial level by members of the WIA Executive in June — but there is a long way to go.

Not forgetting Sydney though, as Ch. 5A is already in nearby Wollongong, Ch. 5A is not their problem — but the latest rumour states that Channel 0 could be.

Keep your ears to the ground VK2s and let us have some feedback A.S.P.

Keep watching WIANEWS for up-to-date reports.

. . . .

Keep the articles and photographs rolling in — a good response so far — and remember that this magazine is YOURS, and what you contribute helps to make it that much better.

73s from Bruce Bathols VK3UV. ■

WIRELESS INSTITUTE OF AUSTRALIA

Federal President: Dr. D. A. Wardlaw VK3ADW

Federal Council:
VK1 Brig. R. K. Roseblade VK1QJ
VK2 Mr. T. I. Mills VK2ZTM
VK3 Mr. J. Payne VK3AED
VK4 Mr. N. F. Wilson VK4NP
VK5 Mr. I. J. Hunt VK5QX
VK6 Mr. N. R. Penfold VK6NE
VK7 Mr. P. D. Frith VK7PF

Staff: Mr. P. B. Dodd VK3CIF, Secretary.
Part-time: Col. C. W. Perry, Mrs. J. M. Seddon and Mr. P. Simmons (AR advertising).

Executive Office: P.O. Box 150, Toorak, Vic., 3142. 2/517 Toorak Rd., Toorak, Ph. (03) 24 8652.

Divisional Information (all broadcasts are on Sundays unless otherwise stated):

ACT:
President — Mr. E. W. Howell VK1TH
Secretary — Mr. Ted Radclyffe VK1TR
Broadcasts— 3570 kHz & 146.5 MHz: 10.00Z.

NSW:
President — Mr. D. S. Thompson VK2BDT
Secretary — Mr. T. I. Mills VK2ZTM
Broadcasts— 1825, 3595, 7146 kHz, 28.47, 52.1, 52.525, 144.1, Ch. 8 and other relay stations: 01.00Z. (Also Sunday evenings 09.30Z and Hunter Branch, Mondays 09.30Z on 3570 kHz and ch. 3 and 6).

VIC.:
President — Mr. E. J. Buggee VK3ZZN
Secretary — Mr. J. A. Adcock VK3ACA
Broadcasts— 1825, 3600, 7135 kHz — also on 6m, 2m SSB and 2m Ch. 2 repeater: 00.30Z.

QLD.:
President — Mr. A. J. Aarse VK4QA
Secretary — Mr. W. L. Glalls VK4ABG
Broadcasts— 1825, 3580, 7146, 14342, 21175, 28400, kHz; 2m (Ch. 42, 48): 09.00 EST.

SA:
President — Mr. C. J. Hurst VK5HI
Secretary — Mr. C. M. Pearson VK5PE
Broadcasts— 1820, 3550, 7095, 14175 kHz; 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.

WA:
President — Mr. L. A. Ball VK6AN
Secretary — Mr. P. Savage VK6NCP
Broadcasts— 3600, 7080, 14100, 14175 kHz, 52.656 and 2m (Ch. 2): 01.30Z.

TAS.:
President — Mr. I. Nicholls VK7ZZ
Secretary — Mr. M. Hennessy VK7MC
Broadcasts— 3570, 7130 kHz: 09.30 EST.

NT:
President — Dick Klose VK8ZDK
Vice-Pres. — Barry Burns VK8DI
Secretary — Graeme Challinor VK8GG
Broadcasts— Relay of VK5WI on 3.55 MHz and on 146.5 MHz at 2330Z. Slow morae transmission by VK8HA on 3.555 MHz at 1000Z almost every day.

Postal Information:
VK1 — P.O. Box 48, Canberra, 2600.
VK2 — 14 Atchison St., Crows Nest, 2065 (Ph. (02) 43 5795 Tues & Thurs (10.00-14.00h).
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 3535 Sat 10.00-12.00h).
VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton (Ph. (08) 254 7442).
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (incl. with VK5), Darwin AR Club, P.O. Box 37317, Winnellie, N.T., 5789.

Slow morse transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

VK QSL BUREAUX

The following is the official list of VK QSL Bureaux, all are inwards and outwards unless otherwise stated.

VK1 — QSL Officer, G.P.O. Box 1173, Canberra, A.C.T. 2601.
VK2 — QSL Bureau, C/- Hunter Branch, P.O. Teralba, N.S.W. 2284.
VK3 — Inwards QSL Bureau, Mr. E. Treblicock, 340 Gillies Street, Thornbury, Vic. 3071.
VK3 — Outwards QSL Bureau, Mr. R. R. Prowse, 83 Brewer Road, Bentleigh, Vic. 3204.
VK4 — QSL Officer, G.P.O. Box 638, Brisbane, Old., 4001.
VK5 — QSL Bureau, Mr. Geo. Luxon VK5RX, 27 Belair Road, Torrens Park, S.A. 5062.
VK5 — OSL Bureau, Mr. J. Rumble VK6RU, G.P.O. Box F319, Perth, W.A. 6001.
VK7 — QSL Bureau, G.P.O. Box 371D, Hobart, Tas. 7001.
VK8 — QSL Bureau, C/- VK8HA, P.O. Box 37317, Winnellie, N.T., 5789.
VK9, 0 — Federal QSL Bureau, 23 Landale Street, Box Hill, Vic. 3128.

QSP

3 CM (10 GHz) BAND JAMMERS

Ham Presstop in June 1978 Ham Radio refers to another threat to amateurs by some manufacturers planning to make and market police-radar jammers under the "Amateur Radio" label, possibly as "radar calibrators".

AMATEURS DON'T CARE

From the June editorial in the Central Coast AR Club Newssheet by Ken VK2YAY comes a further example of the Amateur Ostrich with his head buried in the sand.

With an important meeting looming to discuss the NSW Division's Constitution amendments the editorial laments the usual apathy among our fraternity, and suggests that out of 50 WIA members in the club, five will probably attend the meeting. It is hoped that Ken is proven wrong.

The editorial goes on to say . . . "The point which concerns us deeply is the certainty with which we can make this forecast: summed with deadly accuracy in a recent magazine interview (CB Action) with a self-confessed 'pirate' who said: 'Amateurs don't care.'

In those three words are revealed the major problem of our service — a blithe disregard for matters which affect us all by a majority of amateurs."

It is a pity that it is true — perhaps we shall all wake up after it is too late, and we only have ourselves to blame. ■

WIANEWS

Amateurs who use the 6 metre and 2 metre bands are most disturbed about the television channel allocations and projected allocations.

AR last month carried a special WIANEWS insert explaining how the Channel 5A came into use. In the body of AR various letters or articles were published concerning Channel 5A extended proposed application.

Behind the scenes work is proceeding with the preparation of technical material, opposing 5A, for submission to the Minister, and the need tor amateurs to extol the virtues of UHF TV.

EDUCATION AREA

A 600 question bank on Novice Theory has now been finalised by the Federal Education Co-ordinator and will be presented to the P and T. Department during August. Out of this it is hoped will come sufficient mutually-agreed questions to compile two examination papers typifying the required standard.

These two sample papers will then be of use for a reprint in the WIA brochure dealing with the Novice syllabus and study guide.

NEXT NOVICE EXAMINATION

As at 31st July no news is available from the Department about the date of the next Novice examination. The dates 24th or 31st October or 21st November are under examination.

MAGPUBS

During late July further supplies of the exceptionally bargain price 1977 ARRL Handbooks began to arrive. After this shipment there should be enough of these Handbooks distributed to satisfy the almost unsatiable demand for some time ahead.

Shipments of many other books also arrived and most Divisions should be in a position to meet outstanding orders. New arrivals included the NZART 1978 Callbook, which contains a wealth of information about the radio communication scene in New Zealand.

Reasonably priced amateur radio books is one of the many services available to members. Check with your Division or write direct to the Executive office for listings and availability.

As many members already know, Magpubs also processes subscriptions to the more popular overseas amateur radio magazines such as QST, VHF Communications and others. Unfortunately the prices of these subscriptions have risen sharply during the past year or two by virtue of increased source prices and movements in the exchange rates.

During the past year many complaints have been received relating to the non-receipt of one or more issues of several overseas magazines. Unfortunately there is no known way of discovering whether the missing issues were never despatched or were posted but vanished en route. Observations tend to confirm that the troubles arise at source and not in transit.

Subscribers through Magpubs for overseas magazines are advised to write to Magpubs when it becomes quite clear that any issue is missing. Enough time should elapse, however, to cater for delays in transit caused by strikes and other occurrences. Earlier this year overseas mails were subject to much disruption, but the situation appears to have become normal once again.

Many members who subscribe through Magpubs have written direct to the publishers in respect of missing issues but experience shows that this is almost a waste of time. Perhaps the ultimate answer might be for Magpubs to order and distribute monthly copies from Melbourne, but this would result in increased rates because of double freights or postages. As things are at present, Magpubs is the "meat in the sandwich" and erroneously receives the blame for missing issues. Subscribers should remember that complaints to the publishers by the Institute usually, but not necessarily, always, achieves results.

One subscriber complained he had not received a particular publication for seven months although he had paid for a full year of twelve issues and this had not expired. A letter to the publisher resulted in the subscriber receiving all seven issues in one parcel two or three months later. Something had gone wrong with the publisher's computer label print.

EDP

The changeover from the 550 to the 6700 computer of all the WIA membership records seems to have been achieved without too many problems. The change enabled Divisions to receive a greater variety of printouts than formerly and the AR address labelling system was unaffected except for the formatting change and the addition of call sign plus two extra digits to cater lor zones.

Unfortunately it proved impossible to carry out a number of changes in the programmes relating to subscription information and accounting in general. The anniversary, or cyclic, subscription billing of members is a case in point with the result that every member will still receive his subscription notice in December, whether he is a new or continuing member.

New members joining as late in the year as November and paying their subscription for a full year are surprised to receive a subscription for a small amount during December. And if they ignore this, the computer lists them as unfinancial with the consequent suppression of the AR address label in March-April. In fact they are of course entitled to, and have paid for, AR through till the following October in the case quoted.

This is a difficult problem to overcome because there are so many different subscription rates as between one Division and another. The machine was set with a low threshold of $1.00 for this very reason. In other words, if a member owed less than $1.00 tor next year he would not be flagged unfinancial and consequently his AR address label would not cease. At the moment each member owing small amounts has to be manually flagged financial at the very time that everybody in the office must concentrate on processing incoming money.

SUBSCRIPTION NOTICES

Changes are in store for the 1979 subscription notices. Alterations will be made so that members receive a "double" notice (notice plus counterfoil) to enable them to retain one portion for their own records. The other portion would be detached and accompany their payments in the same way as occurs with gas, electricity and many other bills. Thrifty members will also realise they can return their payment in the same envelope which was used to send out the notice to them.

This year there seem to have been more complaints than usual that payments went astray in the mail. Every case investigated has revealed that the member's cheque never went through his bank account but this is little consolation when intervening ARs fail to arrive. So many new members came into the system this year and so many late payments arrived that stocks of AR for April and May became exhausted. For economic reasons, good sense dictates that extra copies of AR, over and above the estimated distribution quantity, should be kept to the barest minimum.

This is only one of the problems associated with late payers. Extra expense to the Institute is yet another problem, especially if reminders have to be sent out. The extra expense in respect of only one or two unfinancials is small, but unfortunately it is not restricted to a handful. And many, looking at the records, appear to be "professional" late payers year in and year out. If too many adopt this practice there is no answer except to increase the annual subscriptions in compensation.

FIRE IN MAILING SERVICE

On the night of 29th July the factory above the AR mailing service, Automail (Vic.) Ltd., caught fire. Although the fire itself damaged only the rear portion of the Automail premises where

our stock of AR envelopes was stored and was a write-off, the rest of Automail suffered water damage.

Fortunately, August AR had not yet been delivered for mailing and the labelled envelopes on a pallet received only minor superficial water damage. Only one set of inserts for the VK2 SW Zone Convention had been on hand. These were a write-off. Replacement ARs and missing copies on hand for mailing were also a write-off.

It is too early to forecast how this will affect future issues but meanwhile we know the Automail staff will do everything they can to overcome their problems in the quickest possible time. ■

CONSERVATIONISTS UNITE

Enlightened self interest is one of the most potent forces there is, especially when people's interests coincide, and they unite to get action.

SO WHAT ARE WE ON ABOUT NOW?
It's about how you and I can take action to remove intruders from our bands, more especially the HF portions.

PLEASE READ ON —
Do intruders ever get shifted? Yes they do, and examples have been given in my column from time to time.

Japanese fishing boats on 3.5 MHz are no longer using that band (exclusive to the Amateur Service in Australian waters), following complaints from the WIA to our P. and T. Department (see February 1977 AR, page 25). But we do not always succeed although reports after reports are furnished. Take another example, this time abortive, the Russian "woodpecker", which since 1976 has caused us all more grief than any other source of interference.

Complaints have been Initiated by the FCC in the USA, by the British Post Office in the UK, and nearly every European country Administration, but it still persists, and how! Not quite as potent as of yore, but still there. Variations of this pulse transmission format as noted to date are—

1. Very wide bandwidth — 100 kHz or more.
2. Narrow bandwidth — 30 kHz or less.
3. Long unbroken transmission — 30 min. or more.
4. Short bursts — 5 to 60 seconds.
5. High speed pulses — 25 per sec. or more.
6. Slower pulses — 3 to 5 per second.
7. Operating on two or more frequencies at the same time.
8. A single transmission moving up and down a particular band.
9. Two transmitters moving up and down a band.
10. A different sound that can almost be heterodyned.
11. An extremely strong single pulse at about one second intervals overriding one or other of the above.

Maybe your report will identify yet another variation.

Please refer my column in AR February 1977, page 25; March 1977, page 32; July 1977, page 26.

It's a sad reflection on our unenlightened disinterest that less than 10 licensed Amateurs In the whole of VK lodge any reports at all on any intruders, and there are over 8,000 of us. This doesn't give our P. and T. much encouragement to protest on our behalf, does it?

So back to our headline.

If in any month only 10 per cent of us took 5 minutes to post off a report on intruders the P. and T. would receive 10,000 reports a year. Think of It, that would exert quite a lot of leverage, don't you think?

HF band conservationists, unite!

Alf Chandler VK3LC,
Federal IW Co-ordinator. ■

AMATEUR OSTRICHES AND CHANNEL 5A

Written by Ron Harrison VK3AHJ
and submitted by the Channel 5A
Action Committee, WIA VK3 Division
412 Brunswick Street, Fitzroy, Vic. 3065

In the interests of all amateurs, whether WIA members or not, this article has been produced for information and hopefully your further interest will be generated. "Amateur Radio" and "Amateur Radio Action" is publishing this material In a joint effort to attempt to obtain your support for the Action Committee.

Future shock? Over-reaction? Rubbish?

I don't think so.

My view of the future of Amateur radio is partly summed up in an editorial comment in the prestigious American Ham Radio Magazine "QST" . . . "has Ham Radio a (any) future?"

There are enough pressures on the Amateur bands from the various spectrum users without something like a Channel 5A allocation in capital cities to threaten a prime, much used and much enjoyed Amateur band like our two metre allocation.

Sincere, dedicated and hard-working Amateurs like Peter Wolfenden (VK3ZPA) tell that people are sick of hearing about Channel 5A. One assumes from this kind of comment that the Channel 5A threat has been receiving, and still is receiving, sufficient publicity. The hard evidence indicates to me that not nearly enough people, Amateurs in particular, are getting excited enough to get off their butts and join the fight.

I support this statement with a statistic from the Australian Amateur Radio Callbook (1977 edition). I notice that about 2400 VK3 call signs are listed. In response to an appeal to forward copies of the Channel 5A protest letter to the WIA 5A committee, about 150 have been received.

(Copies of this letter are available from the Ch. 5A Action Committee — address at top of page.—Ed.)

Allowing that a substantial number of Amateurs (and non-Amateurs) sent this letter direct to Mr. Staley, I smell a strong odor of complacency, indolence and indifference among most of VK3 and, presumably, interstate Amateurs as well. I would be delighted to be shown that my olfactory sense is In some way defective.

Don't you guys care whether our hobby survives in anything like good shape? Have you forgotten about Channel O television and six metres?

I can understand that dyed-in-the-wool high frequency DXers, or any Amateur who does not use two metres, are feeling secure and that their band is not threatened by Channel 5A.

I HAVE NEWS FOR YOU! It was six six metres in 1965. It Is two metres today and it could be your favourite band tomorrow. All licensed Amateurs are morally obliged to join the growing band of Hams who now clearly see that threats to the Amateur service — such as Channel 5A — must be resisted.

So, get with us, all of you, the silent majority which has not yet committed itself to action to dissuade the Government from its plan to consider Channel 5A for capital city use.

Now that I may have succeeded in getting you worked up enough, you may ask: "How do we get involved?"

At this stage, simply!

If you live in a city or near city electorate, use your Federal Member of Parliament — you pay him through your taxes — to present your objection to Channel 5A television allocation to the Government and to Cabinet.

In a country electorate, where distance may be a problem, make sure you write or telephone.

The Minister for Posts and Telecommunications, Mr. Staley, to his credit, has been quite open in stating that the final decision on Channel 5A will be made by Cabinet. Mr. Staley is not in the Cabinet.

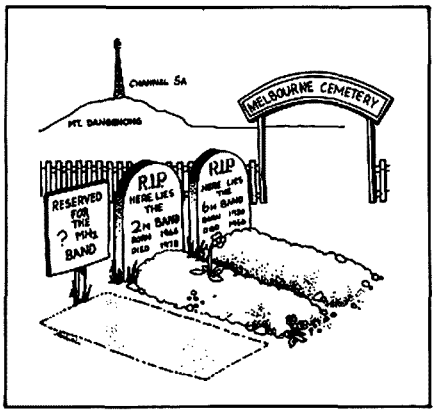
Your Federal Parliamentarian, contacted either by letter or personally — and remember in the current atmosphere an "eyeball" is worth a thousand letters — should take your objection to Cabinet members, and should confirm this in writing with copies of correspondence.

This is the single, most effective action that you can take at this time.

Watch WIANEWS and listen to Sunday morning WIA broadcasts for further follow-up action as the situation demands.

Remember, all you Hams out there in Amateur radio-land, there is a very hard-working group called the 5A Committee, headed by its able chairman, Col Fisher (VK3YII), doing quite a lot to try to save the two metre band from the same fate that befell six metres — for your benefit. The committee needs your support. Without it, you can write off two metres right now!

Technical, financial, or any other input that may assist the crusade against Channel 5A is urgently required, and may be passed on to the 5A action committee through Col Fisher (VK3YII), Les Jenkins (VK3ZBJ), Eric Buggee (VK3ZZN), or Ron Harrison (VK3AHJ). Inputs should be passed to the regional WIA branch in your



State for forwarding to the VK3 5A committee.

Mandatory reading, in conjunction with the foregoing, is the excellent "WIANEWS Special", which appeared as an insert in "Amateur Radio" last month. This concise history of the two metres vs. television conflict, prepared by David Wardlaw (VK3ADW), and Peter Wolfenden (VK3ZPA) illustrates the points that I have mentioned.

If one has to be charitable, the label "cynical" could be applied to some of the documents *coming from* Government sources on the subject of co-existence of the two metre band and the VHF and UHF television channels.

How would you react to receiving a letter from the Prime Minister's Department, in reply to your objection to a 5A installation going into service in your area, by saying quite bluntly that you may be required to limit your hours of operation to non-television program times? This has happened to Steve (VK3OT), at Hamilton.

Unlike the Channel O destruction of six metres, the Amateur radio fraternity has been fortunate, this time, to have received a warning well before a 5A "happening". This is a golden opportunity to use this breathing space to get organised against 5A.

I appeal to all readers not to waste this opportunity In our efforts to save the two metre band.

Rumors about 5A have been flying about as you may expect. The original alert in "The Age Green Guide" was almost a rumor. One of the rumors most damaging to the Amateur cause currently floating around is that for this reason or that reason some particular non-Amateur services will interfere with 5A reception and, therefore, we may relax.

While some of these rumors have some foundation, I can assure you that you are committing a Cardinal sin if you think that you can relax on the basis of this type of argument.

There are many, many reasons for the Government going ahead with Channel 5A and *unless you are* fully aware of all the facts, disregard the rumors. If you want the facts on any aspect of Channel 5A and two metres, please contact the chairman of the 5A committee, Col Fisher (VK3YII), QTHR.

Finally, let me return to my little cartoon. imagine that your immediate reaction on seeing this was "it could not happen". I have MORE news for you . . .

From experiments that have been conducted and have been reported, interference from perfectly legal two metre Amateur transmitters into television sets on 5A is much worse than anything you have heard about on Channel O and six metres, due to the increased bandwidth of the television tuners at the higher frequency of 5A (137-144 MHz).

I don't think I need to mention the number of two metre stations currently active in relation to the number of six metre stations affected by Channel O or the several million dollars worth of two metre gear sold by Australian Ham gear outlets during the past several years.

From this point it does not take too much brain power to figure out how much two metre equipment, and how many two metre repeaters will be on the market if Channel 5A appears in even a few capital cities.

So, unless you are prepared to resist the Government's Channel 5A proposal, it would be provident to offer your two metre gear for sale as soon as possible to avoid trying to sell your gear on a flooded market, perhaps some time next year. ■


THE AGE, Thursday, July 27, 1979

Wanted to Sell

HAM GEAR BARGAINS
YAESU FT221R, FT223.
ICOM IC22S, IC211, IC245,
Kenwood TR7500, TR7400A and many others.
$20 each or near offer. Discount for quantity.
SEE YOUR NEAREST AMATEUR RADIO OP

HAM 2 METRE REPEATERS
Complete installations for removal VK3RML(Ch2) and VK3RGL(Ch8) immediately available
$20ea, ONO
Others available soon.
CALL THE WIRELESS INSTITUTE OF AUST

SIDEBAND ELECTRONICS IMPORTS

P.O. BOX 23, SPRINGWOOD, N.S.W. 2777

WAREHOUSE: 78 CHAPMAN PARADE, FAULCONBRIDGE

TELEPHONE: (047) 51 1394 A.H. (047) 54 1392

Last month I trusted that my 16 crates of $50,000 order of Hygain antennas would be here late July 1978. Sorry, delays occur like Murphy's Law. I placed the order early May and was promised shipment by early June, but now things have been held up until late July 1978, to arrive in Sydney during August and, if the container depot and wharfies are prepared to co-operate, I should have the lot in our warehouse late August 1978.

The Japanese Yen now costs 10 per cent more in Australian dollars than only six weeks ago! Fortunately the U.S. dollar antenna imports are not affected and those prices remain the same, at least with me; I am not in the highway robbers league, nor do I raise prices of existing stock as some others seem to do. Where P.O.A. is mentioned, it simply means that I do not yet know what I shall have to pay for our next imports from Japan.

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18-AVT/WB 10-80m vertical 23 ft. tall	$125.00
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TH3-MK3 10-15-20m senior 3 el Yagi 14 ft. boom	$240.00
TH3-JR 10-15-20m junior 3 el Yagi 12 ft. boom	$175.00
204-BA 20m 4 el Tiger Yagi 26 ft. boom	$190.00
HY-QUAD 10-15-20m full size Cubical Quad	$260.00
11m 5 el Yagi, reduce size slightly for 10m	$70.00
2m 5 el Yagi with balun 7 ft. 3 in. boom	$25.00
2m 8 el Yagi with balun 12 ft. 6 in. boom	$30.00
BN-86 balun, for beam buyers	$20.00

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FT-101E 10-16m AC/DC w/speech processor	P.O.A.
FT-901D Deluxe AC 10-160m digital transceiver	P.O.A.
FT-7 Mobile 10-80m 20W 12V DC transceiver	P.O.A.
FL-2100B 10-80m 1200W Linear Amplifier	P.O.A.
FRG-7 .5-30 MHz general coverage receiver	P.O.A.

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FDK MULTI QUARTZ-16 24 ch. 10W 12V DC 2m transceiver w/xtals for repeaters 1-8 and ch. 40 and 50	$175.00
ICOM IC-202 2m SSB portable transceiver	$175.00
ASTRO 200 modified for latest circuitry including SWR/mismatch overload control	$750.00

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UNIVERSE 224M 12V DC 24 ch. 28.480-28.595 MHz in5 kHz steps, Clarifier operates on receive and transmit giving virtually continuous crystal controlled operation	$125.00

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CDR HAM III rotators on order, expected available early October 1978.	
KEN KR-400 Azimuth rotator w/28V AC control box	$115.00
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ARIE BLES (VK2AVA), Proprietor.

ROY LOPEZ (VK2BRL), Manager.

A 40 WATT LINEAR AMPLIFIER ON 28 MHz FOR $35.00

Having modified a 23 channel 11 metre transceiver for 10 metres conditions will often appear when one is able to just about work the world on 3 watts AM or 12 watts PEP. However under some conditions such as mobile operation or maximum local coverage, communications' duration and range can be enhanced by an increase in power level. At present I am trying to work all Australian States on 3 watts of AM, a task I achieved during the 11 metre amateur allocation and hope to repeat on 10 metres. So as not to miss out on the fun of QRP, the amplifier is often on standby in case required.

Sam Voron VK2BVS
2 Griffith Avenue, East Roseville 2069

The inexpensive solid state linear amplifier to be described has been found to be reliable for both base station and mobile operation. Using a typical CB transceiver, the Hygain V, modified on to 10 metres this amplifier produces 40 watts PEP using a single 2N6084 RF power transistor. For novice use the drive can be decreased to comply with the 30 watt PEP limit or alternately the cheaper 2N5591 RF power transistor can be substituted to produce about 25 watts PEP.

The 10 metre amplifier is shown in Fig. 1. The variable capacitors C1 and C2 are part of the 50 ohm impedance input tuning network. This network is adjusted for maximum transfer of signal into the base of the RF power transistor.

Variable capacitors C3 and C4 are part of the 50 ohm impedance output tuning network and is adjusted for maximum power transfer from the collector output circuit into the antenna.

When we are transmitting we want the low power drive signal to be applied directly to the transistor for amplification but when we are receiving incoming signals we want to bypass the transistor and connect the receiver directly to the antenna. We may use a relay to achieve this antenna changeover. This relay can be operated manually by a front panel switch during SSB and CW operation or automatically by an RF detection switch effective when using AM operation. See Fig. 2.

The amplifier is biased for class B operation. The 1 K and 12 ohm resistors provide the standing current required for linear operation. Decoupling capacitors are found on the positive supply lead to ensure that RF does not pass through the supply leads. The 4 diodes in parallel represent a low forward resistance thus allowing DC to pass when the correct polarity supply is connected. If the wrong polarity is connected the high reverse bias resistance of the diodes protect the amplifier from damage. A further protection is available by running the positive supply lead via a free set of relay contacts in such a way that voltage is only supplied to the RF transistor when the relay is in the transmit position. This reduces the possibility of self oscillation which may result under some conditions prior to alignment when no drive conditions exist. RFC1 in the collector supply line is a parasitic stopper used to minimize the possibility of parasitic oscillations. To shield the input and output circuits and thus prevent unnecessary feedback between them a sheet of metal isolates I the input and output main tuned circuits

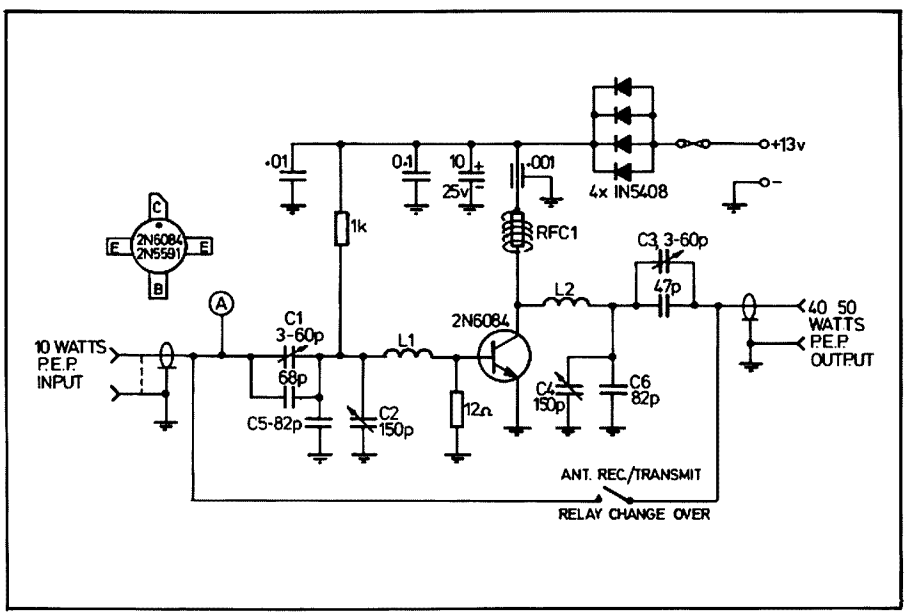

FIG. 1: Circuit of the 40 Watt 10 Metre Linear Amplifier

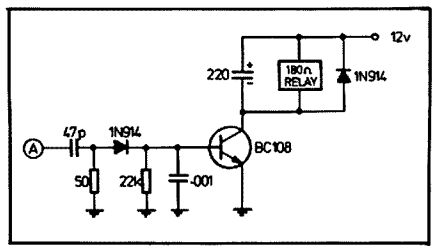

FIG 2A: Automatic RF Detection Switch to Activiate the Antenna Change-over Relay.

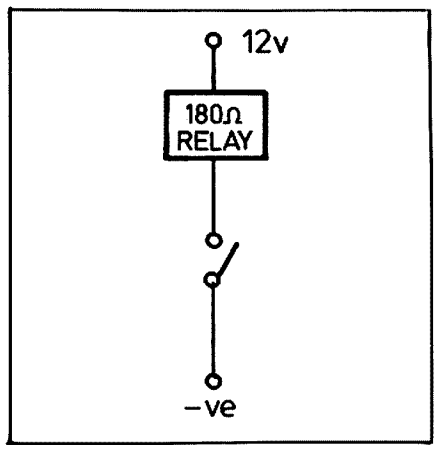

FIG. 2B: Manual Activation of the Antenna Change-over Relay.

The operation of the automatic change-over relay circuit, Fig. 2A, is such that when RF is present at point **A** a part of it is rectified by the diode and biases the BC108 so that it conducts, thus allowing the relay to operate to the transmit position.

10m LINEAR AMPLIFIER PARTS LIST

Transistor: 2N6084.

Diode: 4 — IN55408.

Resistors: 12 ohm 2 Watt, 1K 2 Watt.

Capacitors:

2 — 150 pF air-spaced variable.
2 — 3 to 60 pF trimmer variable (Philips type.
2 — 82 pF disc.
1 — 68 pF disc.
1 — 47 pF disc.
1 — 10 uF 25V tantalum electrolytic.
1 — 0.01 uF disc.
1 — 0.1 uF disc.
1 — 1000 pF.
Inline fuse holder, 5 amp fuse.

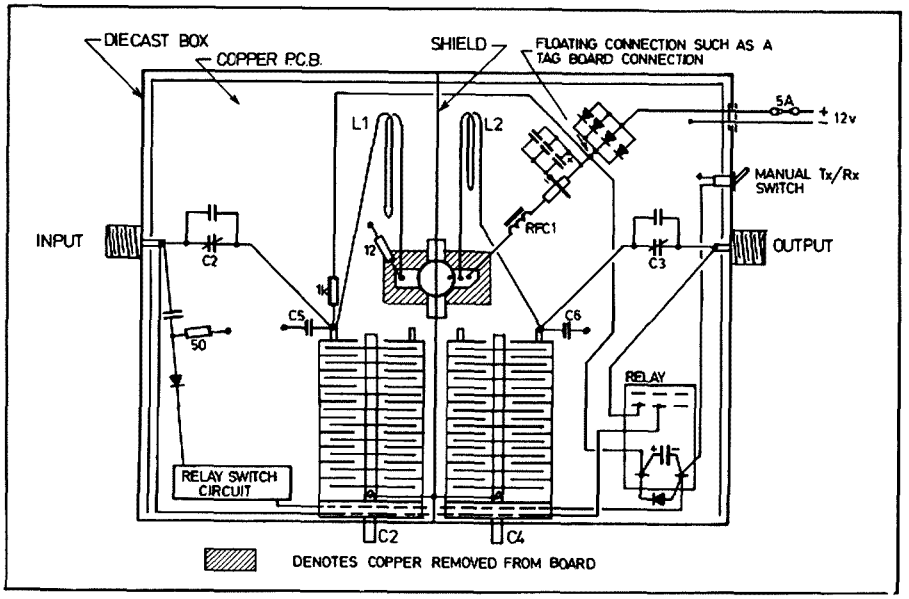

FIG. 3: Layout of the 28 MHz Amplifier

PCB (printed circuit board) — 3 in. by 4 in. Diecast box 3 in. wide, 4 in. long, 2in. high. Two coaxial **RF** panel sockets, type 50-239. Two coaxial RF panel sockets, type S0-239.

Coils:

L1 — 2 turns of 1¼ in. diameter 18 gauge wire (enamelled), space ¼ in. apart.

L2 — 2 turns of 1¼ in. diameter 18 gauge wire (enamelled), space ½ in. apart.

RFC1: To make up this radio frequency **RFCI:** To make up this radio *frequency* choke wind 5 turns of 20 gauge enamelled wire, close wound, around a 100 ohm 1 watt resistor.

RELAY SWITCHING CIRCIUT PARTS LIST

Transistor: BC108.

Diode: 2 — 1N914 signal diodes.

resistors: 50 ohm 2 Watt, 22K ¼ Watt.

capacitors: 220 uF, 16V electrolytic, 47 pF disc, 0.001 uF disc.

Relay: Multi-contact 180 ohm coil resistance.

CONSTRUCTION

Drill a hole in the two centre ends of the diecast box and fit the coaxial sockets for the input and output 50 ohm coaxial connections.

Drill a small hole at the output end of the box, the bottom right-hand end, for the two 12 volt leads. A grommet of appropriate diameter may be used for this hole. The 12 volt lead should incorporate the typical fuse holder used on car electrical leads and a 5 amp fuse should be used.

Drill four holes to hold the PCB to the diecast box and then drill a hole in the centre of the diecast box and the PCB. It may be necessary to attach two or three washers on each screw between the box and the PCB so that the PCB is mounted slightly above the box bottom so as to give the power transistor a good mechanical fit. Silicon grease applied at the point of contact between the diecast box and the 2N6084 RF power transistor may be used to enhance the heat transfer from the transistor to the diecast box which can act as a heat sink.

PREPARING THE PCB

Most of the components in this project are directly mounted on to the copper side of the PCB. Other connections are made from points on the two 150 pF variable capacitors which are mounted above the PCB.

In preparing the PCB scratch out the copper required for the transistor connections, see Fig. 4.

WIRING IN THE CIRCUIT

(1) Screw on the PCB, the 2N6084 and solder it on to the PCB.

(2) Screw in the shield which separates the input and output circuits. This can be a piece of metal partitioning off half of the PCB with a small slot at the centre bottom which will allow a good fit over the transistor cap. The shield could be 3 in. wide by 1½ in. high, such that the diecast box cover can be screwed on without difficulty. ¼ in. of the shield bottom can be bent at 90 degrees and two self-tapping screws used to hold it to the PCB.

(3) Solder in RFC1 with the shortest lead possible to the collector.

(4) Solder in the components in the 12 volt supply line (a tag strip may be used for mounting the 4 power diodes). The bypass capacitors can be connected directly

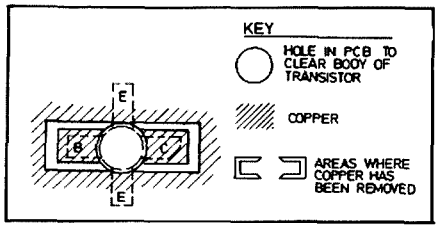

FIG. 4: Showing preparation of the Copper Board for Mounting the RF Power Transistor.

across the feed through (1000 pF = .001 MF) capacitor. This capacitor can be mounted horizontally with the earth end soldered on to the copper and the 2 feed through ends floating above the copper board.

(5) Solder in the 12 ohm and 1 K resistors using the shortest leads possible to the base.

(6) Mount the two 150 pF variable capacitors on the side of the diecast box. The earth end of both can be connected to the top of the shield.

(7) Mount the remaining components and coils L1 and L2.

(8) Mount in the relay switch circuitry on a tag strip as well as the relay and associated wiring.

(9) Drill two holes on the top cover of the diecast box which will allow you to vary C1 and C3.

TUNING UP THE 10m LINEAR

Alignment is carried out in the centre of the 23 channel system on channel 13 (28.450 MHz) with an RF power meter connected at the output of the linear and an SWR meter between the exciter and the linear. The diode from the relay switching circuit is removed from the S0239 connector so that only the manual change-over switch is operative. Connect a 50 ohm 50 watt dummy load to the RF power meter to ensure that initial aligning does not interfere with stations operating on the air. See Fig. 5.

Tune C2 and C1 for minimum SWR to the input circuit of the linear until a low SWR for the exciter has been achieved.

These adjustments should be done for a few seconds at a time to avoid damage to the exciter's output transistor which may result from high SWR conditions.

Tune C4 and C3 for maximum power out of the amplifier into the dummy load.

If at any time current is being drawn by the amplifier when no drive is being applied to the amplifier remove the voltage from the transistor via the manual switch and realign it. ■

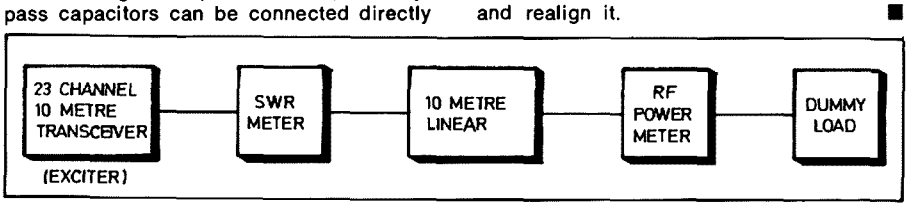

FIG. 5: Test Equipment Layout for Alignment of the 10 Metre Linear

20 METRE GROUND PLANE ANTENNA

Ron May VK1PM
74 Brereton Street, Garran 2605

Grounded vertical antennas with a tapped feed point, the so-called gamma-match, are well known. A gamma matched vertical antenna which is ⅜ wavelength in height was found to have useful advantages for 20 metre band operation.

The advantages were:

1. It satisfied the primary objectives of occupying a minimum of space with maximum efficiency of radiation.
2. It was easy to construct from available materials at low cost.
3. It was more effective on 20 metres than an existing well known multi-band trapped vertical antenna.

The improvement in efficiency over the usual ¼ wavelength vertical or trapped multiband vertical antenna is obtained by a combination of factors each small but adding together significantly.

1. The angle of maximum radiation is reduced.
2. The antenna aperture is greater.
3. The base radiation resistance is increased resulting in reduced ground current losses.
4. Better impedance matching.
5. Increased bandwidth.

Referring to the drawings, the antenna was constructed of sections of ⅜ in., ½ in., ⅝ in. and ¾ in. aluminium tubing adjacent sections of which closely fitted each other. A pair of 1 in. slots are cut in each end of the sections over which "Jubilee" hose clips are tightened when the adjacent ends are telescoped for about 6 to 9 inches.

U-bolts clamp the base of the antenna to a 2 ft. piece of 3 in. x 3 in. slotted angle steel (Dexion or similar). Two 4 in. pieces of ½in. aluminium "U" section clamp the top of the gamma section to the antenna for an outside spacing of 2 in. The stand-off insulators are cut from ¾ In. fibre glass rod and attached between the angle steel and gamma section by self-tapping screws inserted in holes drilled coaxially in the ends of the insulators.

The slotted angle steel can be bolted to a similar horizontal section as a base for mounting to any convenient chimney, post, etc. In this case, the base was mounted on a car port metal roof using a left over piece of steel decking (Stramit, Monodek, etc.) to which the antenna base was bolted. The piece of steel decking was then clipped over the car port roof decking so that holes were not made in the roof.

The gamma match element should be 8 ft. long. The clamp is set at 7 ft. 6 in. from the base.

Soldering or other direct connections are not required between the base and ground plane steel decking because of the small antenna base impedance.

Four ¼ wavelength radials (16 ft. 8 in.) could be used for the ground plane if more convenient.

The series air-spaced variable tuning capacity should be covered against rain and dew by a small plastic container.

To tune the antenna, the transmitter is tuned to the centre of the 20 metre band on a dummy load of the same impedance as the coax line to the antenna. This can be done on low power with a few 1 watt non-inductive resistors in parallel to give the right value. The antenna is then connected in place of the dummy load. The series capacitor in the gamma section is tuned for minimum SWR, which should be 1 : 1 at approximately 80 pF. If a satisfactory SWR is not achieved, the length of the antenna should be adjusted and the capacitor retuned.

It was found convenient to connect the SWR bridge at the antenna end of the coax line and to make the adjustments while remotely keying the transmitter on CW at the minimum power required to operate the meter.

The antenna could be scaled down to 15m or 10m operation by taking respectively three-quarters or half the lengths shown for 20m for the antenna and gamma sections. ■

(Reprinted from "Forward Bias", March, 1978)

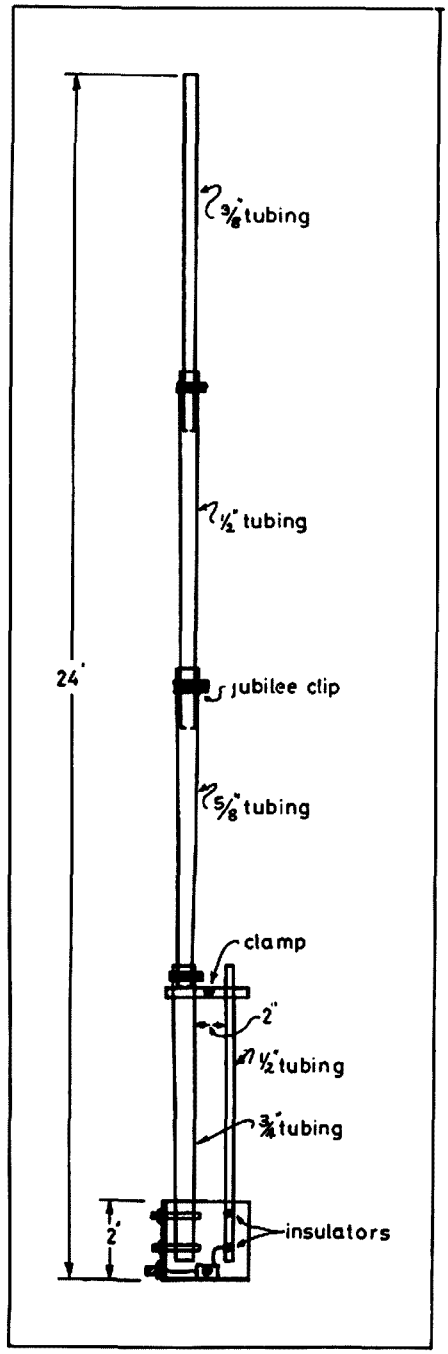

FIG. 1: ⅝th Wave Ground Plane Antenna

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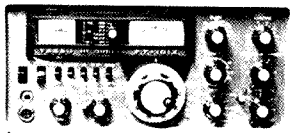

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FTV-650B. 6M. Transverter.
FTV-250. 2M. Transverter.
R-301. Relay box for FT-301 to FL-2100B.
SP-101. Matching External Speakers for FT-101E, FR-101, FRG-7, FT-301.
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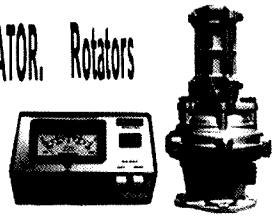

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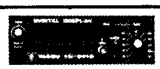

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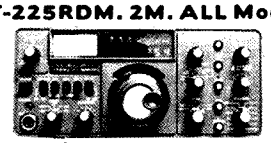

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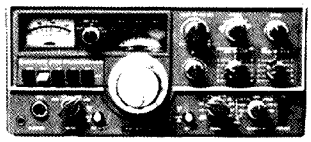

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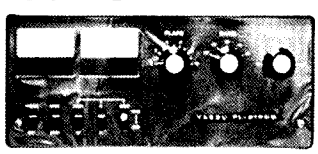

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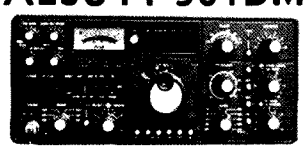

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MORE ON MODIFYING 11 Mx TRANSCEIVERS

Barry Holloway VK6NBM
201 Ferndale Cres., Ferndale, W.A. 6155

Many CB transceivers can be modified on to 10 metres by either changing a bank of 6 or a bank of 4 crystals in the frequency synthesiser circuit.

In the August 1978 issue of Amateur Radio Sam VK2BVS described what was involved in changing the bank of 6 crystals. I shall describe what is required if one wishes to change the bank of 4 crystals.

The advantages in changing the bank of 6 crystals is that it saves you the cost of 2 crystals for only the addition of a capacitor and a realignment.

This article should help complete the newcomers' understanding of the basic techniques in modifying frequency synthesised 11 metre sets on to 10 metres.

Currently advertisements are appearing in Electronic Australia and AR indicating the interest in using modified CB gear as an approach for the newcomer to amateur radio.

The modification applies to a wide range of CB units using 14.907, 14.917, 14.927 and 14.947 MHz crystals such as the Kraco KB255, the Hygain V, the Midland 13-892, and a host of others — just check on the circuit diagram.

The circuit numbers given refer to the Kraco KB2355 base station but the principle applies for the others mentioned. The above crystals are designated X206 to X210 inclusive. See details below.

L202: Crystal synthesiser mixer collector (38 MHz output).

L203, L204: 1st, 2nd bandpass tuned circuits — collector of 38 MHz amp.

L2, L3: 1st, 2nd bandpass tuned circuits — collector of xx 27 MHz mixer.

L4: Tx preamp. collector crt.

L5: Tx driver collector crt.

TC201-TC204: 14 MHz crystal trimmers.

L13, L14: Rx 7 MHz mixer collector — bandpass tuned crts.

L15: Input of 16 MHz amp.

L16, L17: Output of 16 MHz amp — bandpass circuit.

L18: Rx RF amp. input crt.

L19: RX RF amp. output crt.

1. Replace crystals X207, X208, X209, X210.
2. Turn L202, L203, L2, L3, L4 and L5 half a turn out.
3. Fit dummy load to antenna socket.
4. Select AM mode and key transmitter. At this stage there should be a slight indication on the RF power meter. If not, trim L202 slowly until there is. If there is still no indication, use a CRO to tune each stage individually.
5. Monitoring on RF power meter:
   Peak L202 on Ch. 12.
   Peak L203 on Ch. 17, Peak L204 on Ch. 6 — bandpass.
   Peak L2 on Ch. 17, Peak L3 on Cr. 6 — bandpass.
   Peak L4 on Ch. 12.
   Peak L5 on Ch. 12.
6. Trim TC201, TC202, TC203 and TC204 for correct channel frequency (trims new crystals).
7. Re-trim L202, L203, L204, L2, L3, L4, L5.
8. Fit 33 pF capacitor to L13 and L14 — these coils must tune down from nearly equal to 7 MHz or 6 MHz which is outside the range of the tuning slug.
9. Wind L15 half a turn out and select LSB.
10. Apply 1 kHz tone to mic (or whistle into it). Key transmitter and trim L13 until output is seen on Ch. 17 (only very silght Indication on meter).
11. Peak L13 on Ch. 17.
    Peak L14 on Ch. 6.
    Peak L15 on Ch. 12.
    Peak L16 on Ch. 17.
    Peak L17 on Ch. 12.

Transmitter Is now tuned on all modes.

RECEIVER ADJUSTMENTS

1. Select Ch. 12 and provide signal to aerial socket. (I sat a sig. gen. several feet from rig without any actual connection).
2. Select AM mode.
3. Trim L18 and L19 for max. indication on S-meter on a centre channel.
4. Check other channels for equal sensitivity.
5. Select LSB.
6. Select Ch. 17 and apply signal to aerial.
7. Re-trim L13 and L16 for best S-meter reading (these coils have been trimmed before but this allows finer adjustment).
8. Select Ch. 6 and apply signal to aerial.
9. Re-trim L14 and L17 for best S-meter reading.
10. Select Ch. 12 and apply signal to aerial.
11. Re-trim L15 for best S-meter reading.

Transceiver is now ready for use on 10m.

Note the Kraco mobile model uses different coil markings for L201, L202, L203, L204 as a different circuit board is used.

Some set commercially available commence with Ch. 1 as 28.310 MHz and Ch. 23 as 28.6 MHz. This means that channel numbering is one off the WIA 10m channel numbering system, which has Ch. 1 as 28.3 MHz and Ch. 23 as 28.590 MHz.

With the wide publicity of the WIA system on 10m, commercial suppliers are conforming to the WIA system. Those who are using crystals 16.252, 16.262, 16.272 and 16.292 which were supplied commercially in large numbers (up to 300 sets) will find this table handy for referring to the WIA channel numbering system.

WIA Channel Numbering System	Equivalent Numbering on 28.310 to 28.6 MHz sets	Frequency
1	—	28.3
2	1	28.31
3	2	28.32
—	3	28.33
4	—	28.34
5	4	28.35
6	5	28.36
7	6	28.37
—	7	28.38
8	—	28.39
9	8	28.40
10	9	28.41
11	10	28.42
—	11	28.43
12	—	28.44
13	12	28.45
14	13	28.46
15	14	28.47
—	15	28.48
16	—	28.49
17	16	28.5
18	17	28.51
19	18	28.52
—	19	28.53
20	—	28.54
21	20	28.55
22	21	28.56
22A	22	28.57
—	22A	28.58
23	—	28.59
—	23	28.600

This table should help to overcome confusion by allowing those using channelized equipment to be able to refer to the standardized WIA 23 channel numbering system.

Crystals X207, X208, X209, X210 should be on 16.242, 16.252, 16.262 and 16.282 MHz to conform to the WIA system. These are available for $4 each from Jan Crystals in the USA (see details in the Aug. 1978 AR article).

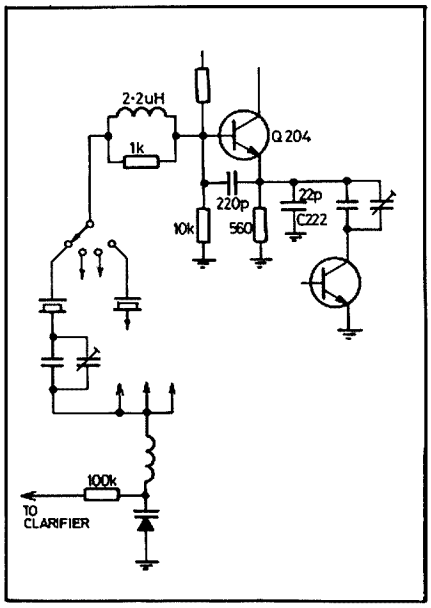


FIG. 1: Original Circuit

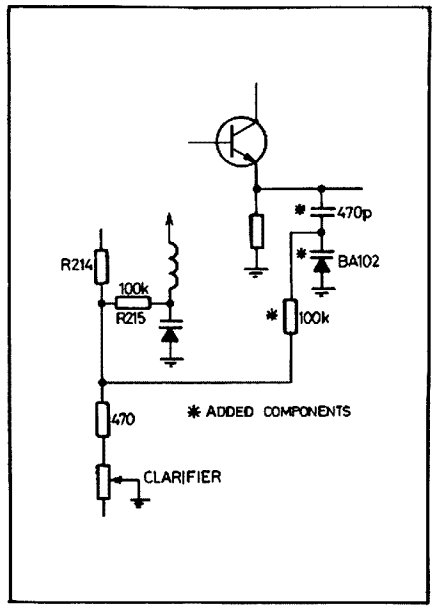


FIG. 2: Modified Circuit

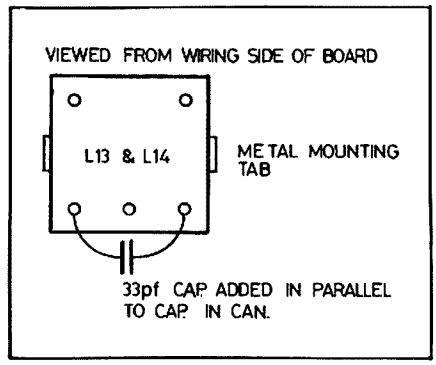


FIG. 3: IF Coil Details

ADDING VERSATILITY TO YOUR MODIFIED SET ON 10 METRES

Normally CB sets are fixed frequency and provide ±800 Hz clarification on receive. Here is a way of going transceive over ±4 kHz on each of the 23 channels.

MODIFICATION TO ACHIEVE ± 4 Hz CLARIFICATION

1. Remove C222 and replace with 470 pF capacitor, leaving earth end disconnected.
2. Connect BA102 varicap diode between free end of 470 pF capacitor and earth (anode to earth).
3. From junction of BA102 and 470 pF capacitor connect 100K resistor to junction of R215 and R214.
4. Disconnect wire from top of clarifier pot and connect to wiper so as to allow variation of transmit frequency. The clarifier will now vary both your transmit and receive simultaneously. All you do is adjust your "fine tune" or "clarifier" control.

Note: The above modifications will cause non-linear control of the frequency. This could possibly be cured by replacing clarifier pot with log. type. ■

WHYALLA HOBBY AND LEISURE FAIR

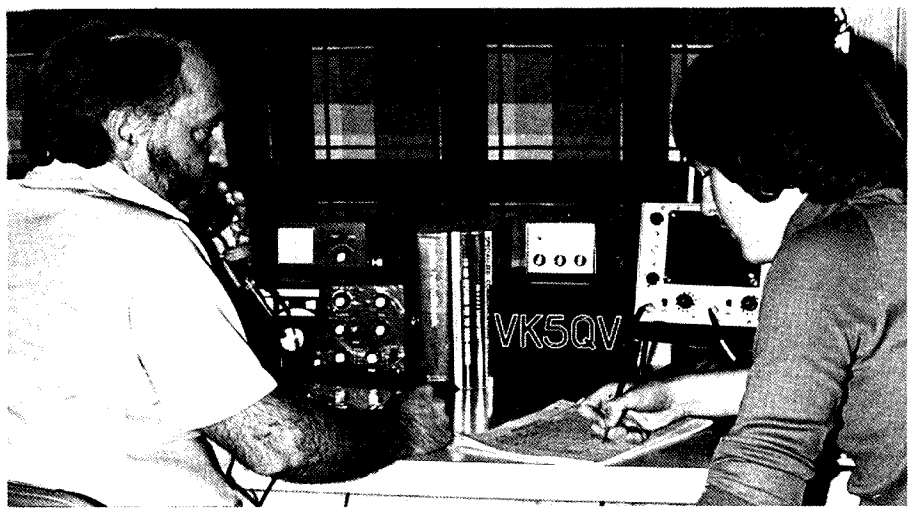
Ivan Huser VK5QV
40 Flinders Avenue, Whyalla Stuart, S.A.

Amateur radio was on display at the 1978 Whyalla Hobby and Leisure Fair held over the week-end of 6th-7th May. Amateur radio station VK5QV/P was set up by Ivan Huser in the assembly hall of Eyre High School in Whyalla with the help of Duncan Hockley VK5ZOH and Steve Baker VK5ZSS.

The equipment consisted of a much modified FT200 into a G2DAF linear amplifier, giving 400 watts PEP output from a pair of QB3/300 tubes. The antenna, a trap-dipole cut for 80 and 40 metres, was strung between two 2-storey classroom blocks.

Equipment on show included a double-beam CRO with one beam used as a RF envelope monitor, and the other connected to a pan-adaptor with a 100 kHz speep.

A great deal of interest was shown in the display, and much time was taken by those manning the stand in explaining to visitors the difference between amateur radio and CB.



This is the third year in succession that amateur radio has been represented at the Hobby Fair.

In the accompanying photograph, Ivan VK5QV and and son, Martin, are shown operating the station. ■

CONVERTING THE MARK HW3 ANTENNA FOR USE ON SIX AND TWO METRES

Maurie Evered VK3AVO
13 Sage Street, Oakleigh 3166

The Mark HW 3 antenna is designed for 80-10 metre use (reference 1). This article presents a simple method of adaption that enables it to be used on the two popular VHF bands. The method can easily be applied to any similar mobile antenna.

1. USE ON SIX METRES

The Mark HW 3 consists of a 49 inch vertical rod to which is attached the various loading coils which resonate it on any of the HF bands. To use it on six metres remove all loading coils and extend the length of the rod to 53 inches, a quarter wave length on 53 MHz. This can be done in either of two ways, one a "try-out" method, the other for permanent installation. The tryout method is shown in Fig. 1a and is virtually self-explanatory, just make sure that the leg of the clip that goes inside the threaded hole is covered with plastic tubing or spaghetti or you may damage the threads. The total length of 53 inches is measured from the point of attachment of the coax cable to the tip of the welding rod extension. Method 2, Fig. 1b, is for permanent installation and uses a brass bolt soldered to the extension rod and screwed into the hole normally occupied by an HF loading coil.

2. USE ON TWO METRES

This follows the same method as for six metres but in this case the total length is extended to 58 inches, this is three-quarters of a wavelength on 146 MHz and presents a low impedance at the feed-point that matches well with 50 ohm coax. Repeated tests have shown that this antenna performs as well as a normal quarter wave.

Well there it is. These two simple extensions when added to your set if loading

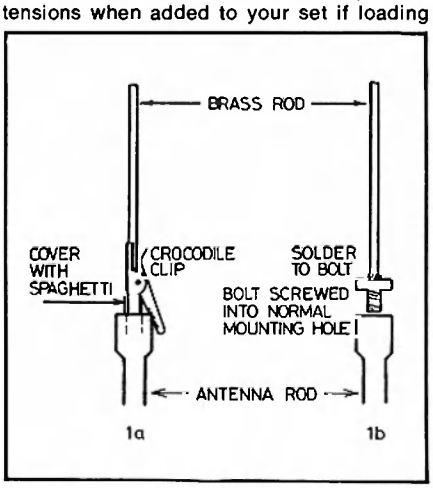
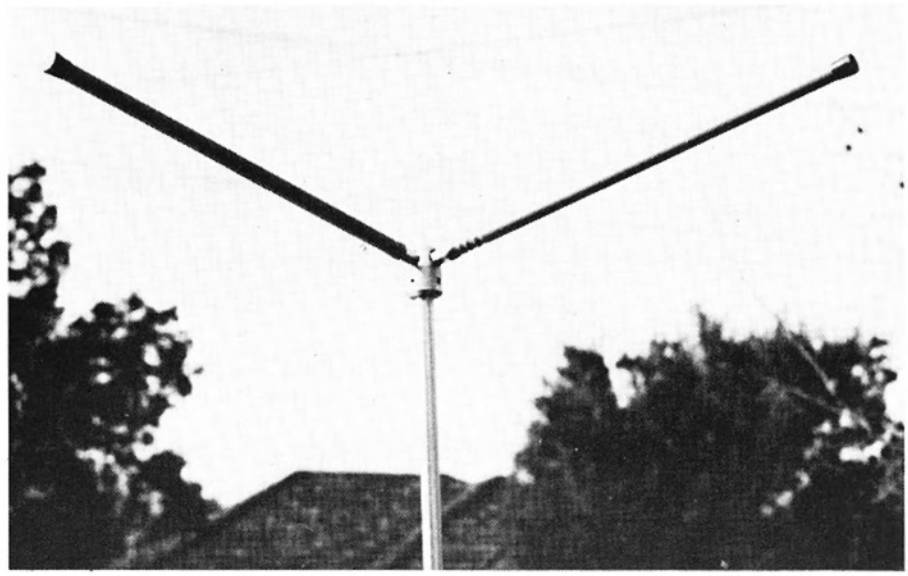
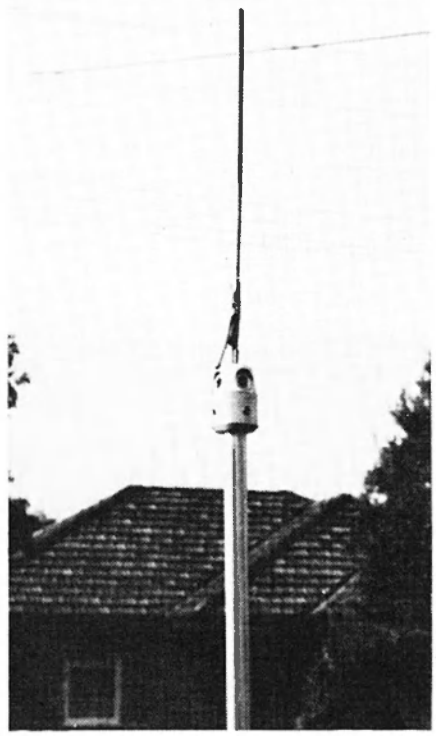


FIGURE 1



Above: The normal HW3



Left: 6 Metre Modification

tensions when added to your set of loading coils provide a mobile antenna that radiates effectively on all bands from 80 to 2 metres. Happy molibeering.

Reference — Amateur Radio, July 1976, p. 11. Starting Mobile Operation, M. Evered, VK3AVO. ■

FURTHER NOTES ON THE ATLAS TRANSCEIVER

L. J. Brennan VK4XJ
12 Cornhill Street, Kenmore 4069

A worthwhile improvement in the signal to noise ratio, especially on 10 metres, is possible by changing the first receiver mixer to four Hot Carrier Diodes in place of the four 1N4148 diodes. Hewlett Packard 5082-2800 diodes were used.

The first receiver mixer is located on PC Board No. PC100 or if a noise blanker is fitted the Board is PC120 and is located on the right-hand side of the dial drum looking from the front top of the set. It is a plug board fitted with a relay. The four diodes D127-D130 are mounted side by side. Make a note of the polarity of the diodes and fit the Hot Carrier Diodes in the same place. These diodes are also known as Schottky Barrier Diodes and have a more uniform contact potential and current distribution which results in a lower noise characteristic. Although costing near $2.00 each, the Improvement is worthwhile and It is suggested that this simple modification should be done firstly because with some sets a preamp may not be required. ■

THE USE OF THE ICOM IC202 FOR SATELLITE OPERATION

Introduction by R. C. Arnold VK3ZBB

I have received a number of enquiries from onwers of the IC 202 SSB transceiver to ascertain its use for satliite operation. The following notes attempt to define its use and limitations.

In the first place it is necessary to obtain the appropriate range crystal to cover the frequency 145.800 to 146.000. This is available from Vicom and is fitted in one of the spare range sockets. Mode A operation requires transmission within this band and the IC 202 using USB together with the appropriate linear amplifier to increase the power output is quite suitable.

Mode B requires reception between 145.800 and 146.000, and has been mentioned in various notes on satellites, the signal is inverted, and invariably LSB capability is required. Where this is so it is necessary to modify the IC 202 to provide LSB, and the following method as described by Sid McLean VK5ME is satisfactory for this purpose.

As the snsitivity of the IC 202 is somewhat lacking at the top end of its range, it may also be considered desirable to add a pre-amplifier, designs of which are readily available in AR articles and various VHF technical books.

MODIFICATION OF THE IC 202 FOR LSB OPERATION

Sid McLean VK5ME

The approach used entails duplication and switching of the 10.7 MHz carrier generator comprising Q9 and Q10. The carrier shifter stage (Q8) for CW operation is not duplicated. See Fig. 1.

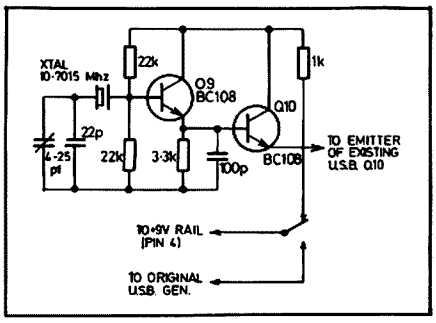


FIG. 1: New 10.7 MHz LSB Carrier Generator.

The new carrier generator is built on a piece of Veroboard some 2 cm square and fits on the rear of the VXO gang, alongside the PCB mating connector, and is attached to an unused tapped hole in the gang frame by a 6BA screw, and backed with an insulated spacer strip. The trimmer capacitor should be mounted at the inboard end of the new board to allow access. Miniature ceramics 1/8 watt resistors and a "K" type (HC 25u) crystal are used.

The crystal should be 10.7015 MHz, series mode. The unit at VK5ME was from a damaged 10.7 MHz crystal filter. These crystals are usually unmarked but can be checked using an oscillator and counter. If no counter is available an empirical method is to connect the new generator and select a crystal that produces a similar receive noise pitch to that of the original USB generator, using the trimmer to achieve this.

FITTING

Remove front plastic panel by:—

(1) Remove two screws holding top strap bracket.

(2) Peel back front rubber foot and remove two screws underneath.

(3) Pull off all control knobs — note main dial requires Allen key.

(4) Remove threaded retaining ring in well behind VOLUME knob.

The front panel will now remove.

Drill a ¼ in. hole exactly half way between function switch and crystal selector switch on the same vertical axis.

NOTE 1

It will be necessary to relocate three earth wires connected to a pressed lug in the area of the hole. Fit a push-button switch (SPDT) in the hole. A Tandy "Archer", Cat. 275-1553 Is suitable. Plot and drill a 3/16 in. clearance hole in the plastic front cover. One of the coloured plastic toggle covers for miniature switches will conveniently fit the push switch shaft in preference to the large knob supplied.

To determine which sideband is selected a new LED is installed.

A spare well is moulded in the front panel alongside the "POWER ON" LED. A 7/64 in. drill is used to make a hole in the stick-on black metal trim and allow a second LED to be fitted. This is fed via a 22K resistor from the USB/LSB switch +9 volt circuit so that it lights when LSB is selected.

NOTE 2

When CW operation is required, the USB must be selected as no carrier shifter stage (Q8) is used on the new board.

WIRING

On original PCB remove jumper wire connecting +9 volt pin (4) to track feeding R47 (1K). Replace by a wire to new USB/LSB switch. Wire pin 4 (pink wire) of the PCB mating connector to the moving arm to the USB/LSB switch.

Resistor R51 (1.8 meg) requires to be lifted from the existing +9 rail, which now becomes the USB feed, and shifted to the +9 supply which is pin 4 of the connector plug. See Fig. 2.

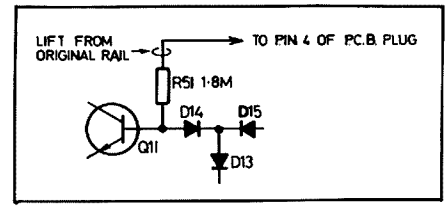


FIG. 2: Modification to AGC Amplifier.

An addendum suggested by Derek McNeil VK3ZVG, suggests that rather than drill the front panel for the LSB switch, it may be possible to use one of the small sockets on the front or rear of the unit provided for external speaker, etc. ■

QSP

HISTORICAL RADIO BOOK
Another very interesting book has recently been released entitled "A History of Radio In South Australia 1897-1977", by Mr. John F. Ross. Costing $10 (add postage for 1 kg weight), this well presented, limited edition, book includes a great amount of detail on the early days (and later, too) of amateur radio and the Wireless Institute. In a letter the author writes that, although the book deals specifically with South Australia, it would be of great interest to amateurs in other States. Copies are available from Ernsmiths, 50 King William Street, Adelaide, S.A. 5000.

SUNDRIES FROM CANADA
Various items in "Ham Radio", February 1978, are reproduced for general interest. Point of sale control for linear amplifiers has been instituted by Canada's Department of Communications. A recent DOC study of 406-960 MHz is expected to propose 420-430 MHz for mobile services and a new 902-928 MHz amateur band to be shared with fixed services and radio location.

RAAF RADIO STORY
A small supply of autographed books "A Saga of Achievement", by Gp. Capt. E. R. Hall (Retd.), is available for purchase from Magpubs. The price is $12.50 plus postage and packing. The weight of the packed book is a fraction over 1 kg for postage calculations.

ELECTRONIC WATCHES
According to a snippet in "Collector and Emitter", March 1978, electronic watches, especially LED models, can be permanently damaged by exposure to RF fields.

YOUNGEST AMATEUR
According to "Worldradio", March 1978, Neil Rapp WN9VPG, now WB9VPG, was the world's youngest amateur. His age was five years. He is now a technician at six years of age and is studying for his general licence. Another five-year-old has now taken over the laurels from Neil as the world's youngest amateur. ■

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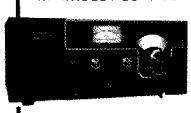

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FT-901DM	160-10M 200W TCVR	$1485
FT-7	80-10M 25W TCVR	SPOA
FT-301S	80-10M 25W TCVR	SPOA
FT-301	160-10M 200W TCVR	SPOA
FT-301D	Digital 200W TCVR	SPOA
FP-301	20 Amp 301 Series PS	SPOA
FL-2100B	80-10m Linear Amp	SPOA
YO-301	301 Series Monitorscope	SPOA
YO-100	101 Series Monitorscope	SPOA
YP-150	Dummy Load/Wattmeter	SPOA
FRG-7000	Digital Comm Rx	SPOA
TS-520S	120-10m 200W TCVR	SPOA

NEW!!

250Kz CW Crystal Filters to suit popular transceivers

Type 3F-250SY to suit Yaesu 101 Series
$47.50

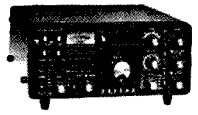
Type 33H-250 to suit Kenwood TS-520S
$45.50

* * * * * * * * * * * * * * *

THE INCREDIBLE FT-901DM

Why pay $1,499.50 for the FT-901D with just some options when you can get the real thing, the FT-901DM, from GFS for only

$1,485.00



The FT-901DM is an amateur's dream come true. A few of its many features are Memory VFO, Variable IF Band Width, Built in Electronic Keyer and Many More.
Only $1485

EMOTATOR ROTATORS

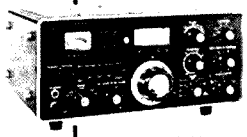
MODEL 103L8X Medium duty.
Rotation torque – 450 Kg/cm
Brake torque – 1500 Kg/cm
SPOA

MODEL 502CXX Heavy doty.
Rotation torque – 600 Kg/cm
Brake torque – 4000 Kg/cm
SPOA

MODEL 1102MXX Extra Heavy Duty
Rotation torque – 800 Kg/cm
Brake torque – 10,000 Kg/cm
SPOA

1211 Mast Clamp for 103LBX **SPOA**
1213 Mast Clamp for 502CXX **SPOA**
1215 Mast Clamp for 1102MXX **SPOA**

FAMOUS YAESU FT-101E TRANSCEIVER



Yaesu's latest model FT-101E from GFS comes to you at a price that is very hard to beat.

For Instant 260 watts PEP operation on 160 through 10 metres just add 12 Volts DC or 234 Volts AC.

The FT-101E's updated RF SPEECH PROCESSOR provides that extra 'talk power' needed to cut through most of those bad pile ups and heavy QRM. **SPOA**

IS THERE A DX-565D FREQUENCY COUNTER /SIGNAL GENERATOR IN YOUR SHACK?

If not now is the time to update your test gear with this popular instrument.

Featuring a 220 MHz counter upper limit and 30 MHz generator upper limit.

Generator frequency is read directly on the counter.

A MUST FOR EVERY HAM SHACK.
SPOA

Technical Data:
10Hz to 220MHz counter.
0.4 to 30 MHz generator.
600Hz tone oscillator.
2mS and 200mS gating time.
5 Digit LED display.
Switchable KHz and MHz

DX-555 same as DX 555D but with 30MHz counter. **SPOA**

DX-5P 220MHz pre-scaler for DX-555 **SPOA**

* * * * * * * * * * * * * * *

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GFS ARE NOW STOCKING THE WELL KNOWN HI-MOUND BRAND OF MORSE CODE KEYS

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HK-704	High quality Key	$18.80
COK-1	Code Practice Oscillator	$12.50

KB-105 80-10 METRE TRAPPED VERTICAL

The KB-105 is supplied complete with guy ropes and radial traps, which are optional extras with many other brands.
KB-105 80-10MX **SPOA**

FINANCE AVAILABLE TO APPROVED PURCHASERS *

ACCESSORIES FROM GFS

FS-302 VHF In-line power and SWR meter, 50-170MHz – $58
SWR-15 SWR/Field strength meter 3.5 to 150MHz – $15.50.
SWR-200 Osker Block SWR/POWER meter – $69
OTR-24 24 Hour World Clock – $31.
LP-30 low pass filter, 50W power capability. Ideal for novice use – $9.50.
VS-1 mini mic compressor, 46dB of compression – $25.
MC-801 Katsumi mic compressor – $45.

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MANY YEARS OF EXPERIENCE IN THE AMATEUR RADIO AND COMMUNICATIONS SERVICE INDUSTRY PROVIDES US WITH THE BACKGROUND AND KNOWHOW TO OFFER YOU THE BEST IN SERVICING

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CO-AXIAL CABLE

RG-58/U	5.6dB/100 ft. at 100MHz	$0.45/m
5D-FB	2dB/100 ft. at 100MHz	$1.20/m
PL-259	Connectors to suit 5d/FB/RG-58	$1.10 ea.
SO-239	Sockets	$1.10 ea.

FS-302 – $58
50-170MHz

VS-1

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THE ANSWER TO THE NOVICE'S DREAM AT A NOVICE'S PRICE

FT-7

FEATURES:
Modern compact styling for easy under-dash mounting.
Size 230mm x 80mm x 290mm.
80 to 10 metre operation.
VFO controlled.
Noise Blanker that really works.
Facilities for fixed channel operation.
Ideal for the shack or the mobile at a price that you can afford.
SPOA including mobile mount, microphone and cables.

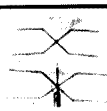
MC-801

* * * * * * *

HIDAKA MODEL VS-22

10 and 15 metre Duo-band
3 element yagi. **SPOA**

SWISS QUADS



Offer high forward gain (up to 14dB) narrow beam width and good front to back ratio.

SQ-20M	–	20MX Swiss Quad	– SPOA
SQ-15	–	15MX Swiss Quad	– SPOA
SQ-10	–	10MX Swiss Quad	– SPOA

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BL-1A 5KW PEP 1.8 – 40 MHz, 1:1 Toroidal Balun. 50 – 75 Ohms
Less 0.1 dB insertion loss. **Price: $15.99**

A-248D 80/40/20 metre Trapped Dipole Antenna Complete with Wire, Insulators, and Traps. 18 metres long. 2 KW PEP rating.
Price: $36.00

HEAVY DUTY HF HELICAL WHIPS, 80–10 mx.
ONLY $29.00 each.

20 Foot Tower Self Supporting **Price: $75.00**

ALL OUR EQUIPMENT IS PRE-SALES CHECKED AND WHERE AC MAINS OPERATED THEY ARE WIRED WITH 3-CORE POWER CABLES AND PLUGS. PRICES INCLUDE SALES TAX.
90 DAY LIMITED WARRANTY TO ALL EQUIPMENT BUT DOES NOT COVER FINAL TUBES OR SEMI-CONDUCTORS. PRICES AND SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

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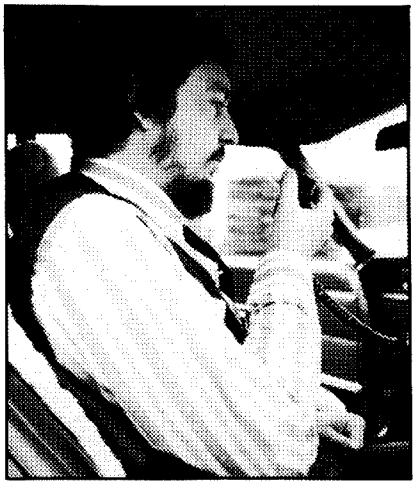

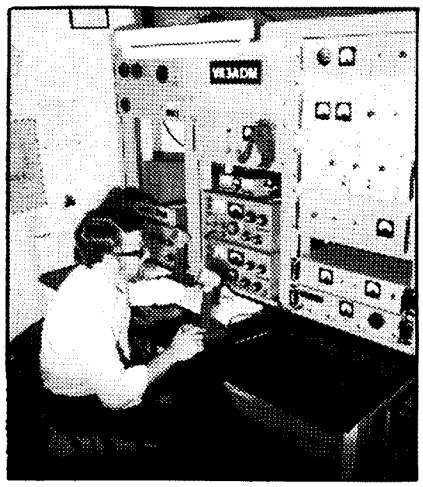

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1.

ICOM

IC-211
2m
All-mode

SMALL ENOUGH FOR MOBILE!

Maximising 4MHz – the full 2 metre band – with fully synthesised multi-mode operations, the IC211 is the most advanced, highest quality 2 metre transceiver available anywhere. The IC211 comes complete with ICOM's single-knob frequency selection and two digital VFO functions, standard features at no extra cost.

The large weighted flywheel knob mounted with low friction ball bearings is used to drive an optical chopper to provide pulses to the synthesisers LSI, which shows a full 7 digit readout. A breaking mechanism, which operates electrically, engages to provide a smooth feel at slow speeds; and a "dial lock" button holds the reading at the time it is pushed, even though the knob continues to rotate.

The IC211 incorporates computer compatible interface via the 24 pin accessory socket on the rear panel which enables PIA connection for the microprocessor buff.

The IC211's synthesiser steps are displayed, with positively no time lag, backlash or uncertainty in display stability, in increments of 100 Hz or 5 KHz from 144–146 MHz, and in 5 KHz from 146–148 MHz for FM operation. Any offset from 10 KHz through 4 MHz for repeater use can be programmed.

The IC211 contains both 240vac and the 13.6vdc power supplies and has a built-in high SWR autopower control. Variable output power contributes to the IC211's versatility. Output between 500 milliwatts and 10 watts may be front panel controlled on FM.

More of the maximiser's built-in standard features include: a pulse type IF noise blanker; front panel discriminator meter, SWR meter; VOX with adjustable VOX gain delay and antivox; CW monitor volume level; and semibreak-in CW operation.

And your new IC211 carries the VICOM 90 day warranty backed by spare parts and technical expertise.

COMPARE THE IC211 WITH THE OTHERS!

Price $785

computer compatible

2.

IC-701
HF

ICOM's superior LSI technology takes the lead in Amateur HF. The extremely compact IC-701 delivers 100 watts output from a completely solid state, no tune (broad band design) final, on all modes and all bands, from 160–10 M. With single knob frequency selection and *built-in dual VFO's*, the LSI controlled IC-701 is the choice in computer compatible, multi-mode Amateur HF transceivers.

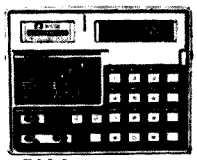
The IC-701's single frequency control knob puts fully synthesized instant tuning at a single finger tip. WIDE bandspread, with 100 Hz per division and 5 KHz per turn, is instantly co-ordinated between the smooth turning knob and the synthesizer's digital read-out with positively no time lag or backlash (no waiting for counter to update: less operator fatigue). And at the push of the electronic high speed tuning button, the synthesizer flies through megacycles at 10 KHz per step (500 KHz per turn).

The computer compatible IC-701 LSI chip provides input of incremental step or digit-by-digit programming data from an external source, such as the microprocessor controlled accessory which will also provide remote band selection and other functions.

Full band coverage of all six HF bands, and continuously variable bandwidth on filter widths for SSB, RTTY, and even SSTV, help to make the IC-701 the very best HF transceiver ever made. IC-701 includes two CW widths, all of this standard at no extra cost.

Sold complete with the high quality electret condenser base mic (SM-2), the IC-701 is loaded with many ICOM quality standard features. Standard in every IC-701 are *two independently selectable, digitally synthesized VFO's at no extra cost*. Also standard are a double-balanced schottky diode 1st mixer for excellent receiver IMD, and RF speech processor, separate drop times for voice and CW VOX, optionally continuous RIT, fast/slow AGC, efficient IF noise blanker, fast break-in CW, and full metering capability.

Price $1380 (AC power supply extra)



The new RM-3 remote controller is microprocessor controlled for direct frequency dial-up, scan and memory functions. Price $169.

Distributed by:

VICOM

68 Eastern Road
SOUTH MELBOURNE VIC 3205
PH. (03) 699.6700 Telex AA30566

Sydney	681.3544	Perth	446.3232
Brisbane	38.4480	Adelaide	43.7981
Hobart	43.6337	Gold Coast	32.2644
Melbourne	836.8635	Canberra	82.3581

all rigs predelivery checked!

ICOM

IC701 HF digital solid-state transceiver	$1,380.00
IC701PS matching power supply / speaker	$279.00
IC202E 2m ssb portable (new model)	$219.00
IC502 6m ssb portable	$219.00
IC402 70cm ssb portable, coming soon!	
IC22S 2m fm mobile transceiver	$335.00
RM-3 Remote controller	$169.00
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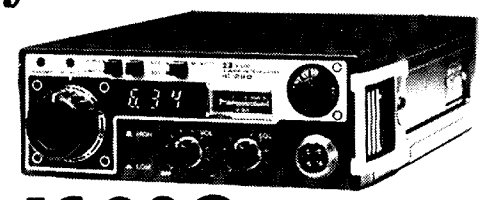
IC245 2m fm digital mobile transceiver	$575.00
IC211 digital 2m all mode	$785.00



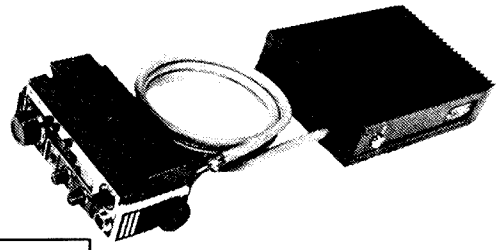
NEW

399.00

IC-280 2m fm transceiver

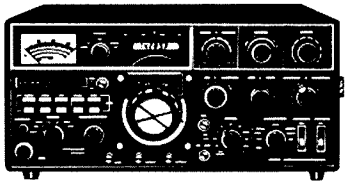
REMOTABLE COMPUTER CONTROLLED 144-148 MHz

ICOM



KENWOOD

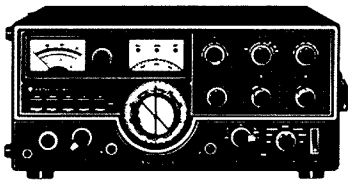
TS520S HF transceiver	$789.00
TS820S HF transceiver	$1,279.00
SP820 matching speaker with filters	$66.00
SM220 station monitor	$335.00
TL922 Linear Amplifier	$1,450.00
AT200 matching antenna tuner	$185.00
TV506 6m transverter	$236.00
TV502S 2m transverter	$290.00
TR3200 70cm fm portable transceiver	$229.00



KENWOOD TS-820S transceiver

TS-820S features: • Factory installed digital frequency readout • 160 thru 10 meter coverage • Integral IF shift • RF speech processor • VOX • Noise blanker • PLL • Built-in 25 KHz calibrator • CW sidetone & semi-break-in • IF OUT, RTTY, & XVTR • 200 W PEP input

$1279.00 Give us a call today

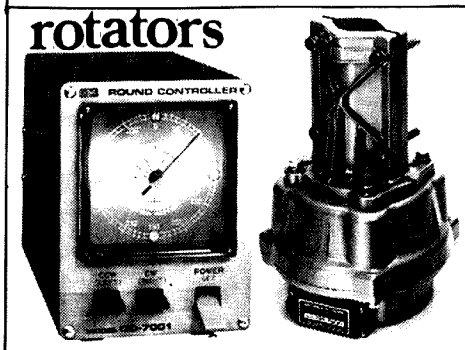


KENWOOD TS-520S transceiver

Features: • 160-10 meter coverage • Optional DG-5 digital frequency display • New speech processor w/audio compression amplifier • AC power supply (DC optional) • RF attenuator, front-panel activated • Provisions for sep. receive antenna & phone patch • 200 W PEP input.

$789.00 Plenty in stock!

rotators



NEW FROM DAIWA, QUALITY ANTENNA ROTATORS COMPLETE WITH 240VAC CONTROL BOX:

Model DR7500S medium duty	NEW	$189.00
Model DR7600S heavy duty		$259.00

Trade-ins accepted

ANTENNA CHANGE-OVER RELAYS (DAIWA)

CX-2L 1.8 thru 170 MHz, 100w pep max	$48.00
CX-2H 1.8 thru 450 MHz, 200w pep max	$69.00

COAXIAL SWITCHES (DAIWA)

CS201 2 position, high pwr, up to 500 MHz	$25.00
CS401 4 position, high pwr, up to 500 MHz	$59.00

SPEECH COMPRESSORS (DAIWA)

RF440 phasing type, 6dB gain	$135.00
RF550 filter type, 6dB gain	$179.00

MORSE KEYS

HK702 deluxe key with marble base	$39.00
HK708 economy key	$21.00
HK706 operator's key	$25.00
MK701 manipulator (side swiper)	$43.00
EK103Z electronic Keyer	$169.00
Palomar IC Keyer	$149.00

MICROPHONES

VM-1 noise cancelling, dynamic, low Z	$9.50
VM-2 Desk mic, dynamic, low Z	$29.80
MC-50 Kenwood Desk mic	$58.00
MC-35S Kenwood hand ptt mic	$20.00
Icom hand ptt, low Z	$14.50

MOBILE SUPPRESSORS

Hansen NB-2 heavy duty type for alternators	$9.50
Hansen truck 100 amp alternator filter	$22.00

TRAP DIPOLES

MIDY VN 80-10M, 23.5M long	$109.00
AL48DXN 40/80M dipole	$68.00
AL24DXN 20/40M dipole	$65.00

TRAP VERTICALS

V4JR 40-10M, 5.2M high, no guys	$99.00
V5JR 80-10M, 6.7M high, no guys	$165.00
14AVQ/WB Hy-Gain, 40-10M	$109.00
18AVT/WB Hy-Gain, 80-10M	$155.00

DIPOLE KITS

A4VPN 40M dipole kit	$32.00

2M ANTENNAS

Scalar M22T ¼ wave whip	$7.00
Scalar M25T 5/8 wave whip	$17.50
Bases for above	$4.00
Magnetic Bases	$19.00
ARX-2 Ringo base antenna	$49.00

DISCONE ANTENNAS

9DX-1 80-480 MHz	$84.00
SCAN-X 65-530 MHz (Receiver Only)	$35.00

DIP METERS

TRIO DM800, ideal for hams	$145.00

70cM BEAMS (JAYBEAM)

88/70cM, 18.5 dBd gain, 88el, length 3.98M	$102.00
48/70cM, 15.7 dBd gain, 48el, length 1.83M	$79.00
PBM18/70, 18el, 14.9 dBd gain, length 2.8M	$71.00
D8/70cM, twin 8el, 70cM, 12.3 dBd, 1.1M	$62.00

antennas

SWR/PWR METERS

VC2 twin meters, 3-150 MHz cal. chart	$34.00
SWR200 Oskerblock 2-200 MHz	$75.00
SW410A 140-500 MHz, direct reading	$129.00
SW210A 1.8-150 MHz, direct reading	$96.00
SWX777 up to 30 MHz, professional	$131.00

LOW PASS FILTERS

FD30M 32 MHz Fc, 1 Kw max, 3 stages	$35.00
FD30LS 32 MHz Fc, 200w max, 3 stages	$20.00

NOISE BRIDGES

Omega TE7-01 up to 100 MHz	$49.00
Palomar up to 100 MHz	$79.00

BALUNS

AS-BL for beams	$31.50
BL50A 50 ohm 4 Kw model for dipoles	$26.00
BL70A 70 ohm 4 Kw model for dipoles	$27.00

VALVES

6146B for Uniden, Kenwood, Yaesu	$13.00
6KD6 for early Yaesu linears	$13.00
6JS6C for FT101 series	$13.50
572B for Yaesu linears	$59.00

2M BEAMS

5Y/2M Jaybeam, 7.8 dBd, length 1.6M, 5el	$39.00
8Y/2M Jaybeam, 9.5 dBd, length 2.8M, 8el	$47.00
10Y/2M Jaybeam, 11.4 dBd, length 4.4M, 10el	$79.00

VICOM

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SOUTH MELBOURNE VIC 3205
PH (03) 699.6700 Telex AA30566

Perth	446.3232	Sydney	681.3544
Adelaide	43.7981	Brisbane	38.4480
Gold Coast	32.2644	Hobart	43.6337
Canberra	82.3581	Melbourne	836.8635

MARINE MaDnEsS

Greg Noble VK7FT

**You've heard of some crazy ideas.
Well, here is one to add to the list.**

7.30 a.m. Sunday 12th February: Harvey (VK7HK) arrives at Greg's (VK7FT) QTH where Greg had just concluded fuelling his 15 ft. half cabin cruiser. They load up their gear into the boat which includes various strange items — strange to go fishing with at any rate. They depart shortly after and head north-east to a place called Dodges Ferry. On arrival — back the boat down the launching ramp to be greeted by some water conditions which are far from being pleasant for boating (or whatever they are up to).

They launch the boat with much difficulty with very strong winds pushing the waves straight in onto the launching ramp.

The boat reverses into the "slop" and takes in quite a bit of water over the stern. They head for their next destination which is only just around the next point but this takes some time as the 4-5 ft. waves make for slow going. They look at each other ("We must be mad").

They arrive at their destination just off-shore from a boatshed at which Greg's father-in-law stands with a 12 ft. aluminium dinghy. The aim at this stage is to get the dinghy out to the boat. They dare not go any closer than 25-30 yards to the shore because of the pounding weather conditions. Greg's father-in-law makes a cast with his fishing rod and on his second attempt Greg's boat becomes "hooked". They attach a rope to the line and it is reeled in to shore where it is tied onto the dinghy. They now head off with dinghy in tow to their next destination — the most sheltered spot available — about ½ mile away in the lee of a small island called Spectacle Isle. They anchor close into the island to get some protection from the weather which by no means has improved.

Now, down to the business at hand.

They pull the dinghy up alongside and with heart in mouth transfer the rented 600W petrol generator into the dinghy, connect the extension lead to it and let it drift away again. They now have a dinghy drifting about 50 ft. away — an extension lead supported by three plastic bottles filled with coolite. Harvey sets up his FT101E on a temporary operating table in the cabin, throws an earthing rod over the side and connects to an antenna coupling unit.

Next comes the fun part of the exercise — pull the gas cylinder from under the bunk and commence to inflate the weather balloon which will support the 66 ft. vertical wire antenna — "MAYBE!!"

Whoops — the acquisition of the balloon must have been too cheap — it has two holes in it and subsequently bursts.

Guess the next step is to employ the 18 ft. (4 aluminium section) vertical — it was taken along as a standby — tie it into place with some fishing line, tune up the rig just in time to give a report to the VK7W1 Sunday morning broadcast which was partly heard on the 2 MTR rig installed in the boat. The next four hours is spent working as many stations as possible for the John Moyle Memorial Field Day Contest. After 34 contacts, 302 points, two flatheads, one whiting, several cups of coffee and one generator refuel and lots of fun, Greg and Harvey with dinghy in tow, head for home, working Mike (VK7FB), crossband 20 metres SSB to 2 metres FM, on the way.

NOTE: The generator in the dinghy 50 ft. away was to reduce any audible or RF interference. Harvey and Greg will probably be about next year — I wonder what they will dream up for then. Thanks to all who worked them. ■

Greg dismantling the aluminium antenna as Harvey looks on

COMMERCIAL KINKS

Ron Fisher VK3QM

This month's notes cover modifications to the FT-75 carried out by Ron Cook VK3AFW. Ron writes:

"The FT-75 is an excellent QRP HF rig and given a good antenna system will perform well both as a mobile and a base station. However, when the QRM builds up on 14 MHz, DX QSOs become difficult to initiate. This can be frustrating. The addition of a linear such as the SB-200 or FL-2100, etc., provides 300 watts or so of output. A signal boost of 10 dB makes a big difference in marginal or difficult conditions. The maker's handbook states that a linear amplifier is an optional accessory, however it cannot be used because the appropriate linear amplifier control wiring does not exist. To be more precise, the FT-75 has an uncommitted change-over contact set which grounds pin 9 of the rear power connector J1 on receive, and pin 10 on transmit. The DC-75 DC power supply has pin 10 of P101 connected to pin 3 of J101, the accessory socket. So far so good, the catch is that there is no interconnection between the corresponding pin 10 of P101 and J101, or at least not in my particular cable.

Although a linear is more likely to be used when the FT-75 is operated as a home station, the FP-75 AC power supply not only has no pin 10 interconnection in its cable, it has no accessory socket.

There are two alternatives. Either an additional wire must be run along the outside of the power cables and wired to both pin 10s, then taped to the cable and an accessory socket added to the FT-75 or the pin 10 wire in the transceiver must be brought out to another socket on the FT-75 back panel. The 7 pin socket J7 seems of no practical use, so re-wiring this is the neatest solution if a suitable socket is available. Otherwise it is necessary to mount a socket such as an RCA (phone) type for which plugs are readily available. Space for such a socket is very hard to find. I took the easy way out and removed J7 and its wiring and replaced it with an RCA socket mounted on a small aluminium disc bolted into J7s hole. A wire was run from pin 10 of J1 to the centre pin of the new socket. A screened wire was used to connect to the linear. Many happy QSOs and S9 reports have been had since.

Of course the FT-75 is of limited use as a portable or base station unless a VFO is used. The matching Yaesu VFO tends to drift a bit and the dial calibrations are nominal rather than actual. I have built a VFO based on the Drew Diamond circuit published in the October 1973 issue of Amateur Radio. I used a TIS88 FET in the coil covers 21 MHz and is shunted with oscillator. Band changing is effected by switching three coils and two shunt capacitors. One coil covers 14 MHz and is shunted with capacitance for 3.5 MHz. Another coil covers 7 MHz, and the last capacitance to work at half the injection frequency for 28 MHz. There is some drift but it is less than the Yaesu unit. Temperature compensation has not been needed to date.

I found it convenient to sit the FT-75 on top of the AC supply. Unfortunately this gives rise to an annoying level of hum. Placing a sheet of perforated steel between the rig and the supply cured this. Four stick-on plastic feet were used to space the sheet above the power supply case to aid ventilation."

Next month some more simple modifications for the TS-520. ■

THE LADY BEHIND THE MICROPHONE

FIRST LICENSED XYL FOR SUMMERLAND AMATEUR RADIO CLUB

(See front cover)

During a goodwill visit by the newly elected President of the NSW Division of the WIA, David Thompson VK2BDT, to the Summerland Amateur Radio Club at Lismore in northern New South Wales, the opportunity was taken to have the President of the Division preside at a ceremony held by the Club to congratulate the Club's first XYL member to gain an amateur licence.

Jenny Wicks, newly licensed as VK2NTJ, received the best wishes of all present at a well attended meeting of the Club which had been called as a special meeting to welcome the Division President to the district. Jenny had been an active Club member and regular attender at the Novice clasess conducted by the Club, and her determined efforts had finally paid off. Not being one to allow the grass to grow under her feet, she has already embarked on vigorous studies for the AOCP, and if past performance is any indication, it won't be long before she has the full call.

This special meeting of the Summerland Amateur Radio Club was attended by 36 members from a wide area of the North Coast district served by the Club. Club President, Fred Herron VK2BHE, extended a warm welcome to the Division President on his first visit to the Club since his election as Division President. The welcome was followed by an entertaining evening which included a video tape showing of a recent TV programme on Amateur Radio, and a second video tape programme on the subject "Transistors versus Temperature", both arranged by versatile Club Secretary Harold (Wheeler-Dealer) Wright VK2AWH. At the conclusion of the programme, a sumptuous supper was presented by the Ladies' Auxiliary.

All in all, the evening to remember at the Summerland Amateur Radio Club.

(Information supplied by Fred Herron VK2BHE, President, Summerland Amateur Radio Club.) ■

FROM THE OVERSEAS ADS.

An occasional AR feature

From ETO: The new Alpha 76A HF linear which has a 1 kW CW continuous power rating or a 2 kW PEP two tone SSB rating. They also are bringing out a 6 metre model.

From Alda: Their Alda 103, a 80/40/20 solid state 250W input transceiver under $US500.

KLM have a shortened 40 metre rotatable dipole.

ASTRO have brought out the ASTRO 200A with tuning buttons on the mic. to allow instant QSY. Great for mobile.

Cornell Dubilier introduce an updated HAM II, known as the Tail Twister. Much bigger and much more rugged.

Kenwood have the SM220 monitor scope, the TS700SP with digital dial, and a neat HF antenna tuner Type AT200 to bring that piece of wire within range of your pi network. Also Kenwood have a very nice linear, the TL922.

Icom have a natty new 2 FM rig, the IC270 built in two parts. A remote control head and a boot mounted transceiver. Looks an interesting new rig. Icom also have the IC202A with LSB and USB and the IC302, a 432 MHz version of the IC202.

Drake have a very fine HF transceiver in the new solid state TR7. Drake also have a 3-band VHF transceiver for 144, 220, and 432 in their UV3. ■

TECHNICAL CORRESPONDENCE

The Editor,

Dear Sir,

There are a couple of errata in the circuit of the "Sub Carrier Audio", page 26, AR July 1978.

(1) The correct type No. of Q1 is 2N4249 (alternately 2N4250).

(2) A .01 uF ceramic disc should bypass the cold end of the collector coil of Q2.

RFC is a single wire through an F29 slug.

If audio response is too bassy, change .01 coupling capacitors of the LM3900 stages to .005 uF.

Yours faithfully,

I. F. Berwick VK3ALZ. ■

THE WORLD ADMINISTRATIVE RADIO CONFERENCE — 1979

Michael J. Owen VK3KI.

1. INTRODUCTION

In the last two years a great volume of material has been published in amateur journals on the World Administrative Radio Conference in 1979. This paper is an attempt to provide a basis for understanding the problems that are facing all frequency users in 1979. It describes in broad terms the organisation of the International Telecommunications Union and refers to the political background. It then describes how the IARU and the National Amateur Radio Society in each country are undertaking their preparation for the 1979 conference.

2. THE ITU

The ITU is the oldest of the specialised agencies of the United Nations — it is considerably older than the United Nations itself. Its origin lies in the Paris Conference of 1865 which led to the signing of the International Telegraph Convention, the foundation of the International Telegraph Union. The origin of the ITU lay in the need to co-ordinate telegraph communications.

With the development of radio, international co-ordination of frequencies also became essential. Starting with the Washington Radio Conference of 1927, that task has been undertaken by a series of major conferences. At Madrid in 1932, the International Telegraph Union changed its name to The International Telecommunications Union to encompass radio as well as telegraph in its title. Following the Second World War, the ITU met in two meetings in Atlantic City, one a Plenipotentiary Conference, the other an Administrative Conference. The Administrative Conference reviewed the whole of the frequency table. By agreement with the United Nations, the ITU became a specialised agency and its headquarters were shifted from Berne to Geneva in 1948. Then, in 1959, there was a further general review of the whole radio frequency table in Geneva. It will be in 1979 that the whole frequency table will be again reviewed.

Before looking in more detail at the organisation of the ITU, it is helpful to remember the nature of the ITU as an International Organisation. Its members are sovereign states and those states lose no part of their sovereignty by being members of an international organisation. They have ultimately the choice as to whether they are bound by its decisions to participate in a meeting or they may not sign the final document, or they may sign the final document with reservations, or they may refuse to ratify a treaty, or they may ratify with reservations that completely change the meanings of the decision for that particular member state.

The purposes of the International Telecommunications Union are set out in the Convention, which is the basic treaty that creates and governs the Union. The current Convention was adopted in 1973 at Malaga-Torremolinos (in Spain).

Amongst the defined purposes of the ITU is the following:

> ". . . the Unions shall in particlar: effect allocation of the radio frequency spectrum and registration of radio frequency assignments in order to avoid harmful interference between radio stations of different countries."

The Union comprises a number of organs.

A. THE PLENIPOTENTIARY CONFERENCE

This is the supreme organ of the Union and revises the Convention, the basic document that creates the ITU.

It meets usually at five yearly intervals and comprises delegations from all the member countries.

B. ADMINISTRATIVE CONFERENCES

These may be world or regional. They may undertake partial or complete revision of the administration regulations of the ITU. These regulations are:—

(a) the Telegraph Regulations;
(b) the Telephone Regulations;
(c) the Radio Regulations and Additional Radio Regulations.

C. THE ADMINISTRATIVE COUNCIL

This comprises 36 members elected by the Plenipotentiary Conference. It is responsible for the co-ordination of the work of the Union, particularly the administrative and financial aspects.

D. THE PERMANENT ORGANS

(a) The general Secretariat.
Directed by the Secretary General, assisted by a Deputy Secretary General, it is responsible for the whole of the administrative and financial side of the Union's work.

(b) The International Frequency Registration Board. The Board is composed of five independent members appointed by the Plenipotentiary Conference, assisted by a specialised Secretariat — the IFRB. It is responsible for, in effect, keeping a master frequency register and to advise members in particular areas.

(c) The International Radio Consultative Committee (CCIR).

(d) The International Telegraph and Telephone Consultative Committee (CCITT).

The two Consultative Committees study and issue recommendations on technical and operating questions in their particular areas. The Deputy Secretary General, R. E. Butler, recently pointed out that these Committees provide an enormous pool of knowledge and expertise of government telecommunication operating entities, industry and scientific interests. He said —

". . . members of the Union base their actions not only on the collective wisdom of governments and their agencies and institutions, but also on the specialist expertise of the technical and scientific communities and operating entities."

The 1979 World Administrative Radio Conference will be preceded by a special meeting of technical experts In the framework of the CCIR in October 1978 —

". . . with a view to recommending the various technical parameters so that the 1979 Conference can adopt its decisions based on the latest *agreed* technical and related operational advice."

That may all sound as though the ITU is remote from global polltica and operates in a satisfying technical vacuum. That is not always the case. The final protocol of the Malaga-Torremolinos Convention is interesting reading. For example, the text of the Final Protocol for the People's Republic of China commences:—

"The delegation of the People's Republic of China wishes to state as follows:—

1. that the traitorous Lon Nol clique is a handful of Cambodian National sc and is illegal from the very beginning . . ."

In the same Final Protocol, the People's Republic made reservations on the assignment and utilisation of radio frequencies.

The Conference in 1979 is a World Administrative Radio Conference. The agenda has been fixed by the Administrative Council. It will in 10 weeks attempt to cover that agenda which will indeed be a formidable task.

3. THE POLITICAL BACKGROUND

The first general World Administrative Radio Conference after the Second World War was held in Atlantic City in 1947. The world has changed greatly since then, particularly for the United States of America and the western Industrialised world. Those countries have traditionally supported the amateur service so that change may be significant in any evaluation of the position of the amateur service today.

In a paper published in the ITU Telecommunications Journal, George Codding,

Jnr., of the Political Science Department of the University of Colorado wrote —

> "American delegates to international conferences must be made aware of the fact that they and the rest of the industrial west are now in a minority."

Daniel P. Moyihan, the former United States Ambassador for the United Nations, wrote —

> "We are witnessing the emergence of a world order dominated arithmetically by countries of the Third World."

The same thoughts were expressed by Armin Meyer, the former US Ambassador to Iran in Japan in an address to the North West Convention on July 30th, 1977. He referred to the short-lived Pax-Americana following the Second World War and the reaction now to the actions of the United States at that time. "A new majority, comprised primarily of the emergent nations, encouraged by the communist countries, is ramming through resolutions. Issues are decided not necessarily on their merits, but through a coalition of special interests."

Codding points out that the new nations have adopted the battle cry of anti-colonialism and will usually vote unanimously on the side of any issue that can be identified, sometimes accurately, sometimes not, as anti-colonialist. The exclusion of Portugal (subsequently rescinded) and South Africa from ITU Conferences is an example of this.

Meyer warns —

> "Under the circumstances, it is conceivable that many small and poor nations at WARC may construe American support for amateur radio as just another symbol of the determination of a developed country to dominate them through some sort of economic hegemony."

At Atlantic City there were just 50 members of the United Nations. At that ITU Conference many countries exercised more than one vote, having additional votes for their overseas territories. By 1973, the Malaga-Torremolinos Conference deleted the last of these additional votes, a decision that affected Spain, Portgual, France, the United States and the United Kingdom. In 1979, at least 153 countries will be entitled to vote. There are many member countries of the ITU, perhaps even a majority, with different aspirations based on different needs from the western industrialised countries. There are now new politics of alliance that can influence the ITU.

The conflict between political interest and interests of the amateur service is highlighted by the conflict of that service with the shortwave broadcasting service. There can be no more political use of spectrum than shortwave broadcasting, which only exists for the value of the propaganda to the country responsible transmitting it. The question is which is the more useful use of spectrum? The broadcasters lay claim to huge listening audiences. In some cases, their claims are based on concepts that some may find curious, for example, a single request for a QSL card from a 12-year-old in Japan may be taken as representing a listening audience of 250 in that country. There are other and more elaborate justifications of the broadcasting service. In the end, they all suffer from the difficulty inherent in measuring the size of a distant audience listening to a variety of frequencies. Will this conflict be resolved by the frequency Manager as the technical expert, or by a political value judgment?

4. THE IARU AND ITS MEMBER SOCIETIES

The IARU was formed in 1925. It consists of one society for each country that has been accepted as representing the amateurs of that country. By its Constitution, there are no elected officers. One society is nominated as the Headquarters Society and the officers of the Headquarters Society take similar offices In IARU. No fees are paid and there Is no structure for meetings. What consultation that does take place, takes place by means of correspondence and through the IARU Calendar.

Thus, the whole financial burden and the whole responsibility to exercise a leadership role rests with the Headquarters Society. The Headquarters Society is the ARRL, which has appointed a Canadian, one of its Vice-Presidents, Noel Eaton, as President of the IARU. The ARRL, as IARU headquarters, has devoted a massive expenditure and a massive effort to properly carry out Its stewardship of the IARU in this period leading to WARC 1979.

As the ITU divides the world into 3 regions, namely, Region 1 — Europe, Africa; Region 2 — the Americas, and Region 3 — what Is left, so regional organisations have been formed within the framework of the IARU of member societies In each region. These regional organisations are financed by subscription paid by their members' society and they do elect officers.

In fact, the IARU global policy for the 1979 WARC was formulated through a series of Regional conferences in 1975 and 1976. Following these regional meetings the President of the IARU called a meeting of representatives of all three regions concurrently with the Region 2 Conference in Miami in April 1976. Representatives of a number of societies in each region also attended this meeting. Noel Eaton perceived the need for continuing advice and formed a small informal committee comprised of individuals from each region and the Headquarters Society. That Committee met in Geneva in September 1976, at Maidenhead in June 1977, and again in Geneva in February 1978. The function of this Committee has been to advise the President of IARU and through the IARU and through the regional organisations, amateur societies in each country.

It must be remembered that there are many societies without the resources of organisations such as RSGB, ARRL or even the WIA or NZART. It is basic to the IARU strategy that it is only the national society that can deal with the administration in its own country. Even if a society has less than 30 members, it has a vital role to play in the advancement of the amateur position to the World Administrative Radio Conference. It is particularly the smaller societies that the IARU seeks to help. Thus the IARU performs a dual function. One is the coordination of policy and effort and the other Is the provision of assistance and guidance wherever it is sought.

An example is the preparation by the President's WARC Advisory Group of a model position paper for societies to present to their administrators either as a basis for their own submissions or with appropriate adaptations.

Let me illustrate how one particular problem has been grappled with by the IARU. The Administrative Council last June adopted a revised agenda for the WARC. One of the revisions was to include a review of Article 41 in the agenda for the 1979 WARC. Meeting at Maidenhead, England, at the end of June, the WARC Advisory Committee considered the implications of the Administrative Council's decision. This Article had been considered at the Inter-Regional meeting held concurrently with the Region 2 Conference in April 1976 in Miami, Florida. A number of deficiencies were noted, for example, the mechanism for "banned countries".

Against this, it is felt that there are other considerations — the most important of which was the undesirability of a general debate on the nature and usefulness of the amateur service. It is Article 41 that requires a morse code as well as technical qualifications for licensees operating below 144 MHz. It was feared that some administrations could well find the removal of those provisions a convenient way of finding more spectrum for CB operation.

Any review of Article 41 could be unpredictable as to its result. Accordingly at the Maidenhead meeting a position paper suggesting retention of the Article in its present form was prepared and subsequently circulated to member societies. At the last meeting, after consultation with his committee, the President of IARU decided to circulate a further paper stressing the reasons for the advice given by IARU to member societies.

If no member country proposes any amendments to Article 41, there will be no discussion on the topic and therefore the matter will lapse. This is an example of the sort of assistance that IARU is offering to member societies, and an example of how the Amateur Service seeks a co-

ordinated approach to Administrations. It is now up to each society to decide whether it will or it will not follow the recommendation of the IARU.

So far as the preparation, at this stage, for WARC is concerned, there is at present a tremendous variation from country to country. In the USA, the FCC and the other arms of Government involved in the formulation of the United States' case, have been engaged for a very long time in the preparation of a position for that country. Because of the American publications and because of the administrative procedures that govern the FCC which requires its deliberations to be on public record, we tend to see more of that country's preparation than many other countries. Yet we must be careful to distinguish the criteria that is used before the FCC in order to meet the terms of the United States legislation (which is the public interest, necessity and convenience) and the criteria that is used in other countries which normally has no formal legislative basis.

In Australia, a Planning Group has been formed of the Chairmen of the Committees representing each service, including the Amateur Service. From the reports of the Committees, the areas of conflict will be identified and then compromised and in the end a position will be adopted. But these countries are advanced in their preparation.

In other countries the World Administrative Radio Conference in 1979 is not so important and their preparation is only just beginning.

It is obvious that in each country where there is an IARU society, that society has a heavy responsibility to advance the amateur cause to its own administration.

5. THE ASPIRATIONS OF THE AMATEUR SERVICE

It is possible to identify the most important aspirations of the Amateur Service as follows:

At 10, 18 and 24 MHz new allocations to the Amateur Service, of which the 10 MHz proposal Is the most Important.

More frequencies on which amateur satellites can operate on a non-interference basis.

In short, an increase and not a reduction of frequency spectrum allocated to the Amateur Service is a fundamental *aspiration of the service for the* WARC in 1979.

The heart of the amateur case is based on the usefulness of the service combined with the number of stations in the service. The number of licences in the USA rose at an annual rate of 20 per cent. In Australia the rate of Increase was 13 per cent. By 1978, there will be 1,000,00 amateurs in the world. By 1982, when the 1979 WARC decisions take effect, there will be 2,000,000. It is reasonable to predict that there will be 6,000,000 by the end of the century.

6. A GENERAL OVER-VIEW

In each country there are conflicts between users for spectrum. This paper does not seek to explore the specific conflicts in any country. It is not an attempt to predict the outcome of the WARC. It must be remembered that each national amateur society exists in a different environment from all the other societies ranging from countries where there is a basic acceptance of the worth of the amateur service to countries that see other and more useful purposes for the allocation of frequencies.

In countries where the amateur service may not have the support of the Administration, the national societies may be faced with the need to persuade their Government to one or more of the following propositions:

1. A short term desire to isolate people from communication with the rest of the world should not be a basis for depriving people of that opportunity for all time.
2. That Amateur Radio does not represent a potential threat to the security of a country for amateurs are known to, and licensed by, the Administration and that the improper use of amateur bands is more likely to be detected than the improper use of many other parts of the spectrum are closely monitored in many places and improper use is identified.
3. A value judgement that Amateur Radio cannot be useful to a country if that judgment is based on casual observation of the use of the spectrum or even on the basis of the behaviour of visiting amateurs rather than a proper evaluation of the needs and requirements of that country and how those needs can be met by the proper development of an Amateur Service.

Very often a society may be faced with the need to overcome ignorance of the amateur service on the part of particular administrators.

The most difficult task that is faced by the IARU is to articulate what has been called the justification of Amateur Radio.

In a sense, this approach is Influenced by the concept of the public interest, necessity and convenience to test that the Federal Communication Commission is bound to apply. But, in the end, the question becomes the same given conflicting clause — which way Is the interest of the community balanced?

There are philosophic arguments expressed, for example, by Tom Clarkson. He has suggested —

> "It is the *most basic* and the most *worthy of respect* of all radio services. This is because it is a manifestation of human process *very close* to life itself."

These views are worthy of respect, but they are not convincing in all countries. The different needs and different aspirations of many third world countries must be constantly borne in mind. Faced with poverty, perhaps famine, illiteracy, perhaps the fear of invasion or insurgency, these arguments may seem remote. Politicians and bureaucrats are generally more pragmatic than philosophic.

Amater radio exists by International treaty. We cannot ignore the aspirations of what may be a majority of the members in 1979. How does the Amateur Service respond? It seeks to persuade the administrations of the world that Amateur radio is not a plaything of a capitalistic western society; the toy of the wealthy supported by commercial interests. It is not political, but transcends national boundaries and provides a real benefit for either today or potentially because of its educational and training value, a value which is particularly significant for developing countries.

That position is, in effect, being advanced three ways. First, by the representation on a co-ordinated basis by national societies (or by other means where no national society exists) to the administration of each country. Second, at the Conference, through amateurs who are members of delegations specifically representing the Amateur Service. They will, as members of delegations, be entitled to speak — a very considerable advantage. They will, as delegates representing a country, owe their first loyalty to their country and will be bound by their country's position. Third, through the IARU. It is not a member state, but may be admitted as an observer. Its delegates may speak by invitation. At the Space Conference this happened twice. The primary role of the IARU is, therefore, to inform delegates and to seek to influence them.

The position has been simply summarised by R. L. Baldwin:

> "Say, how did that all important word 'amateur' get into the (frequency) tables? Because the majority countries represented (in 1959) *voted* for It. If amateur radio is to survive in this decade, the same thing must happen in 1979."

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6. R. E. Butler, an address to Intelcom 77, 11th October, 1977, Atlanta, Georgia.
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8. Communications Act 1934 (USA).
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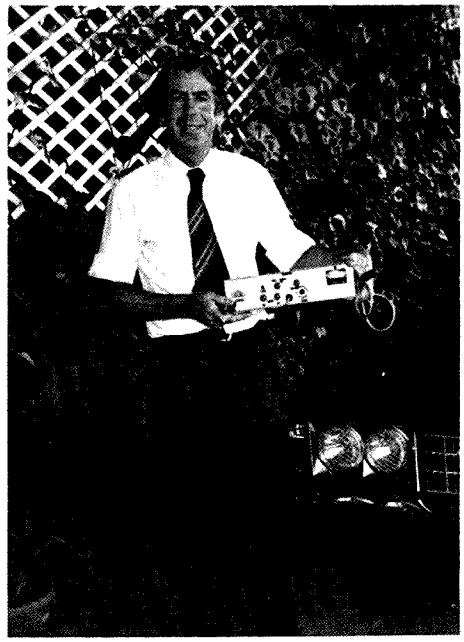
NOVICE NOTES

Novice Amateur Team Wendy VK3NKU and Rodney Johnstone VK3NEJ.



Solid State HF Mobile Transceiver — see text.

R. Champness VK3UG
Photography by Don Laity

ARE THEY THE FIRST?

Pictured are Wendy (VK3NKU) and Rodney Johnstone (VK3NEJ), a husband and wife Novice Amateur team, in their shack in Benalla. Are they the first husband and wife Novice team? They must be one of the first and certainly the first in Benalla.

Rodney was looking for some pastime to get him away from his photographic work and decided radio might suit his interests. He was offered a CB set by one of the locals in January 1977, but heard he would probably need a licence for it. He visited the local District Radio Inspector of the P. and T. Department, and was told that CB was not legal and that he could not operate any radio equipment of this general type without a licence. The Inspector pointed out that if he really wanted a worthwhile hobby in communications radio, that a Novice Amateur licence would be the way to go. It was suggested that he might care to approach Les Osborne VK3AAO, who is an active amateur, with the idea of seeing what amateur radio was about. Rodney did just that. Les "sold" the idea of amateur radio to him and also loaned him a receiver so that he could get his feet wet by listening around the bands. Rodney got stuck into the study and sat for the Novice licence examination in May 1977 and passed all subjects. He obtained his ticket in July 1977.

Wendy, his wife, decided to have a go, too. If the OM could get it, so could she. She sat the first time in October 1977 and completed the examinations in February 1978 and obtained her ticket in June this year.

Rodney does most of the operating and regularly works DX and local stations on 80, 15 and 10 metres. The FT200 is used both at home and mobile. The CB rigs are used for talking to some of their CB friends about Benalla. The Realistic DX-160B, not shown in the photograph, is used for general short wave listening. The aerials in use at their station are up and down like yo-yos as experiments are conducted. The aerials at the time of writing this are a half-wave dipole on 80, one and a half wave dipole on 15, and a quarter wave ground plane on 10 metres.

Rodney is Vice-President of the Benalla District Radio and Electronics Club. He competently and successfully organised and ran a meeting in February for CBers and other radio communications users which was addressed by Senator John Button and Mr. Jim Wilkinson.

Benalla's amateur radio population has doubled in the last two years.

Rodney's influence is helping to gain amateur operators from the local CB fraternity. ■

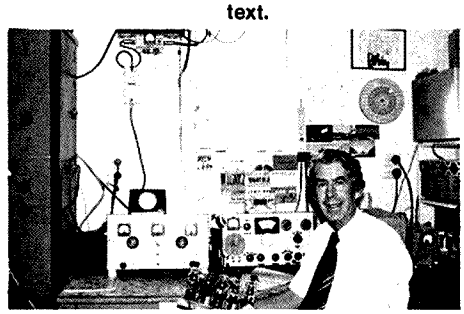
HOME BREWING — VERY MUCH ALIVE

There has been some comment lately that we amateurs operate only "black boxes" or are "appliance operators", and the like.

Well, just to put the scene in the right perspective here is some pictorial proof of the continuing experimental and home brewing side of our hobby.

Merv Collins VK3AFO sent us photographs of some of his work.

Most of the equipment shown, including the SSB H/F linear, HF SSB/CW transceiver, VHF wideband recline, the 12V regulated power supply and the 5 in. CRO were constructed mainly from components salvaged from obsolete black and white TV receivers.



VK3AFO holding a 807 sub chassis — a part of the experimental linear amp.

The transceiver uses a 5 MHz crystal filter.

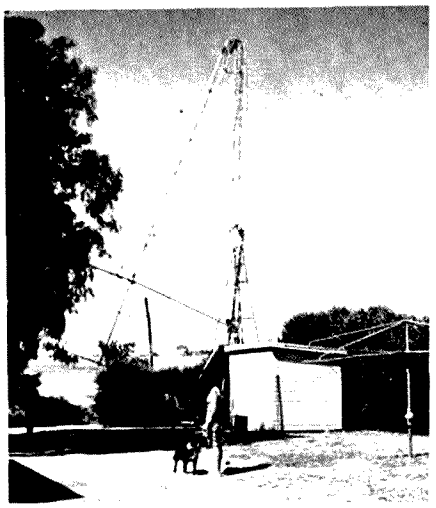
The H/F mobile SSB solid state transceiver, which also uses a 5 MHz crystal filter, was constructed along the lines of the "Amateur Building Blocks" series which appeared in AR during 1975.

Home brewing always will be one of the main attractions to amateur radio. ■

OUCH! WAS THAT ANTENNA HIGH ENOUGH?

It could happen to you, but we certainly hope not. Peter Page VK2APP was the unlucky victim this time when a sudden gust of wind bent the antenna mast a few months ago.

It just goes to prove the old QST saying — "If the antenna didn't come down last winter, then it wasn't big enough."



The tower has been re-installed complete with a 204BA and sundry others.

Peter (who is a blind operator) lives at Montagle, near Young, Central West NSW.

Photo courtesy David Thompson VK2BDT. ■

AMATEUR SATELLITES

AMSAT MEMBERSHIP

Bob Arnold VK3ZBB

I am pleased to report that the Australian membership of AMSAT has almost doubled in the last twelve months. If you would like details send me a SASE or write direct to AMSAT, P.O. Box 27, Washington, DC 20044, USA. Annual subscription is $US10 or Life Membership $US100 — join now while the rate of exchange is really in your favour.

New Life Members from Australia include VK5ZZ, VK5EF, VK4HD, VK2ZAZ, VK2ZQC, VK2ZIP.

Grateful thanks to Dick Smith (prop. Dick Smith Electronics) for his generous donation to the Phase 3 project. Dick is very interested in OSCAR work and you will be hearing more from him in the near future.

WANTED — DX

Greg Roberts ZS1BI reports that there is considerable OSCAR activity in South Africa with 63 stations in AO7 Mode A and 27 on Mode B.

Greg writes, "Starting towards the east, the first major land mass is Australia. Calculations show that a ZS-VK contact is possible and several east coast ZS stations have made a special effort to work VK with no luck so far. It would appear that VK operators do not bother to work the low western passes."

What about you VK6 boys making a new record to follow the great achievements on 432, 1296 and 2304? Greg's address is P.O. Box 9, Observatory, 7935, South Africa. There is also a HF net on Saturday at 1100 GMT on 14280 kHz with ZS1BI net control station.

OSCAR 7 — IT'S EASY

I was interested to read the article by Gil Spencer VK2JK in July AR and propose to correct a few hairy statements:—

- There is no plot to confine OSCAR 7 (or 8) to the chosen few, witness my several offers of basic OSCAR literature prepared by ARRL. The response for "OSCAR for Beginners" has been overwhelming and I have another batch on the way from USA. If you would like a copy send me a 20c stamp QTHR.

OSCAR 7 — IT'S EASY

- Working OSCAR can be achieved with simple gear. Note the comments of Graham VK5EU on mobile operation published in this column in April 1977.
- High power is not necessary, In fact, it is discouraged. Contacts have been made with 300 mW.
- I haven't heard you on 7A yet, Gil, but don't forget the fun you can have on 7B and also 8A and 8J. There are lots of stations waiting to work you but you need a bit of science for 7B and rather more for 8J.

My grateful thanks to Charlie VK3ACR for keeping this column going while I was away. Despite his great interest in 1296, Charlie still remains faithful to the birds; It is amazing how many interests one can have in retirement!

OSCARLOCATOR

Following my review of "Getting to Know OSCAR from the Ground Up" in the March edition of "Amateur Radio", I received a letter from Stephen Place of ARRL. Stephen points out that the OSCARLOCATOR mentioned in the book can be used in the southern hemisphere in accordance with the following instructions:—

1. Ignore the map under the grid.
2. Find your location in terms of latitude and longitude.
3. Place the QTH Rangefinder over your QTH as described in the instructions.
4. Flip the orbit finder over (upside down) as the tracking curve in the Southern Hemisphere is reversed from that in the Northern Hemisphere.
5. Attach as described in the instructions.
6. To get the descending node EQX, add exactly ½ the period and ½ the progression to the time and longitude of the ascending node EQX (from the table).
7. One half the period is 57.473 minutes for OSCAR 7 and 51.615 minutes for OSCAR 8. One half the progression is 14.369° for OSCAR 7 and 12.904° for OSCAR 8.

I have tried this out and it certainly works, although the map under the locator is, of course, not correct and It is necessary to transpose the latitude and longitude readings from the Northern to the Southern Hemisphere. "Getting to Know OSCAR from the Ground Up" is a useful publication for those interested in satellite operations and it is now available from Dick Smith Electronics shops as well as other technical book shops. ■

REFERENCE ORBITS — OCTOBER 1978

OSCAR 7				OSCAR 8			
Date	Orbit	Time Long. Z EQX	°W	Date	Orbit	Time Long. Z EQX	°W
1	17731B	0031	67	1	2920J	0104	57
2	17744B	0125	61	2	2934A	0109	58
3	17756A	0025	66	3	2948A	0115	59
4	17769B	0119	79	4	2962X	0120	61
5	17781B	0018	64	5	2976A	0125	62
6	17794A	0113	78	6	2990A	0130	63
7	17806B	0012	63	7	3004J	0135	65
8	17819B	0106	76	8	3018J	0141	66
9	17831A	0006	61	9	3031A	0003	42
10	17844B	0100	75	10	3045A	0008	43
11	17857B	0154	88	11	3059X	0013	44
12	17869A	0054	73	12	3073A	0018	45
13	17882B	0148	87	13	3087A	0023	47
14	17894B	0047	71	14	3101J	0029	48
15	17907A	0141	85	15	3115J	0034	49
16	17919B	0041	70	16	3129A	0039	[illegible]
17	17932B	0135	84	17	3143A	0044	
18	17944A	0034	68	18	3157X	0049	53
19	17957B	0129	82	19	3171A	0055	55
20	17969B	0028	67	20	3185A	0100	56
21	17982A	0122	80	21	3199J	0105	57
22	17994B	0022	65	22	3213J	0110	59
23	18007B	0116	79	23	3227A	0115	60
24	18019A	0015	64	24	3241A	0121	61
25	18032B	0110	77	25	3255X	0126	63
26	18044B	0009	62	26	3269A	0131	64
27	18057A	0103	76	27	3283A	0136	65
28	18069B	0003	61	28	3297J	0141	67
29	18082B	0057	74	29	3310J	0003	42
30	18095A	0151	88	30	3324A	0009	43
31	18107B	0050	73	31	3338A	0014	45

GUIDELINES FOR BETTER TEACHING

DO'S:

1. Lecture for fairly short periods.
2. Ask questions around the class.
3. Use overhead projectors some of the time.
4. Use slides and tapes wherever practicable.
5. Use film or videotape.
6. Encourage student participation.
7. Give students work to do such as questions to find answers for . . .
8. Borrow a CRO or any relevant equipment and give a class demonstration.
9. A picture is worth a 1,000 words.
10. Use all available resource materials.
11. Plan your course timetable tightly.
12. Teach proper operating procedures.
13. Give book lists and study guides to promote some organised home study.

OON'TS:

1. Lecture for longer than, say, 20 minutes without varying the activity.
2. Waffle on irrelevant digressions.
3. Denigrate the P. and T. Dept. — try to foster good PR with the Dept. ■

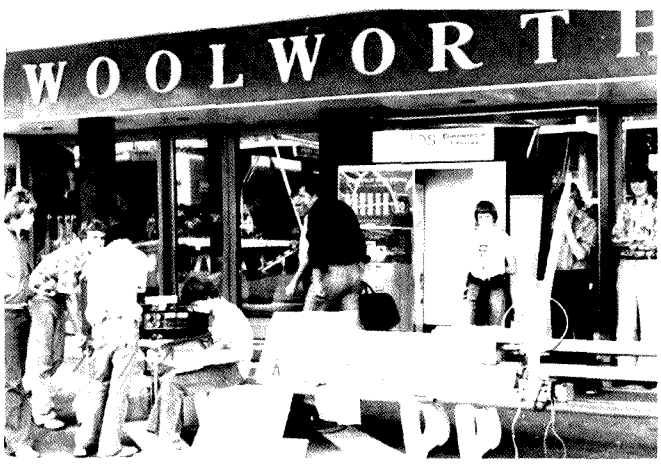
VK/CB ACTIVITIES

PHOTOS AND CAPTIONS BY SAM VORON VK2BVS

How about using 1000 channels mobile in the bus. Just sit back and enjoy the journey.

The antenna is a half wave centre fed vertical dipole running along a plastic pipe. The rig is a Kyokuto running 10 watts on high power and adjusted to 3 watts output on low power.

The 12 volts comes from a 5½ ampere hour motorcycle battery in the pack.



Members of the Amateur and Citizens Radio Club (VKCB) set up this amateur display outside a well known shopping centre in Manly, NSW.

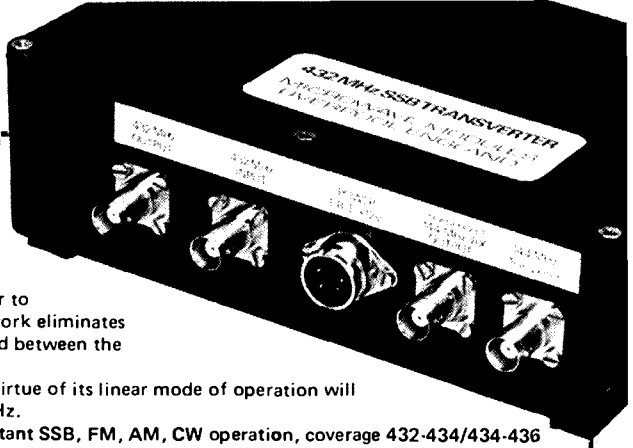
Many new members to the Club who are studying for the coming novice exams helped in running the display and helped to explain amateur radio to the general public.

I found out about amateur radio when I met this fellow standing at a bus stop with a 1000 channel Kyokuto 2 metre FM transceiver.

WIA publicity material proved extremely popular and assisted VKCB members to present the spirit of amateur radio to the public. ■

The Amateur and Citizens Radio (VKCB) Club members about to string up an 80 and 160 metre dipole as part of a display to promote amateur radio during the Red Cross Appeal in April. The location was along one of the main roads in Ryde, Sydney.

New Release $295



TRANSVERTER MODEL MMT 432/144S
UTILIZING an IF of 144MHz * 10 WATTS DRIVE of ½ WATT * VOX
OPERATED, TWO SELECTABLE RANGES
FEATURES EXTENDED COVERAGE FOR OSCAR 8

This 432 solid state linear transverter is intended for use with a 144.MHz transceiver to produce a high reliability transceive capability. A 10 watt load and RF sensing network eliminates the need for any anciliary circuitry. A single coaxial connection is all that is required between the transverter and the associated 144 MHz transceiver.

A wide range of applications is offered by the MMT432/114 transverter, which by virtue of its linear mode of operation will enable 144 MHz SSB, FM, AM or CW equipment to be used at 432 MHz. to 436 MHz.

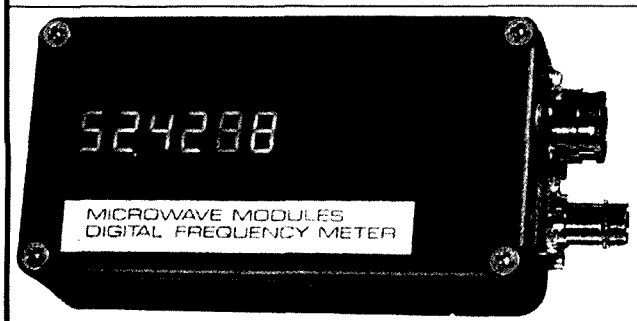
Simply connect direct to your 2 metre rig, 12 volt supply, fit 70 cm antenna for instant SSB, FM, AM, CW operation, coverage 432-434/434-436 in two ranges.

FEATURES: High quality double-sided glass fibre printed board * Highly stable zener controlled oscillator stages * PIN diode aerial changeover relay with less than 0.2 dB through loss * Extremely low noise receive converter, typical 3 dB * Separate receive converter output gives independent receiver facility * Built in Automatic RF VOX with override facility * Built in 10 watt 144 MHz termination, selectable attenuator for ½ watt * Use of the latest state of the art Power Amplifier transistors provide reliable 10 watts continuous output

MODEL MMT432/144S Price $295

TRANSVERTER MODEL MMT 432/28S Features extended coverage for Oscar 8
Second Crystal Oscillator gives two ranges: Low 432 – 434 MHz – High 434 – 436 MHz. Programming available to either Transmit/Receive both Low, both High, or a mixture of the two. Adjustable Drive Level is now provided by an input potentiometer. Optional RF VOX. Power Output 10 watts minimum * 28 MHz IF * Drive 1 mW to 500 mW * Aerial Changeover by PIN diode switch * Modern Microstrip Techniques * Power requirements 12 volt nominal at 150 mA 2.5 amp. peak * Case size 187 x 120 x 53 cm * Spare 432 input socket.

MODEL MMT 432/28S Price: $245 **MODEL MMT 144/28 Price: $185**



500 MHz COUNTER Model MMD050/500

SPECIFICATION:

Digit Height	10 mm
Display Width	45 mm
Case Size	111 x 60 x 27 mm
Frequency Ranges	0.45 - 50 MHz, 50 - 500 MHz Better than 50 mV RMS over 0.45 - 50 MHz. Better than 200 mV RMS over 50 - 500 MHz
Input Connector	50 ohm BNC
Input Impedence	200 ohm approximately
Power Connector	5 pin 270 deg. locking DIN socket (supplied with plug).
Power Requirements	11 - 15 volts DC at 300 mA approximately

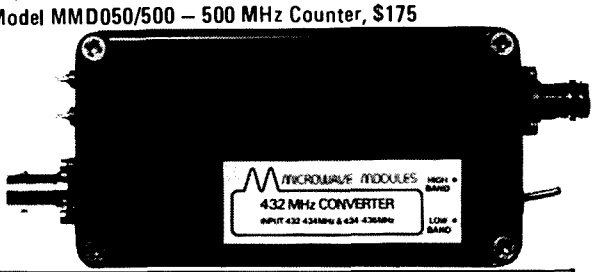
Model MMD050/500 – 500 MHz Counter, $175

DUAL RANGE 432 – 434 MHz & 434 – 436 MHz CONVERTER
TYPE: MMC432/ 28S & MMC 432/144S **Price: $67.00**

FEATURES:
- Extra Range (434-436 MHz) For Satellite Reception
- Ultra Low-Noise First RF Amplifier Stage
- Highly Stable Zener Diode Controlled Crystal Oscillator and Multiplier Stages

SPECIFICATIONS:

Input frequency ranges:	432-434 MHz (low) 434-436 MHz (high)
I.F. output frequency:	28-30 MHz or 144.146 MHz
Typical gain:	30dB
Noise figure:	3dB Maximum
D.C. Power requirements:	11-13.8 volts 12.5V nominal
Current consumption:	50 mA Maximum



BNC CONNECTORS – Excellent quality, fully imported from U.K. – U.S. Mil. No. UG88E/U. Price: $1.35 each.

NEW READY-TO-OPERATE MODULES AVAILABLE IN THE SALES PROGRAM OF VHF COMMUNICATIONS.
All modules are enclosed in black cast-aluminium cases of 13cm by 6cm by 13cm and are fitted with **BNC** connectors. Input and output impedance is 50 ohms. Completely professional technology, manufacture, and alignment. Extremely suitable for operation via sattelite or for normal **VHF/UHF** communications.

6 METRE MOSFET CONVERTER
Featuring 24 MHz local oscillator output for transverter use:

Input frequency:	52-54 MHz
I.F. Output Frequency:	20-30 MHz
Typical Gain:	30 dB
Noise Figure:	2.5 dB
Typical Image rejectoin:	65 dB

Crystal Oscillator Frequency: 24 MHz
Power requirements: 12 volt ± 25% at 35 mA.

MODEL MMC52/28LO Price: $49.00

1296 MHz CONVERTER
Mircostripline, Schottky diode mixer.
IF: 28-30 MHz or 144-146 MHz
Noise figure: typ. 8.5 dB
Overall gain 25 dB **Price: $65.00**

CONVERTERS
PACK & POST $2.00

144 MHz MOSFET CONVERTER
Noise figure: typ. 2.8 dB.
Overall gain: typ. 30 dB.
IF: 28-30 MHz. 9-15 V 20 mA.
Price: $45.00

VARACTOR TRIPLER 432/1296
Max. input at 432 MHz. 24 W (FM, CW) - 12 W (AM)
Max output at 1296 MHz: 14 W
Price: $74.00

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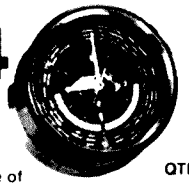
A selection from the wide range of Ham radio equipment and accessories available at Bail.

24 HOUR WORLD CLOCK

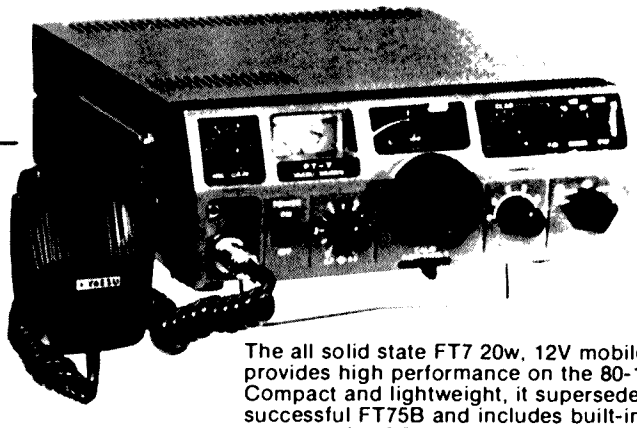
QTR-24



QTR-24

QTR-24 is a new addition to the range of Yaesu fine instruments. With a glance the time in any principal city or time zone can be simultaneously co-ordinated with local time on a 24 hour basis. The QTR-24 is powered by a 1.5V dry cell, which has a normal life of approx. one year.

NEW! FT7 Mobile



The all solid state FT7 20w, 12V mobile tcvr. provides high performance on the 80-10m bands. Compact and lightweight, it supersedes the successful FT75B and includes built-in VFO, provision for CC operation, single knob tuning, NB, plus many more desirable features. Ideal for novice and O.T.

LOW PASS FILTER

Keep your neighbours as friends — reduce or eliminate TVI with a low pass filter. Properly attached to output of Amateur or CB Tcvr. attenuates all harmonics in TV channels or FM band.
DRAKE TV-42 LP 3 section 300w — $25.00
YAESU FF50-DX 3 section 1kW — $39.00
(not illustrated): —
KW Decca 5 section 1kW — $59.90. LP7 Low power $10.50.

HAVE YOUR OWN 10m MOBILE

GTX-3325 SSB/AM 23 Channel CB — You Modify it for 10m coverage!

An economical way to launch into 10m mobile or DX. Set comes complete with mobile mount, mic, power cable, operating manual with original circuit.

Price only $99.95

SWR METER

RS-101 SWR. Power Meter
Compact and rugged unit for CB radio antenna installations. A special function switch is utilized for easy operation. Power 0-10 watt. SWR meter 1:1-1:3. **Priced at a low $7.50**

BALUN

Reduce RF radiation from your feedline 1:1 Baluns for beams and dipoles. Power rating 2kW PEP.
Hy-Gain BN-86 $30 (illustrated)
Western BA1 $22.
300 Ohm model to be available later

DIPOLE TRAPS

Multiband HF Dipole trap sets
Make your own 80-10m trap dipole. Kits consist of 2 weather sealed trap coils and special centre insulator. Dimensions included with kit.
KW Decca $38.
Western $35.
(Wire, coax or twin-feeder, and end insulators extra)

SWR METER

OSKER SWR200 — SWR and Power Meter
Easy-to-operate and high sensitivity standing wave ratio and power meter for practical use by radio amateurs. Push button 75 Ohm or 52 Ohm operation. Power range 0-200w and 0-2kW, accuracy — + 15% at SWR 1.
Priced at $75.00.

Also available — SWR 40, $23.00 and FSI-5 at $32.00.

ANTENNA COUPLER

Extremely important, especially with modern all-solid state transceivers, is the maintenance of a very low SWR to avoid destruction of costly high-power P.A. transistors. An antenna coupler enables precise adjustment with almost any antenna.

HC 500A-160-10m, up to 500w pep $249
Other couplers available from 200w up to 2.5 kW — including FC301 Yaesu-160-10m, up to 500w pep. $195

DUMMY LOAD 10W peak

Dummy load built into a PL-259 plug for easy connection to the back of your rig. No need for large cans, this has a built-in lamp which lights up on transmission, showing AM carrier with modulation varying the intensity of the lamp.

$1.60

Write for our catalogue detailing more of the latest Yaesu equipment and accessories available from BAIL
Prices and specifications subject to change

Please include 50 cents for postage

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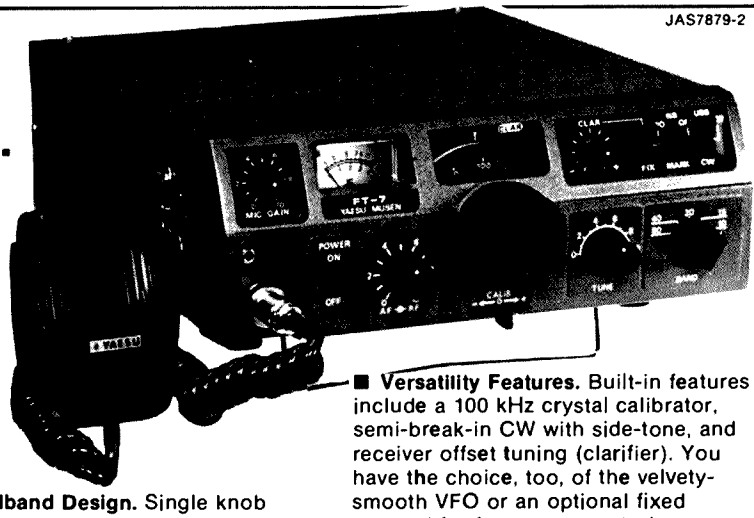
	Amateur & Novice Comm. Supplies, W. E. BRODIE, 23 Dalray Street, Seven Hills 2147	Ph. 624 2691
	DIGITRONICS, 186 Parry St., Newcastle West 2302	Ph. 69 2040
	RIVERCOM, Sid Ward, 9 Copland St., Wagga Wagga 2650	Ph. 21 2125
QLD.	H. C. BARLOW, 92 Charles St., Aitkenvale, Townsville 4814	Ph. 79 8179
	MITCHELL RADIO CO., 59 Albion Rd., Albion 4010	Ph. 57 6830
A.C.T.	QUICKTRONIC, Jim Bland, Shop 11, Altree Crt., Phillip 2606	Ph. 81 2824

JAS7778-40

JAS7879-2

All solid state 80–10m — mobile 20W transceiver . . .

YAESU FT-7



For both the novice and O.T.

For the ultimate in operating ease while HF mobile, go with the exciting FT-7 from YAESU. Small size, light weight, and uncompromising performance are the hallmarks of the FT-7. With mobile activity on the upswing, don't be left behind! Join the fun with the perky FT-7.

■ **Superb Receiver Performance.** The front end features MOS FET and Schottky diode circuitry for maximum sensitivity and immunity from overload.

■ **Compact Solid-State Design.** The FT-7 draws less current on receive than your auto dash lights. What's more, the FT-7 is not much larger than many 2 meter rigs.

■ **Broadband Design.** Single knob peaks all transceiver circuits for frequency in use. No more fumbling for plate and load controls while in traffic!

■ **Ready When You Are.** The FT-7 comes ready for mobile operation on 80 through 10 meters, SSB and CW. Just hook up an antenna and 13.5 volt DC power source.

■ **High Performance Noise Blanker.** A state-of-the-art noise blanker effectively minimizes impulse noise.

■ **Versatility Features.** Built-in features include a 100 kHz crystal calibrator, semi-break-in CW with side-tone, and receiver offset tuning (clarifier). You have the choice, too, of the velvety-smooth VFO or an optional fixed channel for frequency control.

■ **Engineered for Mobile.** Rugged construction and components giving overseas mobile operation with stability equal to rigs of twice the price.

■ **Operate from Car or Home.** You can use your FT-7 as a compact base station, too, with the FP-4 AC power supply. And for highpower operation from base or mobile, the FL-110 solid state amplifier may be used to secure 100 watts of output power.

HI-MOUND HAND KEYS

from BAIL ELECTRONIC SERVICES

Model HK-808. Heavy duty commercial hand key with full ball race pivots, heavy marble base and dust cover. The ultimate hand key. Price **$78.00**

Model HK-710. Heavy Duty De Luxe Hand Key, fully adjustable, ball bearing shaft, plastic protective cover. Mounted on heavy non-skid poly marble base. Base dimensions 168mm x 103mm. Price **$45.00**

Model HK-707. Economy hand key in all black ABS resin, metal parts protected by moulded ABS resin cover. **$19.50**

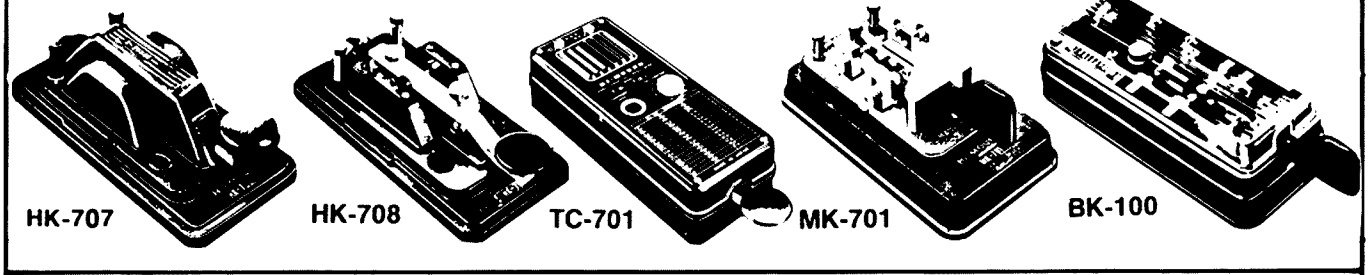
Model HK-708. Similar to HK-707 but without cover and with smart chromium plated keying mechanism and flat American style knob. Price **$16.00**

Prices incl. ST/Freight and Ins. extra/Prices and specifications subject to change.

Model TC-701. Morse practice oscillator with built in key and speaker. Including battery and earphone. Copy of morse code on case. Two can be wired together to form a practice communication set. Price **$19.50**

Model MK-701. Manipulator (side swiper) for an electronic keyer. Accurate and restful keying operation are assured owing to a heavy metal plate and a frictional rubber belt beneath the periphery of the main base. **$45.00**

Model BK-100. Semi-automatic (bug) key, with standard adjustments, wide speed range, protective plastic cover, on heavy non-skid base, beautifully finished. Base dimensions 175mm x 75 mm. Price **$49.00**



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	MITCHELL RADIO CO., 59 Albion Rd., Albion 4010	Ph. 57 6830
A.C.T.	QUICKTRONIC, Jim Bland, Shop 11, Altree Crt., Phillip 2606	Ph. 81 2824 82 2864

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VK1	VK1RTA, Canberra	144.475
VK2	VK2WI, Sydney	52.450
	VK2WI, Sydney	144.010
	VK2RHR, Mittagong	144.128
VK3	VK3RTG, Vermont	144.700
VK4	VK4RTL, Townsville	52.440
	VK3RTT, Mt. Mowbullan	144.400
	VK4RBB, Brisbane	432.400
VK5	VK5VF, Mount Lofty	53.00
	VK5VF, Mount Lofty	144.800
VK6	VK6RTV, Perth	52.300
	VK6RTU, Kalgoorlie	52.350
	VK6RTW, Albany	52.950
	VK6RTW, Albany	144.500
	VK6RTV, Perth	145.000
VK7	VK7RNT, Launceston	52.400
	VK7RTX, Ulverstone	144.000
	VK7RTW, Ulverstone	432.475
VK8	VK8VF, Darwin	52.200
JA	JA2IGY, Nagoya	52.500
KG6	KG6JDX, Guam	50.110
KH6	KH6EGI, Hawaii	50.104
TI	TI2NA, Costa Rica	50.080
W	WA6JRA, Los Angeles, USA	50.091
ZL1	ZL1VHF, Auckland	145.108
	ZL1VHW, Waikato	145.150
ZL2	ZL2VHP, Palmerston North	52.500
	ZL2VHF, Wellington	145.200
	ZL2VHP, Palmerston North	145.250
ZL3	ZL3VHF, Christchurch	145.300
ZL4	ZL4VHF, Dunedin	145.400

Being winter time, there has been a great fall off in overall activity on both 6 and 2 metres. There have been the occasional 6 metre Es opening, the last one being Saturday, 22-7-78, when VK2 were contacted from VK5. Overall, though, activity on 144 and 432 MHz has largely disappeared for anything of great note anyway.

I have been pleased to receive a letter from Bill VK2HZ, who contributed notes to "Wireless Weekly" and "Radio and Hobbies" for a period 1933 to 1963, when Pierce Healy took over the "Amateur Radio" notes in what is now "Electronics Australia". Bill has had a long interest in 6 metre propagation and was active in the 1958 sunspot maxima on 50 MHz. He sends the following information of that era which will be of interest to all those who look a little further than across town for their contacts on six.

"QX working to VK was mainly restricted except for TEP working, but one point seemed to be clear, that contacts to W and XE were via the F layer while KH6 contacts were by TEP judging by times.

"With so much speculation on what cycle 21 is going to bring us in the way of sunspots and F layer and TEP VHF working, it is pleasing to note to date perhaps the optimists are winning. Some have forecast a 1958 repeat with the 200 sunspot number of cycle 19, while others estimated the cycle 21 peak would not reach the 108 number of cycle 20.

"In case the sunspot number does reach high levels we can look at the 50 MHz band conditions for 1957-8-9 and the DX contacts available, with some interest. July 1957 to July 1958 was the IGY year and radio amateurs were requested to report on propagation conditions. With the arrival of TV our 50 MHz band was re-allocated to cover 56 to 60 MHz. During IGY we were permitted to return and use the 50 to 54 MHz band. This permission was later extended to 31-12-59; our 'friend' TV Channel O had not been allocated for use up till that date.

"During IGY VHF activity was high and governmental financial support was afforded many IARU National Societies, to co-relate propagation data made available to them by individual radio amateurs.

"Looking back over notes written at the time the information available is by no means complete, but sufficient to make the VHF gang stick about during the summer and equinoxial periods of the next few years.

"Currently we have on the plus side towards good DX: SSB, greater experience in gauging possible band conditions, more 'after-burners' outside W land, more efficient antennae (a question mark here, as there were plenty of wide spaced yagi aerials in 1958) and finally we still have CW, as I am not certain how many of the 1957-58 contacts were made using this mode.

"On the minus side, of course, our greatest handicap will be the fact we can no longer use 50 to 52 MHz. The JAs, KH6s and most Pacific and Asian stations know where to find us. SMIRK (Six Metre International Radio Klub) in their bulletins is doing an excellent job publicising that VKs and ZLs can only be found above 52 MHz (not true for ZL, but they mainly operate there). Another factor that may affect the number of DX contacts made is the restricted operation these days, with so many stations in TV Channel O service areas, and no longer operating.

"The following snippets of news cover some of the 1957-8-9 activity: Soon after July 1957 VK2WH and VK2ARG were contacting JAs but as usual the VK4s had a mortgage on most of them. The Ws were in contact with EI, LA and SM stations on 50 MHz and in addition cross-band working 28/50 MHz with OH, PAO, F and Gs.

"The LUs were very active, in five days on 50 MHz LU3EX worked ZP5, KP4, CO2, CE, JA, XE, PY6, OA4, CX, TG9, YV, PJ2, TI, KH6 and We, a fair effort for any band! By February 1958 quite a number of W stations had recorded WAC, the first credited to a W6.

"Down this way, K6RNQ contacted ZL4GY on 1-2-58 and ZL2ABX the following day, both contacts around 0001Z. JAs were there for the taking in all Australian States.

"Quite a number of leading stations had over 25 countries confirmed on 50 MHz. The ARRL offered a special trophy for the first 50 MHz WAC confirmed; Bob Perry K6GDI was the ultimate winner. Some G stations in selected areas were permitted to operate on 50 MHz with power up to 500 watts. WAC on 50 MHz by W stations reached over 20 and February, March and April, 1958, provided the best periods. In March Ws worked into New Zealand for 15 days and in April for 10 days. The VK4s were contacting KH6 and W, times appeared to be around 2300Z for Ws and 0700 to 1000Z for KH6. (The latter fitted in with 1978 April openings from VK2 to KH6 times, 0700 to 0830Z.)

"By September some DX stations were thinking of 50 MHz ARRL WAS Certificates, EI2W had 35 listed, SM7ZH 29, PZ1AE 26. The 12,000 miles 50 MHz DX record LU3EX to JA6FR had been challenged (incidentally, it still stands). CT3 had been worked long path by a number of JAs — 17,000 miles, but rather a difficult one to substantiate!

"In November 1958 the band opened practically daily from G to W and G6LX worked 150 Ws in three weeks. 1959 afforded good DX, too, and many of our State DX distance records for 50 MHz were made then (see Call Book).

"The above information is rather sketchy but does give an indication of what can happen. We are rather isolated down here in VK but a sunspot count of towards 200 could make it really interesting."

Thank you, Bill, for that most interesting information; it will surely consolidate the interest being shown by so many of the present day six metre operators and speed many more to get on with the upgrading of their gear.

On the subject of gear, etc., a few words might not go astray at this point to help the less informed or newcomers to six metres to establish contacts of a DX nature, and in particular, to Japan. A number of operators have observed when the bands opened to JA that, irrespective of the strength of the signals, there is little point in turning up the wick on your after-burner. It does nothing but create QRM on your frequency. It is to be borne in mind that most JA operators use 10 or so watts of power output, no more. If you bore in and pump your 200 watts of SSB up their way, it means instead of perhaps 20 stations hearing you if you ran 10 watts, about 500 will hear you, and all come back simultaneously, with the result you work no one. So point one, no matter what the conditions, you would generally expect to work more JAs with 10 watts than you will with 200 watts

Go easy with your rate of speech, remember, the JAs have learnt to speak English so they talk to you, we haven't bothered to learn Japanese to reciprocate. Therefore limit your range of vocabulary to the more simple and useful words, and don't speak too fast. Common or slang words which may have a useful meaning here in VK will have no meaning in JA, so don't use them. And use the recognized phonetics, not some fancy word of your own choice, it won't help to get your call sign across at the other end amongst their level of QRM.

DX conditions in the south of Australia are often quite different from that prevailing in the north in Queensland and Northern Territory, so anybody up that way already grinning at these comments, may I suggest you come down here and try your hand!

Here at my QTH I monitor a TV video signal coming from the north (location unknown) on 49.750 MHz on a separate converter/receiver combination. During periods of DX activity this sign can be copied for many hours a day from abo 0200 through to 0730 and sometimes later, at SI to S3 or 4. When it peaks to S5 or better it is time to look on 50 MHz and almost without exception signals will be found there, mostly from Japanese amateurs, but with other northern TV rubbish putting birdies all over the band. This will be as far as the amateur signals will reach with the TV video at S5. If there are those who believe that because amateurs can be heard on 50 MHz they will also be capable of being heard on 52 MHz under these conditions then they need to think again, because here in southern climes anyway the fact that we operate 2 MHz higher is quite sufficient to mean no contacts. When the video signals rises to S6 and higher (it has been S9+) then you can start working JAs on 52 MHz.

There is, however, another nigger in the woodpile. The closer you are to the north, the better your chances of working JAs. When I say north I am not referring to the Northern Territory or Queensland in this case, but on a local basis. Here in VK5, David VK5KK at Waiseys lives about 25 miles further to the north than I do; he is able to work more JAs and with stronger signals than I can, not only occasionally, but time after time. It would be true to say David receives JAs three to four S points stronger than I do on most occasions! We both run comparable equipment and antennae David therefore will, it seems, work more JAs than the Adelaide boys as they will be a further five miles further away. So signals from the north under present conditions at any rate, are very selective, so before you throw your equipment away, remember to look at your map if someone receives JAs better than you, he may be to the north of you!

Summing up, keep the output power down to work JAs in the southern areas at any rate, have the best possible antenna you can afford to build or buy, as high as possible, and with nothing worse than RG8AU coax feeding it! Keep your linear amplifiers for use with the Ws, KH6s and the other exotic areas, you will need all you can give them to be successful if we can follow the advice of those who have already worked into there.

The VK six metre calling frequency is 52.050 MHz, if you are in the shack working at the bench, keep a receiver running on the call frequency, but remember to call yourself from time to time — no one will ever be worked if we all listen all the time! Always call with the linear on, and if you make contact, move off the call frequency, others may not be able to hear you, but you may block someone from hearing a third party.

We who have been on the bands for a long time hope all the newcomers will keep an ear and tongue on six metres, especially during September-October, summer months, March-April at least for the next two or three years, but particularly 1979. The more operators there are to be heard on our isolated segment of six metres the more likely

we are to induce a few more rare DX stations to come up and look for us.

As mentioned earlier, band conditions haven't been the best in this mid-winter period, and this view is supported by the falling off in letters received, which is normal for this period. However, I was pleased to have a state visit from Allan VK4ZRF and Steve VK4ZSH recently, and we were able to swap VHF comment. Steve is keen to try meteor scatter experiments, and would welcome correspondence from anyone interested in VK5, or other suitably distance placed areas. For your information in this regard more favourable meteor showers for the remainder of the year are as follows:

Orionids: 16th to 20th October, peaking on 21st.

Taurids: 20th October to 30th November, peaking 6th November.

Cephids: 7th to 11th November, peaking 9th November.

Leonides: 15th to 17th November, peaking 17th at 1300Z.

Geminids: 7th to 15th December, peaking 14th at 0700Z.

Ursides: 17th to 24th December, peaking 21st December.

A brief EME report from "The Propagator" regarding the 432 dish at Dapto, indicates the feed antenna and its reflector, the feed box and all of the coaxial cable, control cables, etc., from the feed box have been removed by VK2BOZ, VK2ZHU and VK2ALU. None of the equipment installed by the Moonbounce Group now remains at Dapto. Enquiries are continuing as to what means you use to transport a 30 foot dish!

Lyle VK2ALU advises there has been an almost nil response to his enquiry regarding anyone interested in 3 cm activity. Are there any interested persons further afield than Dapto?

From the "Geelong Amateur Radio and TV Club Newsletter" comes a snippet from Harold VK3CM . . . "The FCC has proposed that all new licences in the Pacific area shall be given KH prefixes, together with a digit denoting the actual island group on which the station is located. Likewise, in the Caribbean area the prefix will be KP and a digit. New "Military Recreation" stations will use the WN prefix." This is mentioned as it is likely six metre operators will in the next year or two come across some of these new prefixes and will be wondering why long existing call areas have changed, i.e. we may ultimately see a Guam signal emanating as KH? instead of the present '66.

CHANNEL 5A

I suppose it is about time I climbed on the bandwagon and started to beat a few drums on the subject of the likely increase in the number of such stations in Australia, particularly in the various metropolitan areas. However, I am not going to beat the drums like some people have been judging by what I read in various publications and hear on the air. I would like to believe commonsense and logic would prevail at all times from the mouths of my fellow amateurs.

First I would say the emphasis of the criticism being levelled at the P. and T. Department is reasonable to a degree because there have been a number of instances of short-sightedness in the past, but I do believe it is totally unfair for the blatant criticism being levelled at the actual officers of the Department, those who carry out the tasks delegated to them. From personal contact I know there are some very bright boys in the P. and T., who have been very helpful, and always willing to pass on knowledge gained. Probably the greater share of criticism should be levelled at the WIA, who for years appear to have been afraid to rock the boat too much at times, for fear of falling into disfavour. Nevertheless, I believe they have been *very* genuine *in their* approaches to the Department and have achieved quite a lot.

Having said that which needed to be said above, and got rid of the brickbats, let's perhaps generalize a little, firstly to support the correspondence by the Federal President of the WIA, which has already been published, and to add my own plea for all to keep writing your letters to the various politicians and ethnic broadcasting interests stating how you feel. Unfortunately, we don't have the numbers the CB boys have, where sheer weight of numbers obtained for them the 27 MHz band, and for the same reason there is as much chance as "Buckley's" that they will vacate that band in 1982 as the P. and T. says they will! But what we lack in numbers maybe we can by constant pressure in the right quarters start to make somebody hesitate.

There can be no doubt that the introduction of the 5A services on a large scale in Australia will eventually turn out to be one of the greatest blunders ever made, and there have been some beauties before! At the moment there exists a great opportunity to start using the UHF bands allocated for television broadcasting in Australia. Except for some of the earliest colour TV sets manufactured, for some 2½ years now all colour receivers had to be equipped with UHF channels. Those early models that were not all had provision for UHF tuners to be added — I know because colour TV servicing is my bread and butter!

In the course of my work I use a service vehicle fitted with UHF FM two-way radio on 469 MHz which operates in conjunction with a base station on a hilltop not far from the Adelaide television stations, but not as high. The antenna on the vehicle is about 6 inches long, there is a groundplane or some similar antenna at the base station, and both base and mobiles run 25 watts of power. My service area extends to 40 miles from the base station and at the extreme end of the run I still have excellent copy both ways. The penetration into the valleys and through townships is quite staggering, and has been *an* eye-opener to *me*. Ordinary houses don't attenuate the signals a great deal, but high hills close in do, the same as it does on VHF. The arguments being currently circulated that the coverage of the UHF stations would be so much less than on the existing VHF channels is plain hogwash! The areas of poor reception on UHF are still areas of poor reception on VHF. My TV service area is throughout the Mount Lofty Ranges, much of it not line of sight like the Adelaide area, and apart from a few pockets of poor reception, most people don't miss out on much television. Increased gain and directivity for UHF receiving antennae will be relatively easy to achieve, and it is therefore quite likely in some areas of difficulty UHF TV may be superior to VHF TV.

There is no doubt any form of operation by amateurs in the 144 to 148 MHz band will interfere with television. Some of the VK5 amateurs recently conducted tests in the Loxton area of SA where there is a vertically polarized Channel 5A transmitter. In the Renmark area, some 3 km line of sight from the transmitter tests were made using a mobile FM rig with the usual quarter wave whip antenna on the roof. With 5A transmitting, it took a distance of a quarter of a mile before interference disappeared from the TV screen with 1 watt output, with 10 watts it took half a mile, and with the TV station not transmitting over three-quarters of a mile before the QRM was not really evident! You can see from this just how much opportunity you will have of doing any operating at all on 2 metres during TV transmission hours. The capital city repeaters will probably have to be closed down during those hours, FM simplex channels will vanish, and the SSB boys down around 144.1 MHz can virtually sell their equipment unless they feel like operating after midnight or around 6 a.m.

The part that hurts me is that Australia is unique in having two non-standard (by world accord that is) TV channels, namely Ch. O and Ch. 5A. Both of these are arraigned alongside the two most used and most satisfactory amateur bands we have. In Ch. O areas for years 6 metre operation of any consequence has been wiped out, and now we are faced with a similar situation on two metres. Operation on two metres will not only be restricted because we interfere with TV sets, but the rubbish transmitted on 2 metres by the TV stations themselves precludes any form of weak signal operation — birdies every 15 kHz approximately right up the band, just like the interference you get on your transistor radio when operated near your TV set.

The amateurs of Australia have been a rather law-abiding bunch generally speaking, accepting that controls of the frequency spectrum have been and are necessary so all may have some enjoyment from them. Amateurs have accepted in the past that if they interfere with a TV set in their area then they either take steps to rectify the trouble if that is possible, or operate outside TV hours. To continue to be law-abiding that's just what will happen when the 5A stations get going, you will be obliged to stay off the air, after all, you have to live with your neighbours.

But do you remember just how easy it became to lose the 27 MHz band. P. and T. were bludgeoned into acquiescence, and all that was needed was simply to post out to each amateur a letter stating that after a certain date the band was no longer available, as simple as that. And that's what will happen with 2 metres. You will get a letter stating if you are unable to operate during TV hours of 5A without causing interference then you are to cease operating during those hours. Then the ever greedy commercial interests will finish up on the remnants of the 2 metre band and fixed and mobile services will eventually take over, particularly in areas away from the city — thus a few more MHz to be allocated.

I have mentioned it before, but there has never been an answer forthcoming. The USA has a population some 20 times that of our own, and therefore it seems reasonable to assume they would have a FEW MORE commercial services and television stations than we have, but they don't have any more spectrum space, in fact, they have less than Australia, because they don't have Channel O or 5A allocations, but still fit in all their TV stations, and have FM broadcasting on a large scale, too. The USA amateurs have 50 to 54 MHz AND 220 to 225 MHz, being 7 MHz more for the amateurs than we have, but they still manage to fit in all the commercial services and television! And I would guess that places like New York, Chicago, Washington, San Francisco, etc., do have more people and companies than even Sydney or Melbourne, and thus more two-way radios, television and FM stations, and amateurs!

It is also difficult to understand why Australia has ignored the satellite broadcasting which takes place in the 5A band, that's an international allocation which we seem to proudly flaunt.

Generally speaking, it would probably be fair to say we amateurs are only a confounded nuisance to the Australian Government, whatever party. We are tolerated, that's about all. If we didn't exist no tears at their level would be shed, in fact, it would be a blessing, because more frequencies would be available and that means more money in the bag. The worst part is simply that we cannot do as quite a large number of the CB boys have, operate without licences, if we felt so inclined; we are already known to the powers that be, whereas the illegal CBer is unknown and operates with immunity. I am not against the CBer at all, but he operates generally with only minimal interference to TV, but amateurs don't have that opportunity if they wanted to; they still have to live with their neighbours!

I could go on dragging up other matters, but don't see the good it will do. Others in this and similar publications can still have their say. I have penned these lines in response to those who have asked why don't I say how I feel. Well I have now. And you can see I am not happy; I have had a lot of pleasure from 2 metres over the years, and had some outstanding contacts, and it grieves me to think all this could end because selfish commercial interests which already have huge slices of the frequency spectrum are not prepared to be realistic in their thinking and start thinking in terms of using the UHF channels so readily available to them.

So keep those letters going, see your politician personally, remember the final decision of what is used where in the frequency spectrum is made by the politicians.

There have been no late letters, so we will conclude for now with the thought for the month: "The man pulling the oar has neither the time nor the inclination to rock the boat."

73. The Voice in the Hills. ■

DIVISIONAL NOTES

JULY 2 METRE FOX HUNTS

The Melbourne 2 metre Fox Hunt for July was held on Friday, 21st July.

The fox for the evening was Kevin VK3AUQ, who provided six interesting hunts, finishing with supper at the home of Gil VK3AUI.

Nine teams of hounds took part and these were represented by VK3AAE, VK3ANX, VK3BAY, VK3BLI, VK3BMO, VK3BMV, VK3JK, VK3YJM and VK3ZCX.

Competition was very fierce as VICOM had offered a prize for the winner. The lead see-sawed back and fourth during the evening with Hank VK3BLI being the eventual winner.

Russell Kelly VK3NT, presenting Vicom Prize to Hank VK3BLI.

During supper the winner was announced and presented with the VICOM prize by Russell Kelly VK3NT, an FET Voltmeter. VICOM are thanked for their interest and support which provided such a fine competitive evening.

During the next 12 months the best performance in the Melbourne Fox Hunt will be counted towards an aggregate with a prize to be awarded by VICOM.

Should be an exciting series of hunts and some special events will be organised.

The September Fox Hunt is on Friday, 15th September. ■

CONTESTS

Wally Watkins VK2ZNW/NCU
Box 1065, Orange 2800

CONTEST CALENDAR

September		
	16/17	Scandinavian CW
	23/24	Scandinavian Phone
October		
	7/8	VK/ZL/Oceania Phone/RTTL (Loop to ZL2GX this year)
	14/18	VK/ZL/Oceania CW
	14/15	RSQB 21/28 MHz Phone
	21/22	RSQB 7 MHz SSB
	28/29	CQ WW DX Phone
November		
	25/26	CQ WW DX CW

When I took this job over I was advised that I should take steps to get the as yet uncontested Contest Champion Trophy out of the Federal Secretary's office. Next month the rules for this trophy will be announced. Each period will run for a calendar year starting January 1979.

Contest arrangers please note that copy regarding your local contests must be in my hands four (4) months before the event, otherwise I cannot guarantee publicity for you. This will allow me to meet my deadline and also takes into account that AR gets out about mid-month.

Another revision of the RD scoring has been requested and anyone with ideas should send them to the above address. Do not complain if I make a unilateral decision and you have not bothered to pass on your ideas.

Further details for contests, send stamped and self-addressed envelope. ■

WICEN

Ron Henderson VK1RH
Federal WICEN Co-ordinator.
53 Hannaford St., Page ACT 2614
Ph. (062) 54 2059, A.H.

Are we short-changing ourselves in relation to publicity for radio amateurs' work in emergencies?

The WICEN Notes in June and July AR provide food for thought.

WICEN — The Wireless Institute Civil Emergency Network — has been operating for a great many years to assist the authorities, both official and unofficial, during any (notified) emergency. WICEN is officially recognised by the National Disasters Organisation (NDO) and certain State Emergency and Police Services.

Amateurs ought to be in a better position to assist in handling emergency traffic than any other service by reason of their keenness, numbers, responsible behaviour and discipline, training, equipment — both fixed, mobile and repeaters, improvisation and technical knowledge, Australia-wide communications — and world-wide also.

Have you enrolled with your local WICEN group? If not, why not do so now? The various co-ordinators are listed below. Because we all hope most sincerely that emergencies are rare occurrences we tend to become disinterested but there are a great many events all over the Commonwealth where emergency-type traffic can be indulged in for practice (and fun too). Such events require approval from the licensing authority but this is arranged by your WICEN Co-ordinator if only he knows about them and local amateurs' interest in them.

The NDO conducts an annual disaster exercise around October and a pipe-opening warm-up has been suggested. In Victoria, amateurs operate the communications for the Red Cross Murray River Canoe Marathon around Christmas and New Year. These communications were previously conducted by the Army. In New South Wales WICEN is a very active organisation and is part of the Volunteer Rescue Association.

STATE WICEN CO-ORDINATORS

ACT: VK1ZJR, 19 Gungarra Cres., Rivett, ACT 2611. Ph. (062) 68 5624, A.H.

NSW: VK2NL, c/- Wireless Institute Centre, Crows Nest 2065. Ph. (02) 665 7434.

VIC.: VK3AED, Lot 8, Ballarto Rd., Skye, Vic. 3977. Ph. (02) 647 3877.

QLD: VK4ZMG, QTHR.

SA: VK5BW, QTHR. Ph. (08) 87 7787, Bus.

WA: Sid Jenkins L60206, QTHR. Ph. (09) 349 6909, A.H.

TAS.:VK7RR, QTHR. Ph. (002) 23 7454, A.H.

NT: Darwin Amateur Radio Club, P.O. Box 37317, Winnellie 5789.

Next time, some notes on WICEN frequencies, call signs and what to do in emergencies, as well as, later, how to do it. ■

MAGAZINE INDEX

Syd Clark, VK3ASC

CQ February 1978
A Giant LCD Clock; The Double-Barrelled Whirling Bedspring Antenna; Television Interference and the Citizens Band Radio Service; Computers — Do You Really Need One; An RTTY Primer, Pt. 3; The National SW-3 Receiver; CQ World-Wide WPX/SSB Contest All-Time Records; Some Comments on Speech Processing; QSL Managers — The Unrecognised Heroes.

CQ March 1978
DXpedition to Istanbul and Khartoum TA7ABK/ST2SA; HF Operating — Remote Control Style; Computers — How They Function; The Metamorphis of CQ; A Miniature Quad Loop Antenna for 15/10 Metres; What to Do About RF in the Shack; Easy PC Board Fabrication Using Address Labels; Hamfesting in Western Ohio; Getting on Two in a Hurry; State of the Radio Art — 1929; Kenwood R599D Rx and T599D Tx Review; More on the Monster Quad; LED Devices.

HAM RADIO February 1978
Understanding and Using Frequency Counters; Simple Frequency Counter; Direct Counting to 100 MHz; Front Ends for a 500 MHz Frequency Counter; Temperature Control For Crystal Ovens; Satellite Tracking Calculations with Pocket Calculators; High Impedance Counter Pre-Amplifier; Wide-Range Capacitance Meter; Solid-State VHF Transmit-Receive Switch; Digital Scanner for Two-Metre Synthesizers; Single Sideband Reception with the Collins 51J; Active Filters Using Discrete Operational Amplifiers.

RADIO COMMUNICATION April 1978
Improved Strong Signal Performance Using Double Balanced Mixers; Alternative Repeater Shift for the TS700; A Transmitter Monitor for 144 MHz; A CMOS Frequency Counter for Receivers; A Time Share Servo SWR Meter; An Assured Speech Process. Calculation of Distances Between QTHs Using Scientific Calculators; A CMOS RTTY Modulator for New Tones.

RADIO COMMUNICATION May 1978
A Channelized 144 MHz FM Transmitter-Receiver; The Development, Theory and Use of Nickel-Cadmium Batteries; Modifications for the W6MXV and other SSTV Monitors; Sunspot Cycle 21 — The Peak, How Much and When; Orbital Predictions for OSCAR 8.

RADIO ZS February 1978
VHF Scatter Propagation, Part 3; 2m Facsimile Transmission.

RADIO ZS March 1978
Pictures by Radio — The Instant QSL; CQ Bermuda Triangle; The Poor Man's VHF — Crystal Frequency Trimmer.

RADIO ZS April 1978
Radiation Patterns of Long Wave Aerials; The ASTRO 200, Equipment Review; In Support of Unity; The South African Signal Company 1914-1918. ■

AROUND THE TRADE

QSL CARD HOLDERS

Quality QSL, who have been making QSL cards for quite some time now, have just released a QSL card album to keep your QSL cards in order. The 12 in. by 8½ in. album holds 60 QSL cards in non-slip clear pockets and includes 16 log book pages plus a page of different codes and the phonetic alphabet. The vinyl (black or brown) cover is printed with gold foil and is of the highest quality. The multi ring binding allows you to add more pages of QSL holders and also log book details, these extra pages are available separately from Quality QSL. The QSL Album and Log Book is available from Quality QSL of 26 Station Street, Nunawading 3131, for $9.95.

NEW ANTENNA TUNING UNITS

Daiwa Corporation of Japan have released a new range of high quality antenna tuning units which also incorporate a built-in SWR and power meter.

Two models are available, one capable of handling 500 watts PEP and the other 200 watts PEP. Both units have a frequency coverage of 1.8 to 30 MHz and an unbalanced output of 10 to 300 ohms.

The SWR/PWR meter uses a direct-reading twin needle meter which is not frequency conscious and has a low insertion loss. The ATU incorporates a three position antenna selector switch for connecting different antennas and features good quality construction as found in other DAIWA products.

Daiwa Antenna Tuner.

Further information is available from the Australian Distributors, Vicom International Pty. limited, 68 Eastern Road, South Melbourne, ctoria.

NEW 520 MHz FREQUENCY COUNTER

Parameters announce new 520 MHz Frequency Counter.

The new B & K Model 1850 Frequency Counter recently released for sale in Australia is designed for engineers and technicians requiring accurate frequency measurement extending into the UHF range.

The Prescale range covers 10 to 520 MHz, while the normal range is from 5 Hz to 60 MHz. Autoranging is featured on both normal and prescaled ranges. Gate times from 10 ms. to 1 second are automatically selected in the prescale mode, and the normal range. For manual gate time selection, 1 second operation in normal and 10 seconds in prescale are selectable.

For accurate very low-frequency measurements, the 1850 has period measurement capability. This feature makes it easy to measure the tone encoding frequencies used in many types of communications systems. Period frequency range covers 5 Hz to 1 MHz, with selectable 100 period average or AUTO display reading in AUTO, a period average of 1, 10 or 100 is selected. In PERIOD, as in other modes, decimal-point position and unit of measure display is automatic.

Input lead and DC power cord included.

For further information contact Bruce McCarthy, Parameters Pty. Ltd., 68 Alexander Street, Crows Nest, NSW 2065. Phone: 439 3288.

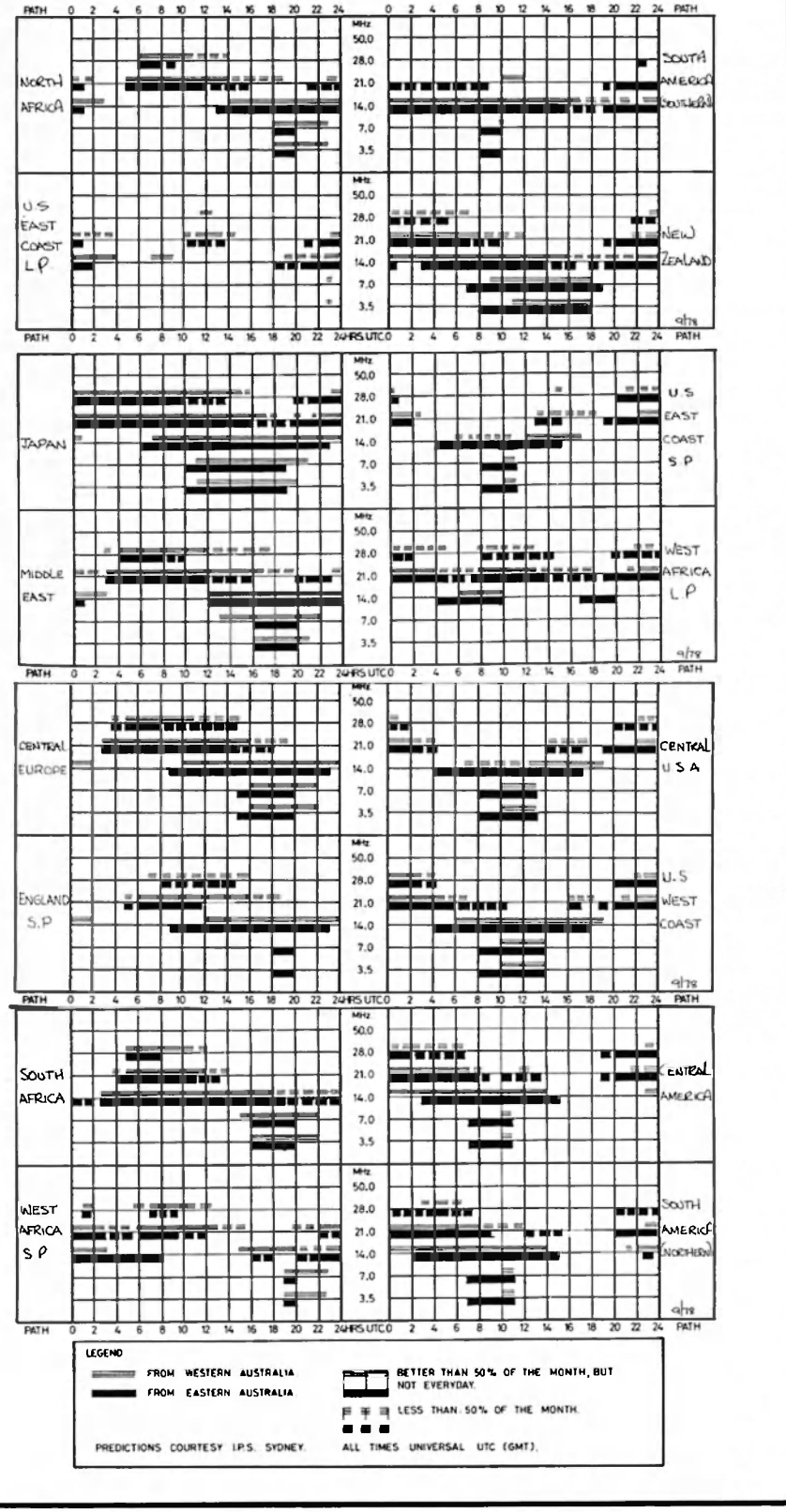
QSP

JOTA — WOVEN BADGE

In 1978 Jamboree on the Air (October 21st and 22nd) the 1st Tea Tree Gully Group will operate VK5BPT and VK5MG. Besides normal QSLs, all senders of QSLs to the group (Box 167, PO St. Agnes, SA 5097) will receive a woven badge, which is the group's scarf badge newly approved this year. Bands in use — 160, 80, 40, 20, 15 and 10. Also 2m perhaps. ■

IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



AWARDS COLUMN

Brian Austin, VK5CA
P.O. Box 7A, Crafers SA, 5152

THE BIRD OF PARADISE AWARD
Issued by the Papua New Guinea Amateur Radio Society.

The purpose of this award is to encourage contacts with amateurs in the Independent State of Papua New Guinea, to advance the art of radio communication and to help foster international friendship and goodwill.

Applications for the award should be sent to —
The Awards Committee,
P.N.G. Amateur Radio Society,
P.O. Box 204,
Port Moresby, Papua New Guinea.

RULES AND CONDITIONS

The award is open to amateurs throughout the world, however for the purposes of the award two geographical areas are considered:

1. Oceania. The applicant must contact at least 7 of the licensed amateur stations in P29, with at least 5 of them located in different provinces.
2. All other areas: The applicant must contact at least 5 licensed amateur stations in P29, with at least 3 of them located in different provinces.

The National Capital District will be considered as a separate province for the award. The official Society station P29PNG, which is only activated on special occasions, may be substituted for any one province. Only contacts made after 16-9-1975 will be acceptable. Any band and mode may be used, special endorsements will be made for one band mode, etc. Certified log entries signed by two fellow amateurs must accompany the application, OSL cards are not required. The application should be accompanied by 10 IRCs, US$2.00 (or equivalent) to offset high postal charges.

An application should be in the following form:

BIRD OF PARADISE AWARD
APPLICATION FORM

I, the undersigned, apply to the Awards Committee of the Papua New Guinea Amateur Radio Society for the issue of the Bird of Paradise Award.
I agree to abide by the Rules and Conditions of the Award, and the ideals of amateur radio in which it is issued.
In support of my application I tender a certified list of P29 stations worked.

Signed: .....

Call sign: .....

Date: .....

CERTIFIED COPY OF STATION LOG OF:.....

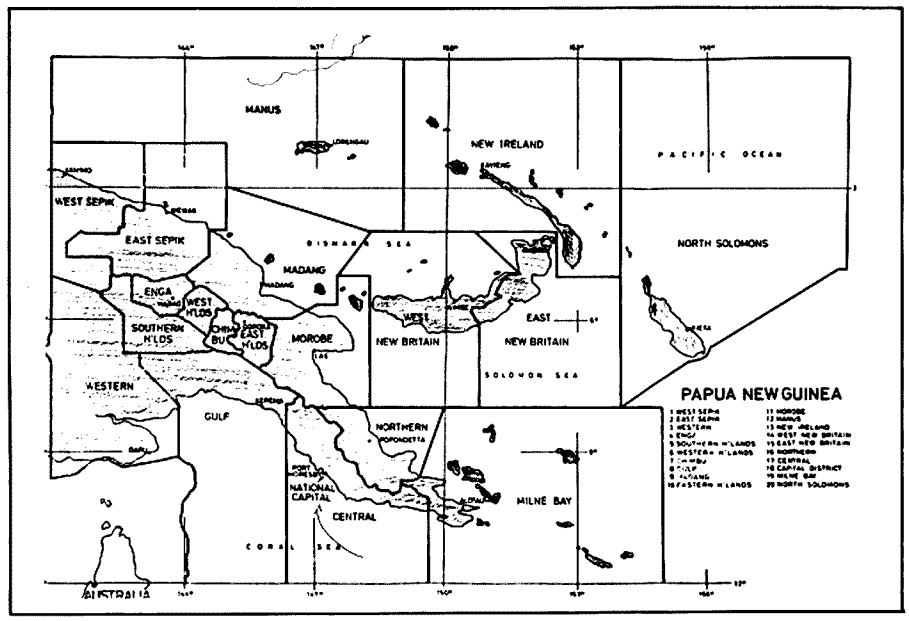
We certify that to the best of our knowledge this is a true and proper extract of the station log of the applicant.

Signed: ..... Call sign:.....

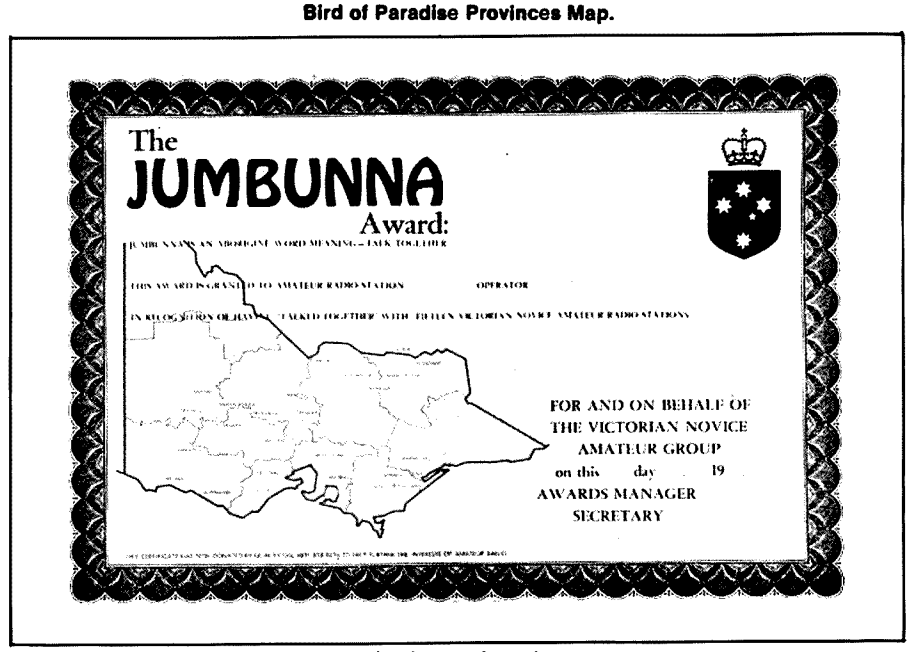
Time	Date	Station	Band
Mode	Report	Province	

SYDNEY NOVICE AMATEUR GROUP AWARD (SNAG)

1. The SNAG certificate will be awarded to any overseas station having worked and caring to claim 15 VK2N contacts since 1-1-1977.
2. These may have been worked on any Australian novice band and in any mode.
3. The station worked must have a VK2N prefix and a two letter suffix, i.e. VK2N??.
4. Endorsement stickers will be available upon further claim for 15 CW, 15 SSB, 15 80 metres, etc.
5. A list must accompany claims stating call signs, names, dates, times and frequencies of the 15 VK2N stations worked, and 7 IRCs to cover postage by airmail return. Provided these points are complied with, certificate issue is guaranteed.



Bird of Paradise Provinces Map.



Jumbunna Award.

6. Claims can be sent to any one of the following:
VK2NEC, Ern Cornwell, PO Box 90, Gordon, NSW 2072.
VK2NAR, John Robinson, PO Box 54, Turramurra NSW 2074.
VK2NDF, Gerry Fergus, PO Box 76, St. James, NSW 2000.

JUMBUNNA AWARD

Is available to amateurs outside of Australia who have made two-way contact with 15 VK3 novices.

It is designed to encourage overseas amateurs to make contact with novices and the certificate is awarded in appreciation of their effort.

To qualify, the following is required: 15 2 x SSB stations, or 10 CW/SSB SSB/CW, or 5 2 x CW.

The contact can be made on any novice band or mixture of bands.

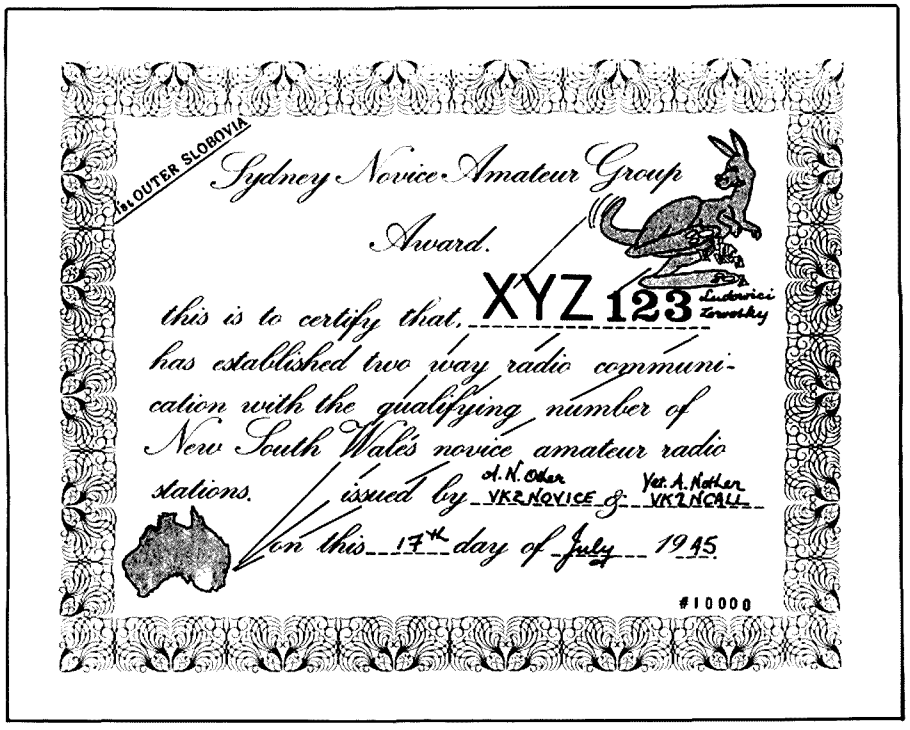
No QSLs are required — only a copy of the log, showing station worked, date, time, mode, QTH of novice station and the operator's name. Certified by one other amateur.

There is no charge for the award, just sufficient to cover postage (minimum of 6 IRCs or equivalent of $A1.50). Less, will forward surface mail.

Please advertise amongst your overseas amateur contacts.
Apply to:
VK3NAC, PO Box 130, Fawkner, Victoria 3060.
VK3NEY, PO Box 402, Werribee, Victoria 3030.
VK3NAH, PO Box 295, Bayswater, Victoria 3153.

THE WELCOME STRANGER TEN-X CHAPTER (VK3)

The Welcome Stranger Ten-X Chapter of the Ten-Ten International Net has been formed by the ten-metre enthusiasts within the Ballarat Amateur Radio Group — BARG. Ballarat is a city of 66,000 people which was founded on gold in the great gold-rush of the eighteen-fifties. The name "Welcome Stranger" is derived from the huge gold nugget, the largest ever found, which was discovered near here in 1869. It weighed 2,280 ounces. Another nugget, the "Welcome" nugget, was discovered right in Ballarat; it weighed 2,217 ounces. We felt that the name exactly expressed the ideals of amateur radio . . . Welcome, Stranger.



SNAG Award.

FORMAT OF THE CHAPTER

All members are allotted points as follows:
Charter Members: 3 points.
Honorary Members: 2 points.
First Starters: 2 points.
All others: 1 point.

In addition to the points earned for the various awards —

- **Welcome Stranger Certificate:** Entry requirements are ten points earned in contacts with Chapter members. Possession of this award entitles to holder to issue one point to contacts. One Charter member, or two local (VK3) members must be numbered in the contacts.
- **Gold City Award:** Requires fifty points. A station may be worked twice (only), providing the contacts are 24 hours or more apart. The points total. Worth one extra point to the holder for a total of two points.
- **Century Strike Award:** 100 points required; requirements similar to the Gold City Award, but three Charter members must be worked in the total. This award is worth an additional two points to the holder, for a possible total of four points.
- **Eureka VIP Award:** 250 points in contacts. Conditions as for other awards. Must contact five Charter members in the total. Worth an additional two points for a possible total of six points.
  All amateurs in the Chapter must possess Ten-Ten numbers, and the maximum number of points that may be held by any member is nine.

COST OF CERTIFICATES AND AWARDS

"Welcome Stranger" Certificate $A2. "Gold City" and "Century Strike" Awards are $A1. All airmailed. The "Eureka VIP" Award price and layout are yet to be determined.

NET TIME AND FREQUENCY

Sundays (Aust.) at 1100 local (EAST), or 0100 GMT on 28.530 MHz.

CORRESPONDENCE

Address all correspondence to:
Leo McPherson VK3NIQ,
P.O. Box 247,
Ballarat East 3350,
Victoria, Australia.
73. Leo VK3NIQ. ■

BOOK REVIEW

AMATEUR RADIO TECHNIQUES (SIXTH EDITION)
By Pat Hawker G3VA

Published by the Radio Society of Great Britain.

An alternative title for this book would be "The Experimenters Handbook" it is one of the finest collections of circuits, building blocks, and design ideas, and is invaluable for the inveterate amateur experimenter and constructor.

The author, Pat Hawker G3VA, has written the Technical Topics column for Radio Communication, the RSGB journal, for over 20 years. During this period a great deal of material has been gathered.

This edition is an update of the previous editions with 45 pages of the latest techniques and design ideas added.

The book is a great source of ideas for the experimenter and touches many aspects of our hobby.

Chapter titles are: Semi-conductors; Components and construction; Receiver topics; Oscillator topics; Transmitter topics; Audio and modulation; Power supplies; Aerial topics; Fault-finding and test units.

Recommended for the serious experimenter and those who just like to dream. Get your copy from Magpubs.

VK3AUI. ■

TEST EQUIPMENT FOR THE RADIO AMATEUR (SECOND EDITION)
By H. L. Gibson G2BUP

While there is no need for the radio amateur to own a shack full of test equipment, he cannot operate his station without access to some basic instruments. This book is for the home constructor — the person who not only saves dollars but has the satisfaction of achievement.

The range of test instruments and methods described cover most of the requirements of all Australian amateurs. Some simplified theory relating to the various techniques is given and constructional details are included for most instruments discussed. Every amateur will be interested in instruments such as the digital voltmeter, a digital frequency meter, and RF impedance bridge, an RLC bridge and the collection of signal generators.

Those who have read the first edition will note that the second edition has been considerably revised. The collection of useful reference is still to be found at the rear of the book.

The majority of these instruments are described in the RSGB Handbook, however this book is much less expensive and contains some more modern instruments.

I consider the book a worthwhile investment.

The review copy was supplied by the RSGB.

VK3AFW. ■

OSCAR — AMATEUR RADIO SATELLITES
By S. Caramanolis

This 192 page book has sold over 7,000 copies in its original German edition, although I cannot see why it should be so popular. The English language edition is distributed by the RSGB, who supplied the review copy. The book tends to be a theoretical text without the practical details which any newcomer to OSCAR finds so very necessary. I doubt that there is much in this book to appeal to many Australian amateurs.

Chapter titles are as follows: Planets and their orbits; Satellites and their orbits; Anatomy of a satellite; Satellites as relay stations; Fundamentals of telecommunication via satellites; Telemetry systems; Satellites of the OSCAR series; Operating with amateur satellites; Learning with AMSAT-OSCAR satellites.

Can 7,000 German readers be wrong? Perhaps not, but while some Australian amateurs will be happy to purchase this volume for its background theory and description of past OSCARS, most will want to pass it by.

VK3AFW. ■

A GUIDE TO AMATEUR RADIO (17th EDITION)
By Pat Hawker G3VA

This book is intended to assist the newcomer to this fascinating hobby, and to help him or her to obtain a transmitting licence. It also contains technical information and operating data of interest to all radio amateurs and listeners.

Whilst of a generally high standard some extra information would enable the newcomer to build some of the circuits which at present only act as illustrations.

Similarly some sections are related to the UK licensing scene and are not applicable locally.

Generally the book is well presented with useful theory and many practical tips and how to do it sections.

A useful book for the newcomer on the way to a licence to read in conjunction with the handbooks.

Review copy from Radio Society of Great Britain, 33 Doughty Street, London.

Available locally from Magpubs or your favourite bookshop.

VK3AUI. ■

QSP

MORE TRANSEQUATORIAL CONTACTS ON 144 MHz

On April 10th Ray Cracknell ZE2JV worked 5B4WR over a distance of 5,978 km. Signals were 5B4WR, RST 219 with doppler flutter, and ZE2JV, RST 227. 5B4WR was also heard RST 529 by ZE2JE.

On April 12th ZE2JV worked SV1AB over a distance of 6,275 km. Signals were ZE2JV, RST 529, and SV1AB, RST 219.

During the period 8th to 20th April at least one station heard transequatorial signals on each day.

ZE2JV has a beacon on 144.118 MHz.

From Radio Communication June 1978.

NEW PREFIX

The Canadian DOC is reported as having changed the prefix call for all amateurs in the Yukon from VE8 to VY1 from 25th April. ■

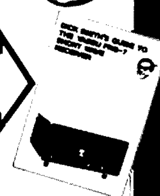
YAESU from DICK SMITH

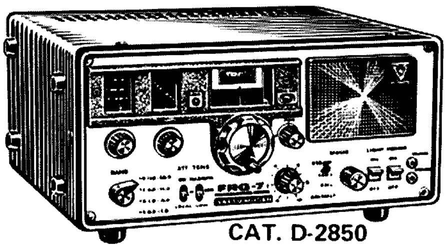
WHEN YOU REALLY CONSIDER THE ALTERNATIVES — THERE ARE NONE!

Fabulous FRG-7 Communications Receiver

* 0.5 to 30MHz continuous reception
* Wadley loop circuitry for stability
* Mains or 12 volt operation — portable.
* BFO for sideband or CW reception
* 0.7uV sensitivity (for 10dB signal/noise)
* 2 IC's, 22 transistors and 16 diodes
* Comes with full instructions plus guide

EXCLUSIVE! With every FRG-7 from Dick Smith or dealers, you receive this exclusive 6 page guide to short wave listening — written by Arthur Cushen, MBE — world famous short-wave correspondent and broadcaster.





only $350

Terms available

CAT. D-2850

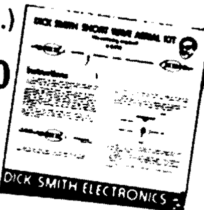
See the review in MAY 1978 E.A.

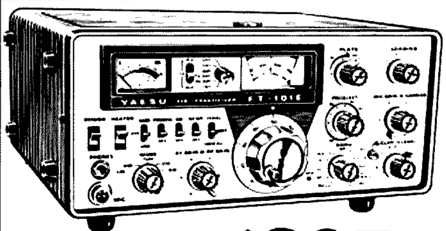
NOW: A short wave antenna kit for the FRG-7 receiver (and any other shortwave receiver . . .)

Designed specifically for Dick by a short-wave expert, this antenna kit needs no soldering, is complete and ready to assemble and has full instructions. Get the most out of your receiver with a good antenna.

$9.50

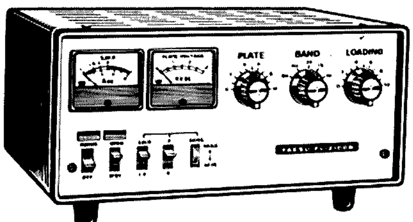
VALUE! Cat K-3490





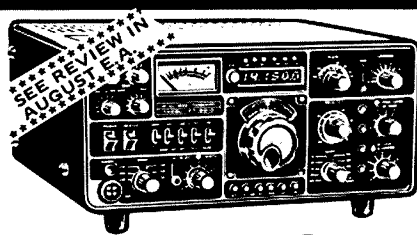
FT101E $895

The most popular HF rig in the world! The FT-101E offers full 160 through 10 metre operation on CW, SSB & AM. Rated at 260 watts PEP — with a receiver more sensitive and with less IM distortion than the TS-520S (see our ad last month for comparison). 240V and 12V supplies built in. Join the Yaesu family — soon. Cat D-2860



FL2100 $585

Here it is: the magnificent FL-2100B heavy duty linear amplifier for amateurs. It covers the 80 through 10 metre amateur bands, and is conservatively rated at 1.2kW. Offers the punch to get through when the QRM & QRN are trying their hardest to stop you! Can be used with any HF transceiver rated at 50W PEP or more. Cat D-2546

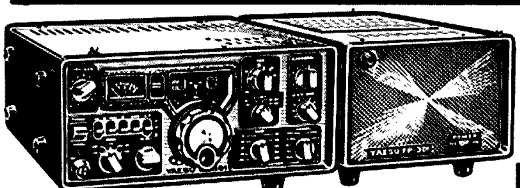


FT901D $1375

Tomorrow's transceiver — today. It really is the ham's dream: full HF coverage (160 — 10 metres) on all modes (yes, even FM and FSK). Gives digital AND analogue readout, has rugged 6146B finals (90% solid state) This beautiful unit has features others can only dream of! Cat D-2854

Optional memory unit: Cat D-2858 $149.50
Optional DC/DC conv.: Cat D-2856 $75.00

SAVE $100 ON FT301



Factory saving passed on to YOU! Yes — was $995 last shipment . . . All solid state (inc. finals), 200W PEP on all HF amateur hands with AM, CW, SSB & FSK. 12V operation (ideal for mobile or base) with RF speech processor & marker, effective noise blanker. Cat D-2870

$895

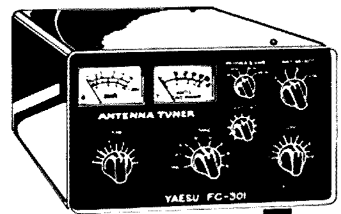
FP301: Matching Power Supply

Heavy duty 13.5V @ 25A regulated supply to match the FT-301, FT-7, etc (also an ideal workshop supply). Cat. D-2872.

STILL ONLY $170.00

Easy terms available to approved applicants on all purchases over $111

NEW! YAESU ANTENNA TUNER FC301



Cat D-2896

* Huge 500 watt rating
* Inbuilt power meter
* Inbuilt SWR meter
* Inbuilt 4 position co-ax switch
* 160 — 10 metres & direct

Special introductory price: $249

STOP PRESS!

HEAVY DUTY CO-AX RELAY NOW REDUCED!

Yes! Now you can save over 10% on this quality co-ax relay. Save the high cost of an extra run of co-ax. Make instant band switches or antenna comparisons. Handles 2500W PEP to 60MHz, 1500W PEP to 500MHz. 52 ohm impedance with an insertion loss of less than 0.1dB

~~$49.50~~ $44.50

Cat D-5210

AT LAST! THE YAESU FRG—7000

Yes! It's been a long time coming — but the wait was well and truly worth it . . . . The Yaesu FRG-7000 offers the serious SWL the ultimate in a communications receiver.

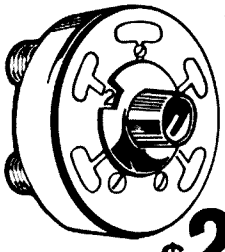
- Digital frequency readout for accuracy (and allow absolute certainty in returning to a previously logged station)
- Full band coverage — from 0.25MHz (yes, 0.25) up to 29.9MHz — with provision for AM, SSB and CW reception
- Digital clock built-in displays local OR GMT (at the flick of a switch) plus allows the receiver to be turned on at any time (eg for recording when you're not there!)
- Wadley Loop circuitry for rock-solid stability plus FET front end for sensitivity
- Operates from 100 to 240V AC 50/60Hz (easy modification allows portable 12V use)

Cat D-2848 **$695**

Terms are available to approved customers (personal shoppers only) on any item priced $111 or more, from 10% deposit and easy payments. Mail order customers: we'll send your purchase anywhere in Australia for $5.00 extra — by Comet.

NEW! High Quality 5 position co-ax switch

- Grounds all unused inputs
- 52 ohm impedance
- 2000W SSB
- Low SWR and crosstalk
- Fitted with a UHF connector



Why take chances with your finals? A proper co-ax switch also reduces TVI, increases efficiency. Insertion loss is negligible, VSWR less than 1.2:1. Up to 150MHz.

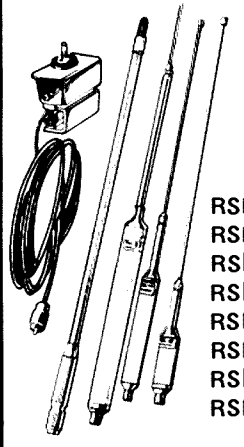
Cat. D-5208 **$29.50**

Why not build your whole station around YAESU?

The QTR24 World Clock. Work out at a glance what the time is in any time zone in the world. Every ham should have one.
Cat X-1054 . . . . . .$33.00

YD-844A desk microphone. 500 ohm/50k switch makes this ideal for all YAESU transceivers. Complete your base station with a YAESU microphone.
Cat. C-1116 . .$44.50

NEW YAESU ANTENNAS



Here's the brilliant Yaesu mobile antenna system for HF and VHF. You buy the gutter mount base and 2m 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 you want for the bands you want. Now there's no excuse to stay base . . . go mobile with Yaesu!

RSE-M-2	gutter mount	D4100	$32.50
RSE-2A	2M stub	D4102	$10.95
RSL-145	6M/2M ant	D4104	$23.95
RSL-3.5	80M antenna	D4110	$19.95
RSL-7	40M antenna	D4112	$19.95
RSL-14	20M antenna	D4114	$20.95
RSL-21	15M antenna	D4116	$20.95
RSL-28	10M antenna	D4118	$20.95

EASY TERMS AVAILABLE TO APPROVED APPLICANTS ON ALL ITEMS PRICED $111 OR MORE.

$375

FT-227R — FULL 2M RIG

As reviewed in the March issue of Electronics Australia. Full 2 metre, synthesised FM unit with memory. Ideal for repeaters and duplex operation. Best value rig available today!
Cat D-2890

$525

YC-500S — 500MHz COUNTER

Fabulous professional quality — 500MHz counter. As reviewed in April E.A. 240V or 12V operation. And it's even cheaper if you have a sales tax exemption!
Cat D-2892

$539

FT-7 — NEW HF MOBILE RIG

Here it is! The new HF solid state 80 — 10 metre mobile transceiver. It's ideal for novice use, too. The best mobile unit going!
Cat D-2866

$239

FL-110 — 200W LINEAR

Use the FT-7 or FT-301S as a full-power unit with the 200W linear amplifier. One knob band switching, no tuning required.
Cat D-2884

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Dealers across Australia.

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DICK SMITH for AMATEURS

Dick has an enormous range of amateur equipment, and it's growing daily! Call in today and have a look around. You're under no obligation! Dick Smith Electronics — the professional amateur suppliers.

Wilson's System 1&2

Monoband performance from a 3 band beam . . .

That's the Wilson System One and System Two HF beams for twenty, fifteen and ten metres. Five elements (four on system two) with an SWR of less than 1.5:1 on all bands. Maximum front to back ratio, high gain (10dB & 8.5dB resp.) . . .
The features are endless. But it's performance that counts — and you'll DX to places that haven't been invented yet! For REAL performance, you need Wilson tri-banders.
NOW: Save around 20% on either beam — Dick's bulk buying prices mean massive savings for you. System One now $75 off!!! System Two now $51 off !!!
Get the benefit of these fabulous savings now: call in to your nearest Dick Smith store.

SYSTEM ONE BEAM

- 5 element ~~$425~~
- 10dB gain!
- 8m boom
- 8m longest element
- 5.6m turning radius

$350 Cat D-4330

SYSTEM TWO BEAM

- 4 element ~~$320~~
- 8.5dB gain
- 5.6m boom
- 8m longest element
- 5m turning radius

$269 Cat D-4332

Wilson Tetra Tower

Dick Smith really is the complete amateur radio store: Now you can even buy your tower from us!
Yes: the Wilson Tetra Tower system — there's nothing quite like it anywhere else . . .
This tower comes in sections — 3.5m long (assembled). Each section comes in a cardboard box less than 1m long and weighs less than 25lbs. The point is this: You buy only as many sections as you want — and when you want them. For example, 4 sections give you a 14m (45') tower — and you can spread your purchase over as long a period as you want. No need to buy a complete tower in one hit! And, if you decide later that you want more height, it is so very easy to add it — up to about 80' maximum. The system is extremely strong — with suitable guying (every 2 sections) it will support the system one beam at 68'.
We're so enthusiastic about 'Tetra Tower' — we know you will be when you see it. Compare conventional masts . . . you'll want the Tetra Tower.

Cat D-4338

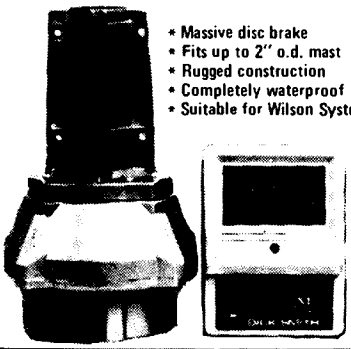
- Tested to accept in excess of 4000lbs vertical loading
- Strong, heavy wall 1" O.D. aluminium tubing.
- NO gin pole needed to erect
- Attractive, unique design
- Clear, step-by-step instructions for simple assembly
- Maximum loading 10 sq. ft. of antenna at 68ft height

$59.50 PER SECTION

DICK SMITH ELECTRONICS: WILSON—APPOINTED MASTER DISTRIBUTORS

New FULLY LEGAL ANTENNA ROTATOR

Handles most beams with ease. Supplied with fully approved power supply and large, easy-to-read control box.



- Massive disc brake
- Fits up to 2" o.d. mast
- Rugged construction
- Completely waterproof
- Suitable for Wilson System

COMPLETE UNIT — Rotator, control unit and approved power supply:
$135.00

OUTSTANDING BARGAIN

Rotator & control box without power supply: Cat D-5000 . . . . . $119.00
Power supply only: Cat D-5002 . . . . . $16.00
Additional mast clamps (if required) Cat D-5001 . . . . . $12.50

FABULOUS SCOOP BUY!

150MHz and 460MHz 1/4 wave verticals — complete units including weatherproof co-axial base fitting.
THESE MUST BE THE BARGAIN OF THE YEAR!

150MHz version:
~~$10.50~~ **$4.00**
SAVE $6.50
Cat D-4020

460MHz version:
~~$9.50~~ **$3.80**
SAVE $5.70
Cat D-4023

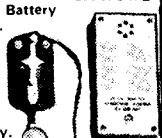
LEARN MORSE...

Here's value: two cassettes recorded with easy-to-learn Morse. Starts off simple, goes to full novice standard. Completely Aural - no printed matter to slow you down!

$7.90 Cat D-7106

Morse trainer

Kit contains all parts to build this practice oscillator. Battery operated, ideal project. Cat K-3472



Key Extra. **$5.90**

BUILT-UP VERSION: As pictured, but no key. Cat D-7110 . . . . $7.90

MULTI Q-16 2m TRANSCEIVER

2 special priority positions to monitor your favourite cahnnels • Large 23 ch. capacity • Provision for external VFO

NOW REDUCED TO ONLY **169.50**
Cat D-3009

XXXX SPECIAL APOLLO LINEAR

was $299.50 now **$199.50**

$100 OFF

- Full 200W SSB *40—10M
- In-built RF pra-amp
- Only 3Wdrive
- RF actuated — no messy control wires!

Cat D-2544

Originally $229.50 Save $100 !
NOW REDUCED TO ONLY $199.50
Don't miss out — Stock strictly limited.

Banish TVI FOREVER!

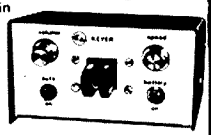
The ULTIMATE in low-pass filters!

Precision built, 4 section filter. Massive power rating — 5000W PEP on SSB. Maximum attenuation is on TV channel 2 — 75dB. Insertion loss is less than 0.5 dB, has SO-239 connectors. 52 ohms.

WHY TAKE CHANCES? **$37.50**
Cat D-7086

KEYER KIT $37.50

Complete kit inc. paddle. Case is undrilled, plain panels See E.A. March '78. Cat K-3470.



PADDLE only: Cat D-7103 . . . . . $17.50

OOPS!

Our July A.R. advertisement carried a statement that the Kenwood TR-2200 2 metre portable was 'the only 2 metre portable now on the market'. Unfortunately, the word 'Kenwood' was inadvertantly omitted from the text, which should have read ' the only Kenwood 2m portable now on the market'
We apologise for this omission and any inconvenience caused.

* SEE OUR OTHER DOUBLE ADVERT. FOR FULL LISTS OF STORES AND DEALERS

DICK SMITH ELECTRONICS

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.

The Editor,
Dear Sir,

I was quite amazed to find that amongst a number of proposals for WARC 79 made at a meeting earlier this year of representatives from a number of international broadcasting organizations and telecommunications authorities, was the "Removal of amateur operators from the 41 metre band" (ETJ July 1978, page 120). Apparently this would refer to the section from 7.1 to 7.15 MHz. However, one feels sure that if this section goes, the rest of the band does not stand much chance of prolonged survival.

It would appear that the wrong side of the coin has been tossed. The long standing problem of getting the broadcasting station intruders out of the 40 metre amateur band has been ignored.

What chance does the amateur fraternity stand in a number of western countries, including Australia, think the other way?

Yours faithfully,
Graham Mutton L70107,
85 Finlay Street, Bridgewater, Tas. 7401. ■

19 Harley Street,
Dingley 3172.
19-7-78.

CHANNEL 5A

The Editor,
Dear Sir,

Following the events of the past few weeks on the Channel 5A issue, and not having a licence to transmit on amateur frequencies as yet, I felt that I had to put pen to paper to speak to amateur operators in general.

I have a small commercial receiver on which I am able to listen to the 2m channel 2 repeater, and it amazes me the complacency of at least 50 per cent of the operators I hear. They are already talking of TVI filter construction, and transverters to 70 cm — 432 MHz.

Are amateurs willing to give up their allocated frequencies to anyone who expresses a desire for them?

You have lost 11m to CB (and already CBers are moving into 10m trying to look for clean air), 6m to Channel 0, and now that there is a real threat to 2m, all I have heard is "When we lose 2m . . ."

It was stated on air one day that there has been test transmissions of 5A in Adelaide, and the only reaction I have heard is "Have they got official permission to do that?".

I would have thought that one of the primary purposes of running test transmissions is to see what, if any, interference may be experienced. Whether they have "official permission" or not, now is the time to show them the extent of the interference they will get. If they cannot pick up their picture due to this interference, what is the purpose of further testing on that frequency.

What will happen to the network of 2m repeaters throughout Australia? Were they installed by people who had nothing better to do with their time or money?

Is VK3BX going to drive to the top of Mt. Dandenong and turn off the repeater and then go home without a backward glance?

What frequency are you going to hand over next — 15m?

The WIA must, of course, go through official channels to stop the allocation of Channel 5A, and seem to be pinning their hopes on WARC 79 if their submissions to the P. and T. Department fail, but let's face it, decisions made in Geneva *are* not binding, i.e., Channel 0, and if it is politically wise, 5A will go ahead, the amateur vote at the polling booth is infinitesimal compared to the Ethnic vote.

The CBers, rightly or wrongly, fought for what they wanted, and proved that it could be done.

It is time for all amateurs to get off their collective rear ends and showed a united front to fight for what they want.

Surely every amateur can afford 10 minutes and 20 cents to sign the protest letter and send it to the appropriate place, and pick up their microphones and continue transmitting on 2m come what may.

Yours sincerely,
Mrs. M. A. Beere L31053. ■

Jack Trembath VK5JT
80 Gloucester Avenue, Belair 5052
25th July, 1978

"SLOW MORSE PLEA"

The Editor,
Dear Sir,

I am writing this letter in reference to the interference that is taking place occasionally to the "Morse Practice"' session from the SA Division of the WIA each evening of the week. It is disgusting that some amateurs continue to transmit and interfere with this very important service which the Institute provides.

TO THOSE STATIONS THAT CONTINUE TO MAR THIS SERVICE

My words cannot emphasise in our journal to the type of person or persons they are that deprive others from obtaining the knowledge and skills that these persons have already obtained, most probably from these sessions. I might add that this service is an unpaid one and that the persons involved give freely of their time, labour and means.

The Postal and Telecommunications Department regulations state: "That an operator should listen before he commences to transmit."

Some people who use this service probably have receiving equipment that is not quite so sophiscated as the fully fledged operator, so please give these people a go. After all, to those persons who are the guilty ones, remember you yourself learnt by a similar means, and it behoves upon you not to be selfish with this grand hobby, let the amateur spirit predominate.

I hope that we don't have to enforce the regulation regarding this interference. This session has the sanction of the Postal and Telecommunications Department, WIA and affiliated bodies.

Chaps, listen before you use the frequency at all times, and assure youself that you are not going to deprive someone of the privilege of learning from this service.

Yours faithfully,

Jack Trembath VK5JT, R. Stone VK5PB, Ian Campbell VK5LI, E. Jones VK5AEJ, J. Foster VK5LU, R. Tester VK5MV, W. Hienrich VK5HR.

(Editor's Note: It is respectfully suggested that non-participating operators leave at least 10 kHz clear either side of the slow morse frequency to enable listeners to copy the sessions with relative ease.) ■

64 Madison Drive,
Adamstown Heights, NSW 2289.

The Editor,
Dear Sir,

In reply to VK2JK's article entitled "Sugar Coated Oscar", I would like to say that there is an easier way to track Oscars 7 and 8 that is well within the reach of every amateur.

My easier solution is to send a letter to the ARRL HQ in Newington, CT 06111, USA, and ask *them* for an ARRL *Oscarlocator*. It costs a lousy $1 (US funds) or an irksome 4 IRCs HI HI. This little gadget will tell you where Oscar is and when and even a crude indication of the elevation at a particular time. (And just before I move on please specify which Oscar you want to track because the Locator is different for each satellite.)

Now when you receive your Oscarlocator in your hot little hands you'll see that it is designed for the Northern Hemisphere, quite true, and then you'll think ". . . who's this idiot 2BHR trying to kid . . ." and my reply is ". . . No one . . ." OK, it is for the Northern Hemisphere, but with a little ingenuity it can be used for us VKs. Here's how!

1. Ignore the map under the grid.
2. Find your OTH in terms of latitude and longitude.
3. Place the QTH/Rangefinder over your QTH as described in the *instructions* (they come with Locator).
4. Place the orbit finder right side up on the map and attach.
5. (Now comes the tricky part.) You must now calculate the DESCENDING NODE EQX which you must do for every day that you want to listen. Once you have done this you use the Locator as if you lived in the Northern Hemisphere (as described in supplied instructions). Now to the "nitty-gritty".

   To find the descending node EQX from the ASCENDING NODE EOX (which is supplied in AR) for:—

   TIME = UTC (for ascending node EQX) + ½ period.

   LONG. = Long (for ascending node EQX) + 180 + ½ progression.
6. Now you'll be saying ". . . what sort of gobbledegook is that?"

   Now I'll give an example:—

   Take August 1st for Oscar 8 for example:—

Date	Orbit	Z (UTC)	Degrees W.
1	2069A	0059	54

   TIME = 0059 + ½ period
   0059 + 51 mins. approx.
   0150

   LONG. = 54 + 180 + 13
   54 + 193
   247 degrees

   So the descending node EQX is:—

   TIME (Z, UTC) = 150

   LONG. (West) = 247.

Now that's all there is to it; easily done? Now you use the Oscarlocator as you would for the Northern Hemisphere with this new EOX data. My Locator works fine and I worked out this system myself, but with a little help from ARRL, who supplied me with another method which was INCORRECT. So if they send you info that resembles mine try it, but it may not work (it might if they give you different info). Mine does though, and I can predict the Oscar's fairly accurately, and if you think the system is too hard . . . THINK AGAIN, I'm 15 and I thought it out, so you should be able to use it. Don't despair at first if you are having a slow time at calculating the orbits, with practice you'll speed up — I did!

If you want more info on how to use the Oscarlocator write to me and I'll gladly help out!

Now, to get the *record straight*. I don't mean to say that VK2JK's article is rubbish; in fact, it is one of the best I have seen!!!

Yours faithfully,
B. Roberts VK2BHR. ■

83 Bindi Street,
Glenroy, Vic. 3046.
9th July, 1978.

The Editor,
Dear Sir,

I do not want to start a CW versus SSB war, but I would like to point out that the current 1977 Australian Callbook has some misprints on page 5. In the "Band Plans — International and Local", the 80 metre and 40 metre CW only allocations are incorrect. They should be "80m — 3.5 — 3.55", and "40m — 7.0 — 7.05". I know that for local use the CW only allocation is often regarded as 7.0 — 7.04, but this is a purely local arrangement. The international "Gentleman's Agreement" allocations as printed in the callbook are quite incorrect.

I know that CW is obsolete and dead; I was told this when I first started to learn the code in 1947; nevertheless, there are a large number of stations who apparently do not know that CW is dead, for they persist in using it. Many of these stations run low power, and are quite severely inconvenienced when high power SSB stations suddenly appear on the frequency.

If we accept that the 80 metre CW band is only the first 35 kHz, then novices have only the first 10 kHz of their allocation for CW; and a surprising number of novices do use the CW mode. To make matters worse, a VK2 novice SSB net has made its home on 3530 kHz during the evening, and causes considerable interference to CW operations, splitting the novice 10 kHz neatly in two. The Sunday morning CW net on 40 metres has also been bothered by SSB on 7030 kHz.

As I have said, I do not want to start a CW versus SSB war; one of our hobby's fascinations is the variety it offers. I am also well aware that the Australian licence makes no mention of exclusive SSB or CW bands, but the international gentlemen's agreement has worked well till now. You do not find CW stations invading the SSB bands — come on now, SSB fans, and give us a go, too!

Yours faithfully,
John H. Smith VK3IO. ■

THE FACT SYMPOSIUM

From a report of the symposium held in Sydney over the week-end 20-21 May comes the following remarks (the entire report was published in the July/August issue of "Forward Bias" — VK1 Division's journal):—

". . . The first speaker was Mr. David Large, an Executive officer from the Policy Division of the P. and T. Department, Canberra. He stated that the Minister and the Department have received a lot of reports indicating that many of the present radio amateurs did not come up to the standard or definition, as contained in the handbook. Their discussions on the air were rarely of a technical nature or experimental. Many bought commercial equipment, which they had to rely on agents to fix! Also our operating procedures were poor.

Third party traffic would not be tolerated, as this could affect the revenue of Telecom on trunk circuits, and OTC.

Also, AR magazine appears to be mainly about contest numbers, reviews of commercial equipment, and social columns.

Mr. Large went on to mention the joint committee of the WIA and P and T. Department, which was recently set up and had its first meeting, so at least amateurs now have some say in the decision and policy areas.

Mr. Large was taken to task on the above comments by many of the amateurs present, including Alan VK3BBM, who pointed out that only the last half of AR could have been looked at to make this particular comment. Also that the listening on the amateur bands must have been of a narrow selective nature and that many amateurs spend more time building and testing equipment on the bench than chatting on the air.

However it was clear to all present (about eighty) that we must improve our operating procedures and use of the bands to retain our status." ■

IARU NEWS

IARU FIRST RADIOSPORT CHAMPIONSHIP
Certificates for this were won by and forwarded to VK3BHN and VK6IC, both in the 1977 phone section.

The 1978 Championship was held on 8th-9th July 1978. The 1977 Championship was excellently supported with over 1,500 individual entries from nearly every IARU Society.

IARU REGION 1 CONFERENCE
This (the 11th triennial) was held in Hungary from 24th to 28th April and was attended (by delegates or proxies) by 36 of the 46 IARU Region 1 Amateur Societies.

The Conference was addressed by Mr. Richard E. Butler, Deputy Secretary-General of the ITU. Items from his address included — "The choice of venue was particularly appropriate, being situated in a country which is doing so much to encourage radio amateur and to provide means for practical training and help. The existence of a strong national radio amateur society can be an invaluable help in such objectives (programmes for developing countries)." He recalled the definition of the amateur service in the Radio Regs and pointed out the importance of the aspect of self-training.

It was pointed out by Mr. Butler that the ITU will request formal proposals from administrations for WARC during September 1978. Written proposals will have to be submitted by administrations by January 1979 if they are to be circulated before the WARC. He also referred to the work of the CCIR (the SPM is in October), which will be preparing documents which could be used as the technical bases for WARC 79. National Societies were urged to submit appropriate papers to the CCIR via their national administrations. Two titles suggested were "Preferred bands for the Amateur Service" and "Sharing criteria in Amateur Service".

ARTICLE 41
In this Conference there was a long discussion concerning possible changes to Article 41 of the Radio Regs and it was unanimously agreed that the IARU Region 1 policy should be one of no change to the present terms of the Article. (Article 41 was described in AR for May 1976, page 20.)

TELECOM 79
Probably the world's largest telecommunications exhibit of the decade will take place in Geneva at the time that WARC 79 opens. The IARU has a stand. During the week preceding the opening of WARC 79 there is to be a technical forum extending over several days and on the afternoon of 22nd September, 1979, the IARU will be presenting an address on the amateur service which will reach delegates and engineers in Geneva at that time.

50-54 MHz BAND
At a joint meeting of all the Scandinavian radio amateur societies on 1-2 April in Oslo the request for the 50-54 MHz band was considered to be especially important. At the IARU Regional 1 Conference a report by various VHF managers indicated the UK, France, Germany, Eire, Sweden and Norway administrations would not be against granting part of this band to amateurs providing there is no opposition from other members of CEPT and nothing anyway prior to WARC 79. Netherlands, Italy and Denmark administrations, however, are said to be resolutely against this.

YI1BGD
This is the club station of the Scientific Welfare Centre in Baghdad and was established by the Yugoslavian Amateur Radio Society after representations to the Government. It operates only on the 14 MHz band.

CALL SIGNS
The call sign series J4A-J4Z has been allocated to Greece and J5A-J5Z to the Republic of Guinea-Bissau, both "provisional".

NIGERIA
The only amateur stations recognised by the Government are 5N2AAJ, 5N2AAE, 5N2AAK, 5NTAAV and 5N2NAS (the Amateur Society's club station).

2m TEP
On 8th and 10th April, 1978, ZE2JV worked Cyprus (5B4AZ and 5B4WR) on 144 MHz, a distance of 5,850 km. On 11th April ZS6LN heard the 5B4CY 2m beacon — 6,340 km, and on 12th April ZE2JV worked SV1AB on 2m, a distance of 6,275 km.

6m OPENINGS
Project TESSA (15th February to 15th April, 1978) recorded many new records during the spring equinox. The French 50 MHz beacon was heard by ZS6PW 8,800 km to the south and also by ZS3AK. The ZS6PW beacon on 50 MHz was received by SV1AB (6,934 km) and G4BPY (91,185 km). The Cyprus beacon 5B4CY is on 50.5 MHz nominal.

10m BEACONS
Operational 28 MHz beacons are listed as follows:—

MHz	Hours	
28.202.5	05.00-06.00Z 15.00-16.00Z	9J2BBB, Lusaka
28.205		DL0IGI, W. Germany
28.207.5		N4RD, Florida
28.210		3B8MS, Mauritius
28.215		GB3SX, Crowborough
28.220		5B4CY, Limassol
28.225		VE3TEN, Ottawa
28.230		ZL2MHF, Mt. Climie
28.235		VP8BA, Bermuda
28.245		A9XC, Bahrain
(28.250 — Oct. 78		KC4, Palmer Stn.)

6m BEACONS
The following overseas beacons are reported: 50.025 MHz 6Y5RC in Jamaica, 50.05 WA1EXN in Maine, 50.078 TI2NA San Jose, 50.087 WA6MH San Diego, 50.088 VE1SIX New Brunswick, 50.090 WA6JRA Orange, 50.092 W7KMA Oregon, 50.098 KG6JIH Guam, 50.100 ZK1AA Cook Is., 50.104 FX3VHF Lannian and KH6EOI Pearl Hbr., 50.110 HL9WI Seoul, 52.110 HL9WI Seoul, 52.500 3D2AA Fiji, 52.500 ZL2VHF Palmerston Nth., 53.

GENERAL
The Norsk RRL celebrates its 50th anniversary this year. Thanks for almost all the above to IARU R1 News. ■

PROJECT ASERT

How can radio amateurs assist in furthering science with greater knowledge of VHF/UHF propagation modes? Broad correlations with weather conditions and solar activity are known but much remains to be understood, states Mr. K. G. McCracken

Mr. McCracken proposes that radio amateurs should support Project Asert — "Amateur Service Experiment in Radio Transmission" — to record and report on such occurrences as the ephemeral nature of sporadic E openings, the heterogenity of chordal hop openings and the physical nature of type II TEP.

What is needed, he says, are simultaneous observations at many widely-spaced locations which, because of the economy drive, cannot adequately be carried out by scientific institutions.

This is the gap which amateurs are ideally qualified to fill. The Executive of the WIA is pleased to support such an investigation since it accords most perfectly with the aims and objects of the amateur service.

Mr. McCracken comments that if such a venue is to possess scientific validity, co-ordination (such as could be provided by the WIA) coupled with technical and scientific information of a professional standard are mandatory requirements.

Two separate classes of experiments are required —

(a) A statistical study of VHF/UHF transmission paths conducted by a co-ordinated group of experimenters throughout Australia; and

(b) Experiments by individual amateurs to distinguish between the various propagation modes and to determine if a path is open.

The point is made that there is urgency in getting this project under way — next year could be too late because of the solar cycle.

Details of the experiments and organisation involved are too lengthy to print here. Anyone seriously interested is urged to ask for a copy of the paper on the subject as prepared by Mr. McCracken.

Ask **NOW** for your copy from: Chairman, VHFAC (Project Asert), C/O Box 150, Toorak, Vic. 3142. ■

ALARA

AUSTRALIAN LADIES' AMATEUR RADIO ASSOCIATION

This month the series of articles on YLs of Australia is interrupted to announce two major items.

The first is the successful completion of ALARA's The first is the successful completion of LARA's third birthday celebrations, which, at time of writing, have just taken place. In Melbourne this auspicious occasion was celebrated with a film night, followed by a dinner party, with, of course, a birthday cake and candles. This year no photographs were taken of the Ceremonial Cake Cutter in back view (for which the aforementioned CCC is grateful. A motorcade from theatre to party resulted in two well-known fox hunters arriving very promptly, guided by a truly ALARA map, in what is now becoming a tradition. If this reference seems obscure, all will be made clear in the Newsletter which will be out soon.

Now for the second piece of news. LARA has changed its name to become the Australian Ladies' Amateur Radio Association, or ALARA. A referendum of members was taken and the consensus of opinion was that there should be a national identification in the name of the Association, so that members competing in international YL competitions can be identified easily.

Another development at a recent meeting was the suggestion that ALARA members sponsor YLs from other countries in joining ALARA. This is a reciprocal arrangement with these ALARA YLs becoming members of overseas YL clubs such as the YLRL, CLARA and WARO in return.

Now that the Association's name has been decided, it has become possible to design a badge for club members and we proudly announce progress in this direction. More news in your next Newsletter (for which, as always, letters and articles are gratefully welcomed by the excessively hard-working editor — Norma VK3AYL).

33s from ALARA.
Kate Duncan. ■

20 YEARS AGO

Ron Fisher, VK3OM

SEPTEMBER 1958

Realism in Signal Reporting. The Editorial page was really trying to sort out that old question of just how strong is a strong signal. Perhaps what we need today is more realism in reporting signals that are below the accepted standard in terms of distortion, sideband suppression, splatter, etc. I often wonder if the average amateur knows just what to look for.

A wide variety of technical articles appeared in September 1958 AR. With everyone changing over to Pi-coupled finals an article on how to tune your Pi-Network was timely. This one was reprinted from OST.

Crystals Substitute Mechanical Filter. HB9EU had some neat ideas on using crystals at both 400 kHz and 1600 kHz to produce a flat top response for use in SSB transmitters and receivers.

Sid Clark VK3ASC expounded on time delay circuits for Mercury Vapour Rectifiers.

Part seven of Amateur Television discussed tests and measurements. Subjects included scan linearity, frequency response, low frequency phase response, system gamma and pulse duration.

Meet the other Amateur and His Station featured the late Arnold Holst VK3OH.

Equipment included the usual Geloso VFO driving parallel 6146s. Receivers were a Marconi CR100 and Eddystone 680X.

A short article, reprinted from the RSGB Bulletin described an "Audible Tuner", to enable blind amateurs to tune up their transmitters. It would be easy to adapt to solid state design.

DX notes for the month include details of a forthcoming expedition to Clipperton Island. Wonder if it caused the pile-ups that the Clipperton expedition of a few months ago produced? ■

HAMADS

- Eight lines free to all WIA members. $9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

FOR SALE

FV200 External VFO for FT200, $75, ONO. VK3PR, QTHR. Ph. (056) 62 2711.

TR7200G Portable 2m Txcr., as new, with nicads, charger, carrying case, manual, etc. R 3, 8, simp. 40, $200; leader GDO, as new, $80. VK2BJP, QTHR. Ph. (060) 25 4580 A.H., (060) 24 3929 Bus.

Eddystone 888A Rx., 160m to 10m, $150; Eddystone 770R Rx., 19 MHz to 165 MHz, $150; Eddystone 770U Rx, 150 MHz to 500 Mhz, $150; Geloso AM Tx G-222, two, $70 each; Vinten BTR10R/A, 50W, 6 ch., no xtals, $80; Vinten MTR21, 5 ch., $50; Creed 7B teleprinter with 2-speed governor and N3 keyboard, $120; ST-6 demod., AFSK generator and interface, $250. Buyer collect. VK3ANG, QTHR. Ph. (03) 602 1333, Ext. 544 Bus.

Swan 500 with AC pack, 500W, orig. and ex., $500; Heath HW32, 200W, 20m only with HB AC pack, good performer, exc. mobile with its one knob tune up, clean, $275; Acitron heavy duty DC power supply with cable for FT200, also suits Swan and Heath, etc., as new, $95; Hammarlund HQ170 super Rx, 160 to 6m, 18 tubes, with every conceivable feature, like new, $290; Europa 200W 144 MHz transverter, plugs straight into FT100, etc., new, $195; all with instruction manuals and circuits; valves, 4 pin, to octal, $1.50 posted. VK3DS, QTHR.

Atlas **210X** with NB and instruction book, $625, ONO. Don Richards. Ph. (02) 406 4368.

Hasselblad **500C**, in mint cond., instruction book, lens hood, four filters (incl. Pola and HZ), Proxar lens attachment, leather eveready case, pigskin carry all case, 2X magnifying viewfinder, integral exposure meter, quick focus handle and eye-level sports view finder, $1,250; or exchange for equivalent value transceiver. VK2ARN, QTHR. Ph. (065) 66 8311, Monday to Fridays, any time.

Drake 4 Line complete station R4C Rx with 4NB noise blanker, 4 optional filters, 6.0 kHz, 1.5 kHz, 500 Hz, 250 Hz, T4XC Tx with spare set of PA tubes, AC4 power supply, MS4 speaker, MN4 matching network, TV42LP filter, mike, new cond., still in factory cartons, all hand books, connecting cables, etc., complete, $1,800. VK6LE, QTHR. Ph. (09) 293 2372.

Uniden 2020, ex. cond., used 4 mths., $750, ONO; CRO, ex. working order, $100; SWR and power meter, Royce 2-098, 0-10W and 10-100W, $45. VK3NIL. Ph. (03) 337 8585, A.H.

Ampex VR650 2 in. B & W Videotape Recorder, c/w manuals, 20 hours tape, $250; Marconi Mk. V. 3.5 in. IO camera, c/w cables, manuals, 4 turret lenses and P/S unit (gives picture but has hor. output fault), 100; TG7B Baudot teletype, $50; Free-standing 19 in. rack, $15. E. Cousins VK2ZST, 62 Jaffa Road, Round Corner 2158. Ph. (02) 651 1490 A.H.

TH6DXX Antenna, incomplete, requires 10 and 15 metre trap and some elements only, has owner's manual and balun, $80. VK3ZEF, QTHR. Ph. (03) 876 1987.

KW107 Supsrmatch Antenna Coupler, incl. large SWR/Pwr. meter and built-in dummy load, handles 2 switchable ants., either coax. or bal. feeders, 10 to 80m, unused, orig. carton, with manual, $235. VK2AFG, QTHR. Ph. (02) 630 2388.

Heathkit SB301/401 SSB/CW Transceiver, together with matching monitor scope, speaker, and all operating manuals, to be sold as complete station only, $450, ONO. VK2BIP, 6 Read Street, Khancoban 2642. Ph. (060) 76 9338.

Unimetrics Stingray, converted to 10m, covers 28.31 to 28.60 MHz, 10W AM, 12W PEP, RF out, suit Novice, $130. VK5ZCW, QTHR.

RX, amateur coverage only, needs peaking up on Rx, otherwise in good order, $110, ONO. L30853, QTHR. Ph. (053) 31 1138.

Dentron Linear, MLA 2500, modern, compact, with internal power supply to two Eimac 8875 tubes, bands 10-160m, absolutely as new, $995; Avo test bridge, 5 pF to 50 mFd, 50 ohms to 50 megohms, and Log. VTVM AF/RF 0-15V, $60; BWD 405 scope, 0-6 MHz, as new, $250; AVO model 8, Mk. 2, multimeter, $60, all in perfect order and cond., with manuals, freight paid. VK2BM, QTHR. Ph. (050) 32 4102.

QM70 28-432 MHz Transverter, 10W O/P, 432-436 MHz, $150. VK2YDY, QTHR. Ph. (067) 52 1185.

Yaesu FT2FB Xtals for 3 Simplex, 3 repeater ch., $140. VK2AXJ, QTHR. Ph. (02) 798 9021.

FT200/FP200 Transceiver and AC power supply, manual and numerous spare valves, good cond., with original cartons, $350. Mick Paget VK2APU, QTHR. Ph. (047) 39 7419, Bus.

Yaesu FT2 Auto 2m FM Transceiver, with inbuilt AC, DC power supplies, 1W or 10W, automatically scans 2m and stops on signal, only $200; 4 el. 20m mono band beam, $140, ONO. VK5TO, QTHR. Ph. (08) 381 1493 Bus., (08) 278 3126 A.H.

Self-supporting tower, 40 ft. commercial windlite C/W 3-band Hygain TH3 Mk. 3 beam, 3 years old, in exc. cond., heavy duty HB rotator and control; considering today's prices a bargain at $500, ONO. VK3ZX, QTHR. Ph. (051) 74 1144 A.H.

Eddystone 750 Rx, grey hammertone finish, with matching speaker, first class cond., any reasonable offer. VK5MP, QTHR.

Uniden 2020 Transceiver, matching speaker and mike, all mint cond., no mods., $695; Shure 444 mike, $28; Numachron 24 hour clock, $6. VK2WD, QTHR. Ph. (02) 427 6080.

Hallicrafters HT32 SSB/CW Tx, 100W PEP output, with two 6146 PA tubes, 10-11-80m, supplied with astatic D104 mic., owner's manual included, 240V AC operation, $205; matching Hallicrafters SX-115 10-80m, WWV CW-SSB-AM HF Rx, with variable IF selectivity, 500 Hz to 5 kHz, 100 kHz xtal calibrator, T-notch filter, variable BFO pitch control, matching Hallicrafters communic. spkr., manual, Hallicrafters best ever receiver, Dow key antenna changeover relay included, $250. Ph. (02) 36 7756.

Antennas, Rxs, Transceivers, Power Supplies, power trans., meters, CB, Ham magazines, books, many miscellaneous items, send large s.a.e. for lists. L30409, QTHR. Ph. (03) 546 3940, A.H.

Icom IC202 SSB Transceiver, as new, complete, original packing, $150; Icom IC22S FM transceiver, as new, complete, original packing, $245. Reg. VK3KK, QTHR. Ph. (03) 652 8110, Bus., (03) 469 4200 A.H.

Rotator Ham 11-CDE, heavy duty, with controls and brake, new, in carton, never used, $200. Will ship. VK2ATE, QTHR. Ph. (048) 61 2725.

Yaesu FT-301D Transceiver, complete with matching de luxe FP-301D power supply, $1,200, ONO; FV-301 remote VFO, $125; FT-221R, $600; YC-221 digital display, $75; FL2100B, $525. VK3AVE. Ph. (03) 379 1213.

IC22 2m Mobile crystalled for repeaters 1-8, reverse repeaters 2-8, and Simplex 37, 40, 43, 49, 50, 51, a total of 21 ch. fitted, as new cond., with mike, manuls, etc., $169, ONO. Ray VK1ZJR, QTHR. Ph. (062) 88 5624 A.H.

Coaxial Cable, RG58/CU, 52 ohm, ¼ in., several 100 yards rolls at $25 each, or will cut to length at 25 cents a yard. VK2RG. Ph. (02) 644 6693, between 6-7 p.m.

Heathkit SB101, with matching speaker, power supply and desk mic., VGC, $325; Heathkit SB104 kit, about ¼ assembled, cannot complete due to work overload, sell at less than ½ price at $400. VK3CH, QTHR. Ph. (03) 560 5150.

Yaesu FT200 Transceiver with FP200 power supply and manual, very good cond., $350. VK2BIW, QTHR. Ph. (02) 27 6432 Bus., (02)449 2198 A.H.

Swan 350 Transceiver with matching Swan 240V AC P/S home brew 12V DC P/S, complete with mic., manual and spare final tubes, $350; Pye 8207 HD low band mobile with s/state P/S, unmodified, $15. VK2BZV, QTHR. Ph. Batlow 369.

Collins 51J4 Rx, late model, $450; KW2000E 10-160m transceiver, $450; commercial 2 and 6m yagis with feeders, $40 each; Pye F60FM 6m base with 52.525 and 52.656, $110; Pye compact, 435 MHz, $80; S and H selective level meter, $80; and more. VK3AAR, QTHR. Ph. (03) 29 2491 A.H.

AWA MR3, ch. 40 xtls, most minor components replaced, 3/10 final, FET preamp and DC/DC replaced, 3/10 final, FET preamp and AC/DC supply, AM modulator elect. Aust. January 1965 with proper modulation transformer and 300-2700 kHz audiofilter, home made power supply unit, drives modulators, transmitters or MR3, with relays, etc., $30 each or offers. VK2BMZ. Ph. (02) 868 2585 A.H.

SSTV W0LMD Board, fully populated with back space and X2 height boards, plus full documentation, $95. VK2AIT, QTHR. Ph. (02) 86 4785.

Realistic AX190 Rx, 3.5-29.5 MHz, in 10 steps, excellent cond., 12 months old, $210. Ph. (03) 787 1980 A.H.

Yaesu FT221, complete, plus YC221 digital dial, transceiver little used, dial new, $700. VK2KI, QTHR. Ph. (02) 78 4237.

Hygain Model 18 AVT/WB Vert. Antenna with instruction manual (10 to 80m), in mint cond., only used for four months, $100. VK2BMH, QTHR. Ph. (02) 631 8045.

Kenwood QR666 Gen. Cov. Rx, exc. cond., with handbook, suit newcomer, $160, ONO. B. Bathols VK3UV, QTHR. Ph. (03) 90 6424 A.H.

KP202 2m Tcvr with 4 rep. ch. and ch. 40 and 50, also spare 51, $125, ONO; SL600 series HF Tcvr, have not had time to finish, $85, ONO; 2m FM Tcvr HB solid state, 2W out., not working, $20; 2 off 6m tunable power amps, solid state, $10 each; 6m SSB solid state Tx, 200 mW out., $25; additive frequency meter, $5; 6m FET converter, $5. Assorted valves, many more goodies. Have cleaned out shack and gone overseas. VK3ZUE. Ph. Mrs. Esselstrom (056) 23 6859 Bus.

ADVERTISERS' INDEX

WANTED

Revox A78 Stereo Amplifier, 80W RMS, $260; Lenco L85 record player with electronic stop and arm lift, $180. Both units as new, complete with schematics, manuals and original packing. H. Buff VK2BZT. Ph. (02) 922 2666 Bus.

HF Transceiver, either transistorized or valve, e.g. FT200, FT100, Swan 240, 350, etc., does not have to be in operational condition. Steve VK2BGL, QTHR. Ph. (047) 54 1096.

FV101B External VFO for FT101B. VK4RF, QTHR.

Information and Circuit Diagrams for VHF Aircraft Txs, type T-27A, 116 MHz to 135.95 MHz, and ARC1 49, 100-155 MHz; valves, type 6L6GA, 5686, 955, RL18, 2C39, 2C40, 2C42, 2C43, QQE03/20. VK2ZHS, QTHR. Ph. (02) 59 5390.

Dead Ken KP202 hand held or sim, in any cond., for spare parts and/or possible resurrection, for around $40. Richard Cowles VK2ANB. Ph. (02) 699 9403 after 6 p.m.

Blind Novice Amateur (very enthusiastic) requires older style Tx/Rx, HF bands 80-10m, or SSB/AM CW Tcvr, working order not essential, or disused gear in HF frequency, we will put to good use; appearance unimportant as frequency readout/tune will be modified; will pay reasonable prices. Please write with details to Paul, C/- James Goodger VK2JO, Box 505, Bondi Junction 2022, NSW. Ph. (02) 36 7756.

Yaesu FL2100B Linear Amplifier, must be in mint cond. Details to VK4AGL, QTHR.

FLOX 400/500 Tx; will pay $300 for good unit. VK2NSE, Box 64, Quirindi 2343, NSW.

Pair Selsyn Motors, with transformer if possible. Particulars and price to VK4SD, QTHR.

Owners of Bearcat 210 Scanner — please contact Bearcat, C/- P.O. Box 122, Ringwood, to swap ideas on the use of this versatile piece of equipment.

Drake 2B Rx and Hammarlund HX50 Tx (obtained DXCC with them) for a good quality general coverage Rx .5-30 MHz, including SSB reception and good bandspread. VK3ACD, QTHR. Ph. (058) 21 2484.

Small HF Mobile Txcvr, 10-80m, Atlas or similar, CRO and HF linear amplifier. Please contact John VK2BYK. Ph. (047) 21 2328 Bus., (047) 21 2822 A.H.

Information (name, address, phone number, etc.) on the Melbourne based manufacturer of crank up, tilt over, amateur type towers. Contact Ron VK3CN, Box 12, Korumburra.

Panoramoscope Model SA3, any condition. Colin Gracie L30060, QTHR.

SILENT KEYS

It is with deep regret that we record the passing of —

Mr. G. M. BOWEN	VK5XU
Mr. A. S. TOLLOW	VK2AST
Mr. O. F. DENSON	VK6GF
Mr. G. TAYLOR	VK2AUT
Mr. P. C. JAMES	VK2ER

GORDON BOWEN VK5XU

On the 18th July, 1978, the South Australian Division lost one of its Life Members. Gordon was instrumental in helping to re-form this Division after the Second World War. During the late forties and throughout the fifties he displayed his leadership qualities when he held the offices of President, Vice-President, Secretary, Treasurer, Federal Councillor, Programme Organiser and operator of VK5WI. In recent years he again served as Secretary in a manner befitting a person much younger than he. Gordon was also an excellent organist and played for many years at the Kent Town Methodist Church. With his passing amateur radio has lost one of its greatest ambassadors.

The WIA would like to extend its deepest sympathy to his wife, Betty, his family and many friends.

From Colin Hurst VK5HI,
President VK5 Division.

NORMAN D. CARPENTER VK2RK

It is with much regret I would like to record the passing of the late Norman D. Carpenter VK2RK.

Norm, as he was affectionately known, died suddenly in the Murwillumbah District Hospital after suffering a heart attack on the 13-4-1978, just one month after retirement. Norm, an oldtimer, was a member of the St. George Radio Club in Sydney. Prewar he enlisted in the RAAF and served in radar installations. After World War II he took up the position of Chief Supervising Technician at Radio Station 2MW Murwillumbah, a position he held until retirement. In the Amateur Service he was a great CW man, as well as phone, and worked mostly 80, 40, 20, and was always willing to assist beginners. Norm was a man who also worked hard for his Church and the community in general. His funeral service was well attended by amateurs from Lismore and Murwillumbah. We extend to his wife, Marie, and son, Mark, our sincerest sympathy.

From Eddie Bailey VK2BB.

WANTED KNOWN

Video Tapes on amateur radio will be shortly available from the WIA Executive Office as Magpubs loan service, standard ¾ in. U-matic format only.

TRADE HAMADS

Gilco Amateur Radio Center — All amateur equipment is now also available at Dee Why through Horst VK2BHF. For after hours attention phone (02) 98 6249. We service most equipment at reasonable rates. Trade-ins welcome!

Join a new Member
— NOW —

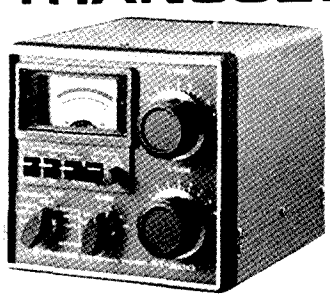
KENWOOD

. . . pacesetter in amateur radio

1.8-28MHz SSB TRANSCEIVER

TS-520S SERIES

TS-520S / VFO-520S / SP-520

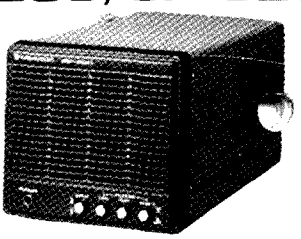


(Antenna Coupler)

Frequency range	6 amateur bands from 1.8 to 29.7 MHz
Input impedance	50 Ohms
Output Impedance	*50 to 500 Ohms, unbalanced*
Through power	200 Watts max.

(Wattmeter)

Type	Through-line wattmeter
Frequency range	1.8 to 29.7 MHz
Measurable RF power	Up to 20/200 Watts, switched
Kinds of RF power	Forward and reflected power, switched
Impedance	50 Ohms
Accuracy	Better than ±10% of full scale



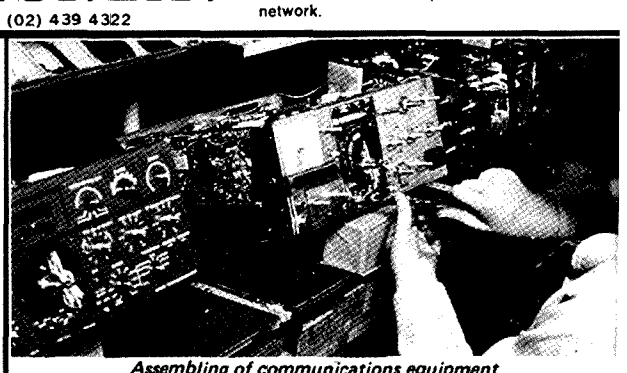
The SP-820 has built-in selectable tone filters to attenuate high and/or low frequencies. You can switch between two different receiver sources. Headphones may also be used in conjunction with the filter network.

"TRIO-KENWOOD (AUSTRALIA) PTY. LTD."

30 Whiting Street, Artarmon, Sydney N.S.W. Australia 2064. Telephone (02) 439 4322

INTERSTATE DISTRIBUTORS:

Vic:	VICOM IMPORTS P/L	(03) 699 6700
Qld:	MITCHELL RADIO CO.	(07) 57 6830
SA:	INTERNATIONAL COMMUNICATIONS SYSTEMS P/L	(08) 47 3688
WA:	WILLIS TRADING COMPANY	(09) 321 7600
Tas:	ADVANCE ELECTRONICS	(003) 31 5688
NT:	R. J. KLOSE	(089) 89 3279

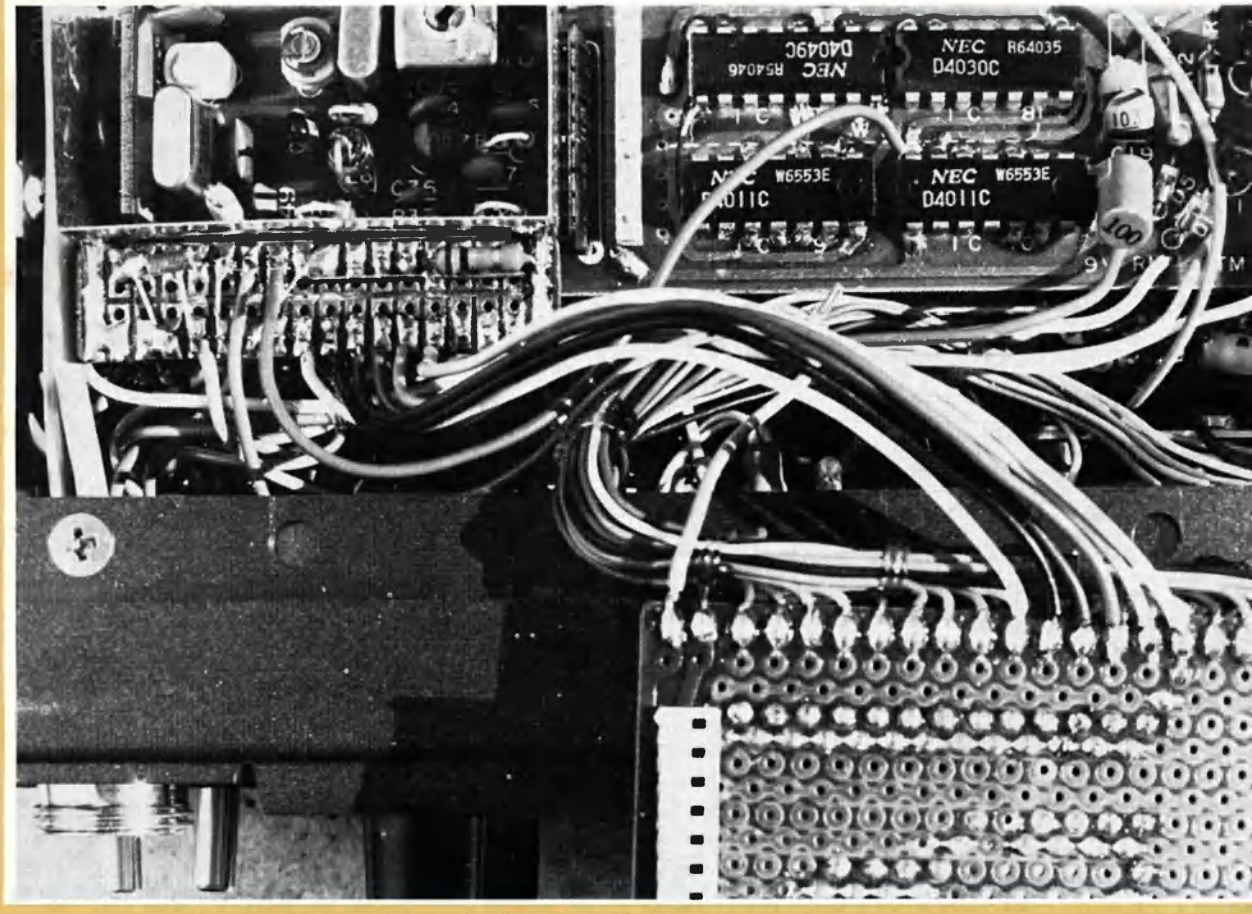


Assembling of communications equipment

"PS" Did you know Kenwood are to release a new solid state 30W PEP HF Mobile Transceiver with full 10m coverage, digital display and noise blanker in OCTOBER? WATCH for further details.

amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA



VOL. 46, No. 10 OCTOBER 1978

CONTENTS

COVER PHOTO

Interior of the ICOM IC22S showing part of the modifications by VK3YFO — see article "An Auto Simplexer for the IC22S" on page 10.

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amateur radio

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The Editor,
PO Box 2611W, GPO Melb., 3001

Copy is required by the first of each month. 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.

Advertising: Material should be sent direct to P.O. Box 150, Toorak, Vic., 3142, by the 25th of the second month preceding publication. Phone: (03) 24 8652.—Hamads should be sent direct to P.O. Box 160, Toorak, Vic., 3142, by the 3rd of the month preceding publication.

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Printers: EQUITY PRESS PTY. LTD.
50-52 Islington Street, Collingwood, 3066
Tel.: 41-5054, 41-5055

QSP — INTRUDER WATCH:

We have the guns, give us the ammunition

There are some vociferous amateurs who go about claiming the Institute's handling of various questions lacks fire and brimstone.

Without getting involved in side issues, what have they done when the Institute needed assistance?

Let me quote one example: The Intruder Watch.

Much more publicity than usual has been given to intruder watch this year, both in AR and on the Federal broadcast tapes. Many more reports are required from members if the Institute's voice is to become effective. Intruder watching is a sideline anyone can help with — licensed amateur and short wave listener alike.

POOR RESPONSE

What has been the response? According to the Federal Intruder Watch Co-ordinator, Alf Chandler VK3LC, the response has been negligible. In fact, the response could be counted as negative because amateurs say nothing seemed to have been done about "the woodpecker" in particular, so why waste time on intruder watching.

I can tell you this. The combined diplomatic and other approaches to the Russian authorities by the Governments of the U.S.A., United Kingdom and others have not resulted in the removal of "the woodpecker". However, "the woodpecker" is not the only intruder problem.

Alf sends into the P. & T. Department reports of intruders logged on the amateur bands. The reports have to include details of the quantity of loggings.

MANY MORE REPORTS ESSENTIAL

Unless the Department can point to more than a handful of loggings they are disinclined to take any action. This has been the state of affairs for years. So Alf is compelled to search for other avenues for redress. One of these is action through Intruder Watch Co-ordinators in other countries. If they also can detect and report the intruder they can sometimes get their own Administrations to take action. Several examples of this are on record.

The trouble is that an intruder causing chaos to amateurs in Australia may or may not be audible overseas. Our Administration will not take action on merely a few reports. Unless they have enough complaints to make a report to the IFRB of the ITU the intruder may get itself registered in the absence of a report of harmful interference. It then becomes "legitimate" and cannot be removed.

For example, why do you think there are so many broadcasting stations wielding muscle between 7.0 to 7.1 MHz — a world-wide exclusive amateur band. Oh yes, this will be taken up very strongly at WARC79, but where is the ammunition?

GUNS ARE USELESS WITHOUT AMMO

We have the guns but no ammunition. Each amateur should be busy making bullets to fire — namely, constantly reporting details of intruders to the Intruder Watch. The Intruder Watch has the strong support of the Institute.

Will you help with ammunition? Give us plenty and we'll keep firing the guns. Adequate fire power is essential.

D. A. WARDLAW VK3ADW
Federal President. ■

GOVERNMENT ANNOUNCES ETHNIC T.V. TO COMMENCE 1979 ON U.H.F. — DETAILS NEXT ISSUE

QSP

RTTY GROUP NSW DIVISION

From AREWISE, Vol. 1, No. 5, the official magazine of the NSW Division RTTY Group, comes news that the AGM of the Group was held on 2nd June at the WIC in Crows Nest. Peter Mulligan VK2ABH was appointed chairman for the ensuing year with Bob Taylor VK2AOE as Secretary, and Syd Molan VK2SG as Publicity and Broadcast Officer. Discussions were held on the proposed new Constitution and the proposal to go national. The Group aim to gain RTTY privileges for Novices and included a questionnaire soliciting signatures to support this move.

432 MHz INTERFERENCE

The RSGB reports in Radio Communication August 1978 432 MHz interference centred on 432.5 MHz ±3 MHz from a new radiolocation system. This system, called Syledia, is reported to be used by BP-Shell and the RSGB have protested about its use within the amateur band. ■

APOLOGIES TO ADVERTISER

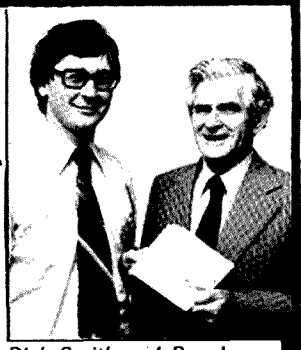
In the advertisement for Emona Electronics in the centre pages of August and September issues of AR, our printer inadvertently reversed the prices for the Dentron MLA-2500 Linear Amplifier and the Dentron MT-2000A Antenna Tuner.

The MLA-2500 Linear Amplifier should have carried the price of $1300 and the MT-2000A Antenna Tuner should have been $269.50.

We apologise to Emona Electronics for the inconvenience caused and also to many of our readers who must have thought that Father Christmas really did exist. ■

THE WINNER

OF THE DICK SMITH/ YAESU 'WIN A TRIP FOR TWO TO TOKYO' CONTEST – Judged by Jim Rowe, Editor of Electronics Australia.



Dick Smith and Ray Jessup holding the winning entry.

Ray Jessup

Ray, VK2NVJ, bought a Yaesu FT-7 transceiver from our Gore Hill store in June. He uses it regularly to contact his son in New Zealand. Ray is currently studying for his full amateur license.

HERE IS THE WINNING ENTRY:

'Promote amateur radio as an antidote to current frustrations confronting youth . . . Parents: Your life is easier if your kids have a good hobby. Amateur radio is a rewarding and challenging hobby, leading to: Practical application of maths, english and logic . . . Self discipline . . . Responsible citizenship . . . New and worthy friendships . . . Job opportunities . . .'

THIS IS RAY'S TRIP OF A LIFETIME – Congratulations from Dick Smith Electronics and Yaesu!

WIRELESS INSTITUTE OF AUSTRALIA

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VK2 Mr. T. I. Mills VK2ZTM
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Staff: Mr. P. B. Dodd VK3CIF, Secretary.
Part-time: Col. C. W. Perry, Mrs. J. M. Seddon and Mr. P. Simmons (AR advertising).

Executive Office: P.O. Box 150, Toorak, Vic., 3142. 2/517 Toorak Rd., Toorak, Ph. (03) 24 8652.

Divisional information (all broadcasts are on Sundays unless otherwise stated):

ACT:
President — Mr. E. W. Howell VK1TH
Secretary — Mr. Ted Radclyffe VK1TR
Broadcasts— 3570 kHz & 146.5 MHz: 10.00Z.

NSW:
President — Mr. D. S. Thompson VK2BDT
Secretary — Mr. T. I. Mills VK2ZTM
Broadcasts— 1825, 3595, 7146 kHz, 28.47, 52.1, 52.525, 144.1, Ch. 8 and other relay stations: 01.00Z. (Also Sunday evenings 09.30Z and Hunter Branch, Mondays 09.30Z on 3570 kHz and ch. 3 and 6).

VIC.:
President — Mr. E. J. Buggee VK3ZZN
Secretary — Mr. J. A. Adcock VK3ACA
Broadcasts— 1825, 3600, 7135 kHz — also on 6m, 2m SSB and 2m Ch. 2 repeater: 00.30Z.

QLD.:
President — Mr. A. J. Aarsse VK4QA
Secretary — Mr. W. L. Gielis VK4ABG
Broadcasts— 1825, 3580, 7146, 14342, 21175, 28400, kHz; 2m (Ch. 42, 48): 09.00 EST.

SA:
President — Mr. C. J. Hurst VK5HI
Secretary — Mr. C. M. Pearson VK5PE
Broadcasts— 1820, 3550, 7095, 14175 kHz; 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.

WA:
President — Mr. L. A. Ball VK6AN
Secretary — Mr. P. Savage VK6NCP
Broadcasts— 3600, 7080, 14100, 14175 kHz, 52.656 and 2m (Ch. 2): 01.30Z.

TAS.:
President — Mr. I. Nicholls VK7ZZ
Secretary — Mr. M. Hennessy VK7MC
Broadcasts— 3570, 7130 kHz: 09.30 EST.

NT:
President — Dick Klose VK8ZDK
Vice-Pres. — Barry Burns VK8DI
Secretary — Graeme Challinor VK8GG
Broadcasts— Relay of VK5WI on 3.55 MHz and on 146.5 MHz at 2330Z. Slow morse transmission by VK8HA on 3.555 MHz at 1000Z almost every day.

Postal information:
VK1 — P.O. Box 46, Canberra, 2600.
VK2 — 14 Atchison St., Crows Nest, 2065 (Ph. (02) 43 5795 Tues & Thurs (10.00-14.00h).
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 3535 Sat 10.00-12.00h).
VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — at West Thebarton Rd., Thebarton (FH) (08) 254 7442).
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (incl. with VK5), Darwin AR Club, P.O. Box 37317, Winnellie, N.T., 5789.

Slow morse transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

VK QSL BUREAUX

The following is the official list of VK QSL Bureaux, all are inwards and outwards unless otherwise stated.

VK1 — QSL Officer, G.P.O. Box 1173, Canberra, A.C.T. 2601.
VK2 — QSL Bureau, C/- Hunter Branch, P.O. Teralba, N.S.W. 2284.
VK3 — Inwards QSL Bureau, Mr. E. Trebilcock, 340 Gillies Street, Thornbury, Vic. 3071.
VK8 — Outwards QSL Bureau, Mr. R. R. Prowse, 83 Brewer Road, Bentleigh, Vic. 3204.
VK4 — QSL Officer, G.P.O. Box 638, Brisbane, Old., 4001.
VK8 — QSL Bureau, Mr. Geo. Luxon VK5RX, 203 Belair Road, Torrens Park, S.A. 5062.
VK6 — OSL Bureau, Mr. J. Rumble VK6RU, G.P.O. Box F319, Perth, W.A. 6001.
VK7 — QSL Bureau, G.P.O. Box 371D, Hobert, Tas. 7001.
VK8 — OSL Bureau, C/- VK8HA, P.O. Box 37317, Winnellie, N.T., 5789.
VK9, 0 — Federal QSL Bureau, 23 Landale Street, Box Hill, Vic. 3128.

VIC. WESTERN ZONE CONVENTION

at

BALLARAT
NOVEMBER 4th and 5th

Further details and bookings for Dinner to
VK3ZBS or **VK3ZHH**

QSP

NEW MEMBERS' SUBSCRIPTIONS

Please note, when you join the WIA you pay a full year's subscription.

This subscription is then split into two parts for accounting and membership purposes. One part is set aside as the pro rata amount owing for the balance of the calendar year to 31st December. The other part is the credit into the ensuing year. In December you will be sent a subscription notice for the full year subscription, 1st January to 31st December, less the credit brought forward from your first payment. After that you stay on the calendar year subscription ending 31st December. Subscription notices are printed early in each December from the computer file using the same address on file for the distribution of your December AR for that year.

When you join the WIA your subscription period begins with the month your first AR is despatched to you. Membership of the WIA is membership of the Division in which you reside and it is that Divisional Council which votes for acceptance of you as a member. Thus your application for membership could be at least a month or two in advance of your subscription membership because of processing at Divisional level and mailing the applications in batches to the Executive office where EDP processing occurs.

If your joining date is late in the calendar year, say October or November, you would carry forward quite a large credit into the following year and thus you would only owe quite a small amount in cash for the ensuing year's subscription. This is where we have a little problem with the present computer programme because the threshold level is quite small for amounts owing before the automatic AR address label cut-off comes into operation. Even though you might only owe say $2 or $3, the cut-off will occur unless it can be manually cancelled. Since, for economy reasons, the office staff is small in numbers and they are heavily engaged in processing outgoing notices and incoming payments at the turn of the year, there is not sufficient time to devote to going through the entire lists to extract details of those who owe only small amounts for the purpose of cancelling the automatic cut-off for these members.

The best way for every member to avoid AR being cut off is to pay promptly. If by some mischance you do not receive a subscripton notice before about mid-January do please send in right away what you think is the proper amount owing for the year ahead. It is much better this way than waiting a month or more to see if AR arrives or not. If you are unfinancial at the cut-off date there will be no computer label for you — it is quite automatic and impersonal.

Late payers of subscriptions always risk one or more of the missing ARs being out of print. Again, for economy reasons, it is necessary to restrict the number of "overs" (over-prints) of AR to a minimum.

STOP PRESS

AX7 PREFIX

Approval has been granted for Vk7 amateurs to use the "AX7" prefix from 1400 GMT 3.11.78 to 1400 GMT 8.11.78 incl. to commemorate the 175th anniversary of Lt. John Bowen's (R.N.) landing at Riedon Cove in 1803.

Official station AX7 WI will operate from the Tasmanian Hobart Radio Convention on Nov. 3-Nov. 5.

Commemorative QSL's will be used for all AX7 contacts.

WIANEWS

POSTAL AND TELECOMMUNICATIONS DEPARTMENT LETTERS

Two letters from the Department during August. The first concerns candidates tor the Novice examination who live in remote areas and is referenced RB4/11/30 of 31-7-1978. This is the text of that letter —

"In appreciation of the geographical problems facing prospective novice candidates living in remote areas the Department has decided to implement the following procedures.

Special Examinations:
Examinations in addition to the normal scheduled dates may now be conducted in Capital Cities and Regional Offices of the District Radio Inspector for candidates who reside more than 80 kilometres from the nearest office of the Department.

Conduct of Examinations:
Radio inspectors may conduct examinations in remote country areas during routine visits to that area. This will allow some candidates who otherwise could have difficulty in attending the main centres to avail themselves of this facility. It is important to note, however, that a request for an examination should not serve to initiate a special examination itinerary.

It is important to note that the number of candidates should be sufficient to make the examination economically viable."

This is a subject which the Institute has been pressing the Department for a satisfactory solution tor a long time. In tact the WIA's submission about Novice exams actually went much further than this — please see AR for September 1977, pages 20 and 21.

At a meeting of the Joint WIA/Departmental Committee on 22nd August clarification was sought concerning the number of candidates to make an exam worthwhile in a distant centre. A figure of about ten guaranteed candidates was mentioned but this depended upon circumstances as, for example, an RI visiting the centre anyway in the course of other duties.

HOW TO SET ABOUT GETTING AN EXAM IN A REMOTE CENTRE
The way to go about getting a Novice exam in your town is tor the group leader or instructor to write to the State Superintendent giving details of all the candidates and, most importantly, suggesting some local hall or classroom which he has previously ascertained would be made available for the exam.

The second letter from the Department was in reply to a WIA request resulting from a decision made at the WIA 1978 Federal Convention. The details are now well known but members would like to know how it read. This letter was also referenced RB4/11/30, and was received on 8th August, having been posted on the 7th. The letter is published in full in "Novice Notes" under WIA correspondence.

On the same day is was received, advice was telephoned to Federal Councillors and many Novices were quick to spread out up to 3625 kHz. The news arrived in time for the RD Contest and it will be interesting to see how many Novices participated in it.

JOINT COMMITTEE
At the August meeting most of the time was occupied in discussing the examinations and licensing areas. Graeme Scott, the Federal Education Co-ordinator, presented to the Department the bank of multi-choice Novice questions prepared by his WIA helpers. This bank consisted of over 600 questions from which a paper of 50 typical questions is to be selected for inclusion in the proposed printed edition of the WIA Novice syllabus and study guide.

THE AOCP SYLLABUS
After some discussion it became apparent that work on the official AOCP syllabus has not yet been completed. It it is ready in time the Departmental representatives believed it should be

possible for the August 1979 AOCP theory exam to be of the multi-choice variety. Consequently the next AOCP exam in February would be the traditional essay type. Once again the WIA, through the Federal Education Co-ordinator, would arrange the preparation of a bank of suitable questions for presentation to the Department.

EXEMPTIONS FROM THEORY EXAMS

What were the criteria, asked the WIA representatives, for exempting certain people from having to sit for the theory exam? The Department did not grant automatic exemption, but in each case examined the syllabus which was used for the qualifications claimed by any candidate. It had been found in the past that, although the candidate's qualifications appeared to far exceed the AOCP standard, nevertheless a number of specific subjects had not been studied — e.g. harmonic generation and interference from transmitters.

The Departmental officers enquired about comments received on the last Novice exam. Feedback from candidates indicated the standard was quite reasonable but that much dissatisfaction was expressed about the long delays in obtaining a licence by those who passed.

LICENSING DELAYS

The delays in issuing licences was noted as particularly irksome in Victoria although this was not the only State affected. The documentation involved with licensing was generally considered to be antiquated. The WIA will continue to exert pressure to have licensing delays reduced to a minimum.

RECIPROCAL LICENSING

A WIA enquiry elicited the fact that reciprocity existed only with those countries listed in a letter from the Department printed on page 17 of AR for August 1972.

The WIA representatives, consisting of the Federal President, David Wardlaw, Peter Wolfenden and Graeme Scott re-raised a number of items many of which have been in the system for some time. One matter which at long last appears to be nearing a conclusion is the WIA request some years ago for reduced licence fees for pensioners and disabled amateurs, see AR December 1976, page 5.

FINAL ANSWER EXPECTED
IN 3 or 4 MONTHS

SUBSCRIPTIONS 1979

At the Executive meeting in August much time was spent closely examining the financial situation in order to relate this to a budget for 1979.

THE FEDERAL COMPONENT OF WIA SUBSCRIPTIONS HAS NOW REMAINED UNCHANGED SINCE 1976. In effect this really means that there has been a continuous REDUCTION in Federal dues when related to Inflation.

INFLATION CAUSES REDUCTION IN FEDERAL DUES

Next year is the big year for expenses related to WARC 79. The WARC levy last year helped towards the funds accumulated for this purpose but an appeal is shortly to be made for NON-members of the Institute to make some contribution.

Apart from this, costs of AR have risen sharply, especially in postages, and other office expenses are increasing.

Nevertheless, after a long discussion, the Executive decided to recommend to the Finance Sub-Committee that there should be no change in the Federal dues for 1979. The total amount should remain at $15.00. At the time of writing it is not known if the WIA's financial experts will accept this. They might deem it prudent to recommend some increase to avoid eating into reserves. IT WAS EMPHASISED THAT HOLDING THE FEDERAL DUES AT THE 1978 LEVEL DEPENDED LARGELY UPON A CONTINUED UPSURGE IN MEMBERSHIP.

At the same time a short discusion ensued on the kind of subscription notice to be printed for 1979 onwards and on balance it was decided NOT to have one with a counterfoil.

PROJECT ASERT

Also during August, the VHFAC discussed at great length the PROJECT ASERT, briefly outlined on page 48 of last month's AR. Dr. McCracken attended the meeting and explained his proposals in detail. It was agreed however that some preliminary caution should be exercised and consequently a small pilot committee will set the thing in motion. The pilot committee consists of Bob Arnold VK3ZBB as chairman, Dr. McCracken (VK2CAX) himself as scientific advisor, and Les Janes VK3BKF as hardware co-ordinator.

TV CHANNEL 5A

Yet again the prospect of increasing usage of TV Channel 5A occupied the time of the Executive and the VHFAC. Peter Wollenden prepared and recorded three segments of the Federal tapes broadcast during August. Further technical information was awaited so as to prepare a proper submission to the Minister and to include a very strong recommendation that UHF television should be the goal rather than the proliferation of non-standard channels such as 5A and 0.

Various other items of interest in the pipeline will have to be left over until next month.

NEXT NOVICE EXAM

Clarification was finally obtained from the Department about the date of the next Novice examination — this will be 21st November for all States EXCEPT VICTORIA, which will be on Saturday, 25th November. ■

QSP

JOTA

A reminder about Jamboree on the Air, the 21st. Begins about 0.001h local time on 21st October and ends 48 hours later. If you can help out by providing and manning a station for a Scout or Guide group contact your local Scout JOTA organiser right away. Here is an excellent opportunity to show your amateur radio prowess — Novices, Limiteds and Full Calls can all participate. The Australian Radio Scout net will operate on 1st and 2nd Sundays in September and the 1st Sunday in October — listen on 7070 kHz from 09.30h for VK4QH which might later QSY to 14290 kHz. Perhaps next year a special Scout Novices' net might be organised on frequencies available to the Novice amateur operator.

IT IS NOT TOO LATE TO
JOIN WITH SCOUTS AND GUIDES
IN JOTA 1978.

The opening JOTA ceremony will be on air from VK1BP at 14.00h EAST on Saturday, 21st October, which will include greetings from the Chief Scout, Sir Zelman Cowen, the World JOTA organiser and Les Mitchell, the founder of JOTA. The frequencies will be close to 7090 kHz and 14290 kHz, the official World Scout frequencies. The World Bureau JOTA will be on air as HB9S/ portable from near Geneva and should hopefully be on the 21 and 28 MHz bands so that Novices can have a chance to work this station.

ARTICLES FOR AR

We are always on the lookout for both technical and general articles for publication.

Please forward your submissions to the Editor, P.O. Box 2611W, GPO, Melbourne 3001.

In order to keep a reasonable balance of material published, it is sometimes necessary to hold submitted items for several months, therefore some delays can be expected before the item is actually published.

On receipt of an article, an acknowledgement is sent to the author advising receipt and approximate publication date — but circumstances at the time of finalising an issue may temporarily delay an article.

All items accepted will be published as soon as possible after receipt, and your indulgence is requested if publication has not occurred at the previously notified time.

Technical articles especially require editing by our technical staff and professional drafting of circuit diagrams — this does delay some material for a few months.

We would also request that should authors who submit items to AR and other Australian magazines simultaneously, as a matter of courtesy to all concerned, each magazine be advised that the item has been submitted elsewhere to save embarrassing duplications as have occurred in recent months.

DECORATIONS

Advice has been received that Surgeon Rear-Admiral Jim Lloyd VK1CDR was awarded the Officer of the Order of Australia in the Queen's Birthday list. Also honoured was Jim Wilkinson, awarded the Imperial Service Order. ■

MICROCOMPUTERS

An insert advertisement in the July 1978 edition of Monitor (the Proceedings of the IREE, Australia) advises that a publication entitled "Microsystems" is published in alternate months in Sydney and costs $30 for one year. Incidentally, the same issue of Monitor lists Lawrie Blagbrough VK4ZGL as the Chairman of the IREE Brisbane Division. ■

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AN AUTO SIMPLEXER FOR THE IC22S

W. Miles VK3YFO
PO Box 225, Red Cliffs 3496

The IC22S is an excellent mobile rig, but I am sure every owner has been frustrated by forgetting to switch to simplex when necessary, after changing channels. After the modification (need I say it), you will wonder how you got along without it.

The additional circuitry, costing less than $1, is mounted on a small piece of Vero board. The only change in existing wiring is the re-location of one wire. There is provision for nine simplex channels, although this can be expanded by adding extra diodes. After modification, the DUP/SIM switch is disabled when switched to simplex channels and simplex operation is automatically selected. Repeater channel operation is unaffected.

Referring to the modified circuit (NOTE: the new IC is designated IC11), when a repeater channel is selected all anode ends of the diode OR gate are floating (i.e. not connected to +9V), therefore pins 1 and 2 of IC11 are pulled LO by the 10k resistor. By inversion, pins 3 and 12 go HI. Therefore the logic signals from the DUP/SIM switch are inverted twice and appear at the dp point on the programming matrix board with no change. When a simplex channel is selected, +9V from the channel switch turns on the appropriate diode in the OR gate. This pulls pins 1 and 2 HI and therefore pins 3 and 12 LO, this blocks logic from the DUP/SIM switch and forces pin 11 HI, therefore pins 4 and 10 LO. Now that the dp point is LO for both Tx and Rx, simplex operation is assured. The two output gates are in parallel to properly drive the 10k pull-down resistor on the PLL board.

Cut a piece of Vero board 18 strips by 4 holes, EVERY strip should have 4 holes. Cut the inner 16 strips to form pads for the IC and diode leads, file a bevel on the ends of the strips (to prevent shorts to the oscillator shield). Make the mounting lugs by tying the end strips to the board with wire, this prevents the copper from lifting when soldered (see Fig. 3). Mount the IC and diodes (see Fig. 2 for orientation) on the "component" side of the board, on the other side mount the resistor and links as in Fig. 2. Unsolder the red wire from the dp point on the programming matrix board and solder it to pin 13 of IC11, run a wire from pin 4 of IC11 to the dp point. Run the supply wire from pin 14 of IC10 to pin 14 of IC11 (see photo). Solder the end strips to the oscillator shield with the board about 5mm below the top edge of the shield, check for accidental shorts.

To set up, connect each input of the diode OR gate to a simplex position on the programming matrix board, at the points where the wires run to the channel switch. Unused OR gate inputs are left open. Example, in the original IC22S programming connections, wires should be run from 3 diodes to positions 9, 10 and 11 for channels 40, 50 and 51.

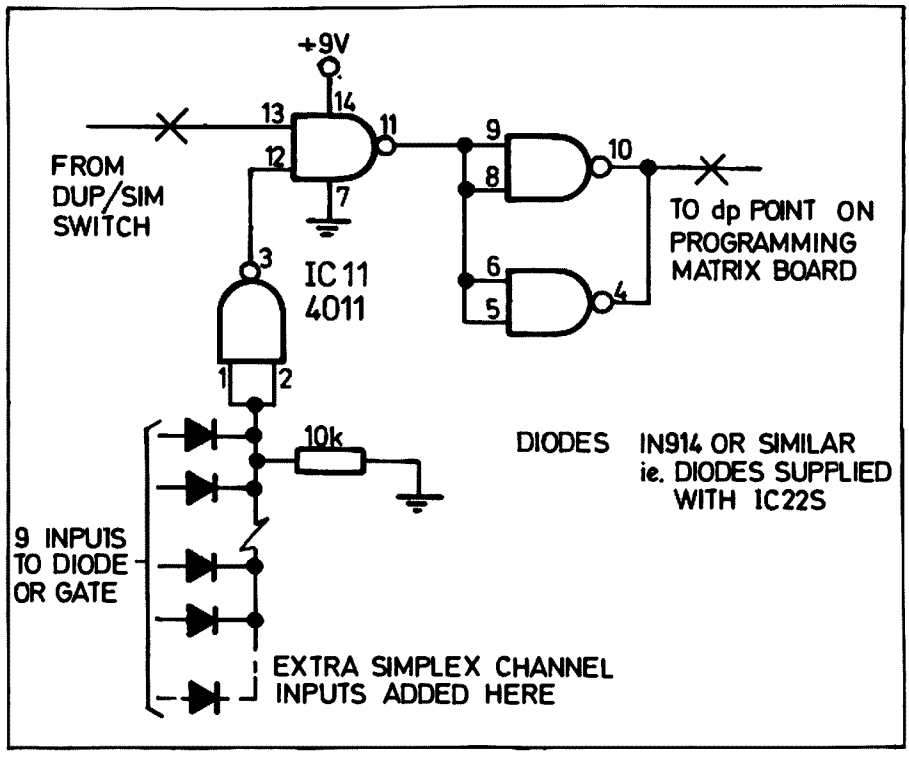


Figure 1

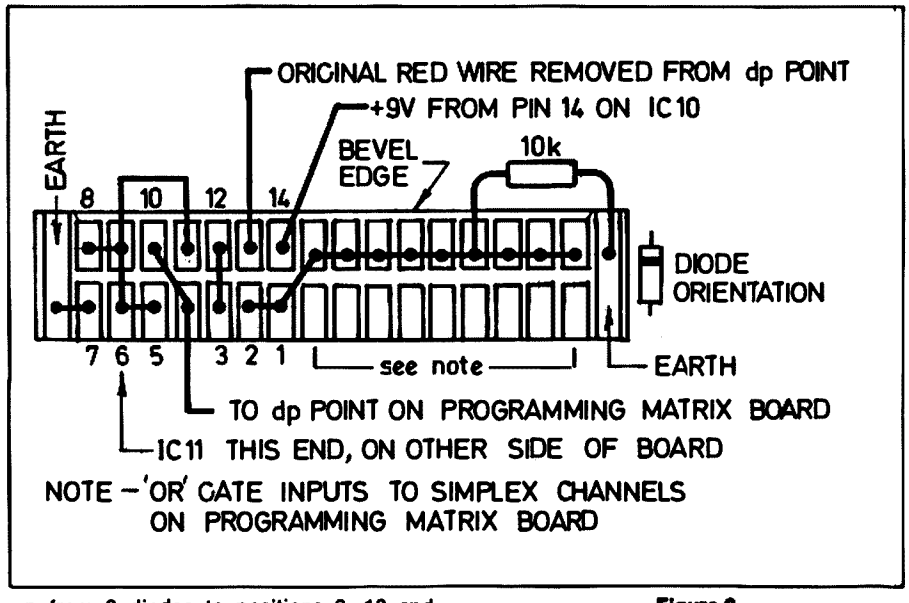


Figure 2

My thanks to Arthur Hill for his help with the photography.

POSTSCRIPT

Since writing this article, it was found necessary to add a resistor from Pin 13 of IC11 to earth. This ensures proper operation when working simplex on repeater input frequencies, using the DUP/SIM switch simplex position. ■

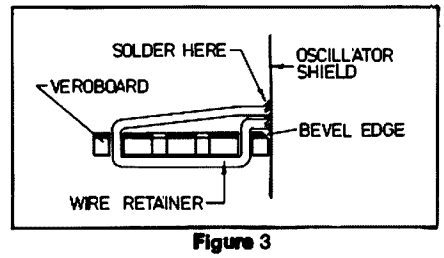


Figure 3

GETTING THE BEST OUT OF YOUR SSB

Denzil Roden VK2BXF
7/169 Herring Road, North Ryde 2113

A casual tune around the amateur bands will bring to light all kinds of signals purporting to be SSB voice transmissions. Lots are from home-brewed gear but many of them emanate from commercially produced equipment. It is evident that many amateurs are not getting the best results from their stations.

A most common source of trouble is the incorrect alignment of the carrier insertion oscillator frequency with respect to the wideband filter. This has been found to be a fault even with brand new commercially made amateur equipment, so a check of the positioning of the oscillator frequency is well worthwhile Initially, and again after a couple of years operation.

Natural ageing of crystals used in the carrier oscillator and in lattice filters can itself cause misalignment to occur. Ageing is the process of the settling down of the atomic structure of the quartz, after this has been disturbed through cutting, grinding, etching and plating, etc., in much the same way as time has to be allowed for relexation of winding tensions in copper wire and plastic bobbins, before maximum inductance stability may be obtained with precision pot core coils.

A new crystal can be expected to shift in frequency by up to 500 Hz or, in some cases, with cheaply produced crystals, by as much as 1000 Hz, in the first year or its of manufacture.

Some of the more professional manufacturers pre-age the crystals they use. Ageing can be accelerated by placing the crystals in switched oscillators and temperature cycled ovens. However, when one considers the vast numbers of crystals in new equipment every year, it Is obvious the process is very costly in time and space, so crystals supplied in new equipment are unlikely to be aged.

Government disposals crystals, such as the FT243 style, have been lying around for a great many years and are very useful as they are fully aged. Even so, where slight changes in their frequencies are made, new ageing problems may be introduced.

FILTER RESPONSE

The carrier oscillator frequency, generally, is positioned about 20 dB down the skirt of the filter, though it does depend upon the filter shape. Some filters are symmetrical while in others the skirt is steeper on one side, giving greater rejection of the carrier oscillator frequency.

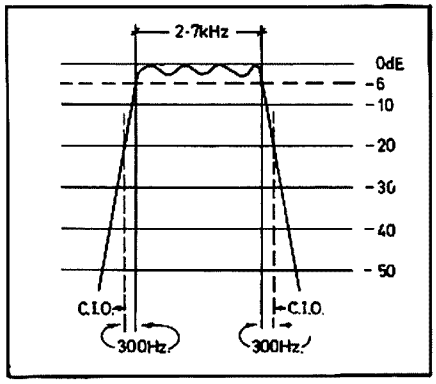


FIGURE 1

The 20 dB point can be taken to correspond to 300 Hz outside the point of 6 dB attenuation. So, in Fig. 1, the filter will accept frequencies between 300 and 2700 Hz above or below the CIO frequency for USB and LSB respectively.

Considering a USB exciter, the transmission will contain frequency components corresponding to voice frequencies In the range 300 to 2700 Hz.

Were the CIO misplaced, 500 Hz low, the voice range would be restricted to between 800 and 3200 Hz. This would have the effect of eliminating a great deal of the basic components of intelligibility of the speech. This results in the transmission being extremely difficult to tune at the distant receiver and causes the transmission to suffer more from propagation and interference problems. Though it may still be possible to distinguish what is said, the speech sounds thin and unnatural.

With the crystal frequency placed too high, the top end of the voice range is restricted, giving a woolly or muffled sound, lacking in clarity and again making the receiver tuning tricky.

Due either to uncertainty or politeness, one will find that only about one of every ten average amateurs will report such a transmission defect without prompting. The answer is for you to check your own gear for yourself.

ADJUSTMENT TECHNIQUES

There are various ways in which CIO alignment may be checked. These are described in greater detail in the various handbooks, but the method employed is decided by the availability of test equipment. I shall outline various approaches to the problem which I hope will prove helpful to those with limited access to equipment.

In the ideal situation where one has access to top notch test gear, the direct method of measuring the filter response can be used. A signal generator having a slow tuning rate is connected at the input to the IF strip, containing the SSB filter. An RF voltmeter is connected at the output of the IF amplifier following the filter. Then as the generator is carefully tuned across the filter passband, a plot may be made of output voltage against generator frequency, the frequency being measured accurately using a counter. A type BC221 frequency meter is useful as a calibrated generator for the purpose.

Thus the frequencies at which 6 dB attenuation occur can be established and hence the upper and/or lower CIO crystals may be set using the counter or BC221.

In this manner the response may be plotted of a filter not wired Into an equipment, provided the filter is terminated with the correct impedance at input and output as specified in the filter data sheet. Later when the equipment Is assembled, the information can be used to adjust the oscillators.

Alternatively, a receiver CIO may be aligned using an uncalibrated signal generator, tuned to any band — preferably an LF band as tuning becomes easier — connected to the receiver aerial terminal. Then as the generator is tuned across the receiver passband, the varying beat frequency between the signal and the CIO is measured at the receiver audio output, by means of a counter, or other more traditional methods of audio frequency measurement.

The audio output level can be metered, though AGO can alter linearity of readings. Otherwise the receiver "S" meter will give a close enough indication of 6 dB attenuation. The CIO trimmer can be adjusted directly to produce an audio output frequency range from 300 Hz to 2700 Hz between the —6 dB points of the receiver response.

TRANSMITTERS

Where a transmit-only unit is to be aligned, a frequency calibrated audio generator is fed into the microphone socket and with minimal drive to the PA, the RF output level can be measured at the aerial socket of the transmitter, using a VTVM power meter or even an SWR meter. Again, the input frequency range should be 300 Hz to 2700 Hz between the —6 dB points.

Without even an audio generator, a most basic, if rather crude method, is to

unbalance the balanced modulator and adjust the CIO crystal trimmer, measuring the change in transmitter output level as the CIO is tuned around the filter skirt. This, of course, is only possible where the trimmer capacity range is sufficient for adjustment from the top of the filter response down to just below the 20 dB point. One well known brand of transceiver I once set up, did not have enough trimming range to allow the upper and lower CIO crystals to be set to their correct frequencies. It was necessary to remove a fixed capacitor in parallel with the trimmer in one case and to add capacitance in the other. So do not rely too much on your kilobuck equipment designers!!

With transceivers, CIO misalignment is not always so obvious in the receive mode, so the Old Timer's adage that excellent reception is not proof of good transmission holds true again.

Just by listening around the bands, one will realise that SSB transmissions can result in really pleasant audio quality, and in a lot of cases can almost equal hi fi!

When you tire of trying to find a microphone that sounds right, just check the basics. Don't take anything for granted, especially if you have a rugged voice like mine — fortunately for you all, I'm a CW man! I hope this general information will help someone to achieve better two-way performance. ■

TRY THIS

WITH THE TECHNICAL EDITORS

A SIMPLE GUNNPLEXER 10 GHz LINK

Paul Jacobs W2IOG

Here is a simple Gunnplexer hook-up that WA2ZKD and W2IOG have been using for several months now. It has been very easy to use, and we have had a lot of fun "hilltopping" with them. I suggest you make one or both of your units portable, as the spots you have to get to for line of sight paths are not always accessible by road (even with 4-wheel drive).

Start your initial tune-up with the units only a few hundred feet apart. Set the varactor bias on the free running unit to about 4 volts. On the "AFCD" unit set S_1 to position 1 (manual) and S_1 to position 2 (tuning voltage). Tune the bias pot until you hear the converter noise quiet, and note the M_1 reading. If it reads between 2.5 to 5.5 volts, you can switch S_1 to the AFC position and you should be "locked". If not, adjust the GPX manual tuning until you can acquire signal in the 2.5 to 5.5 volt range. Then move the S_1 to "AFC" and lock the two units. Now switch S_2 to read AFC voltage and tweak the GPX manual tuning until M_1 reads exactly 4 volts. Now you should be "locked" at exactly centre tuning on your converter. If the FM receiver on the other end is now tuned to the same frequency as yours, you will have a two-way audio path.

If your units won't lock with the above procedure, it means you are tuned to the wrong side of carrier. Just tune the manual frequency adjust until you get another signal, and try again.

Once these adjustments are made, you need only set up at your "DX" location, aim your antenna, switch to manual and tune near 4 volts until you acquire signal. Then flip S_1 to AFC and your are in communication!

Good luck and good DX. ■

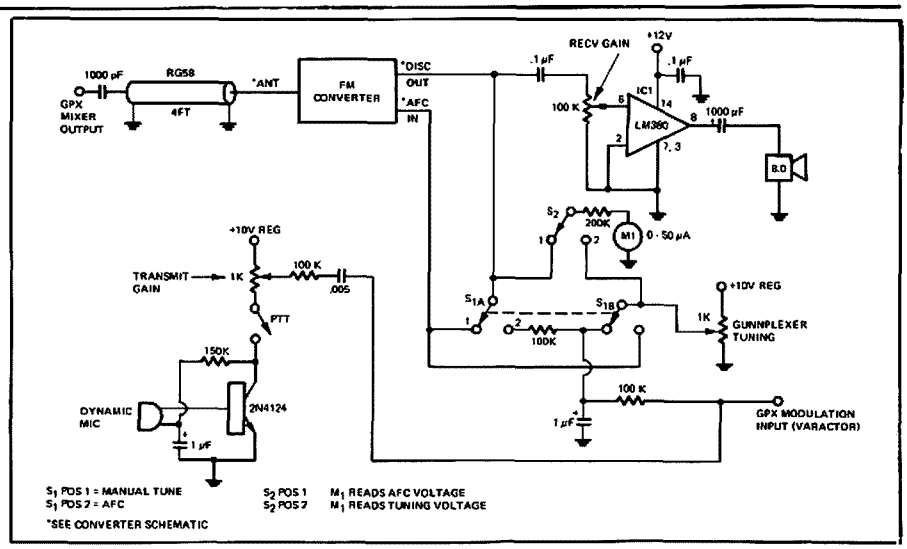


FIG. 1: Gunnplexer IF, Audio, AFC and Modulator (use one end of link only)

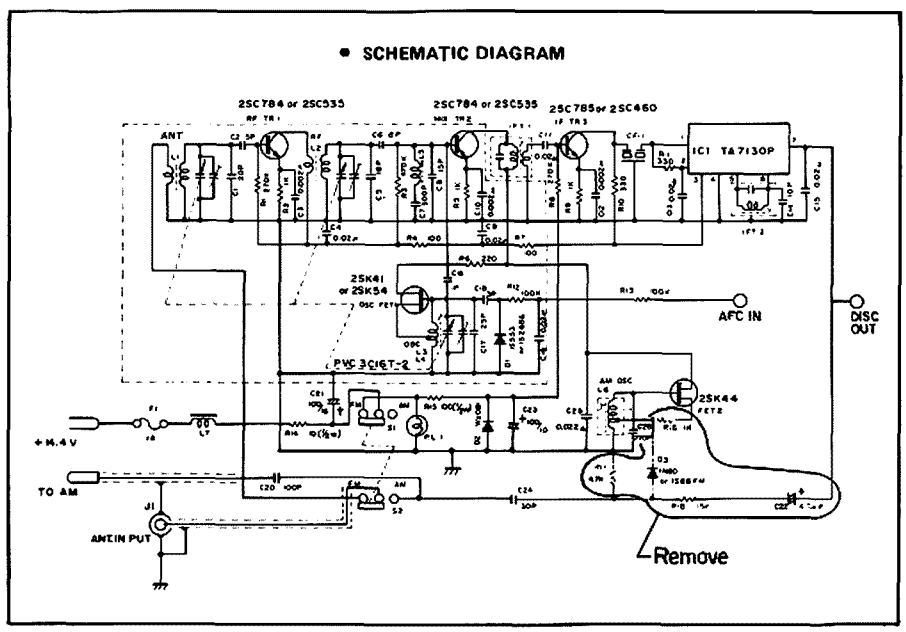


FIG. 4 (Above): Schematic Diagram

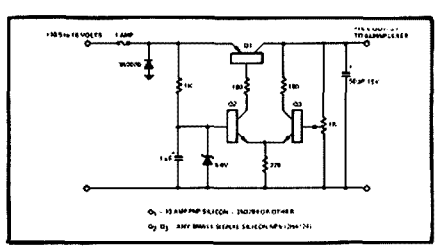
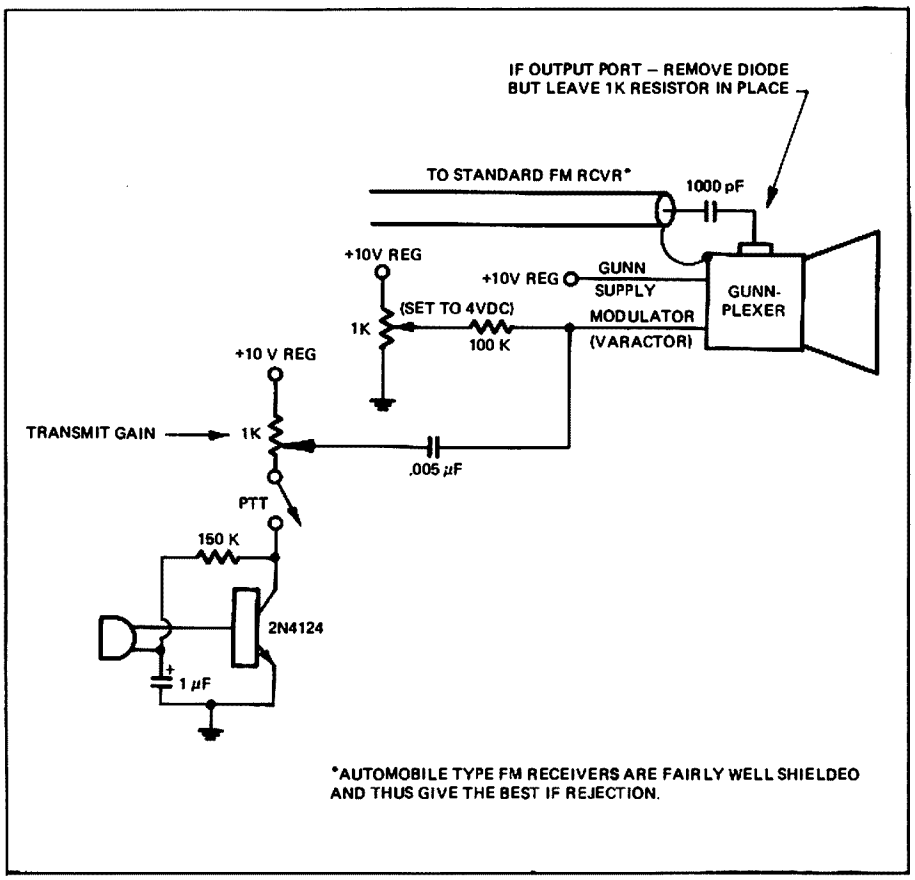


FIG. 3 (Left): 10 volt Regulator for Gunnplexer will hold Regulation down to 10.5 volts on input



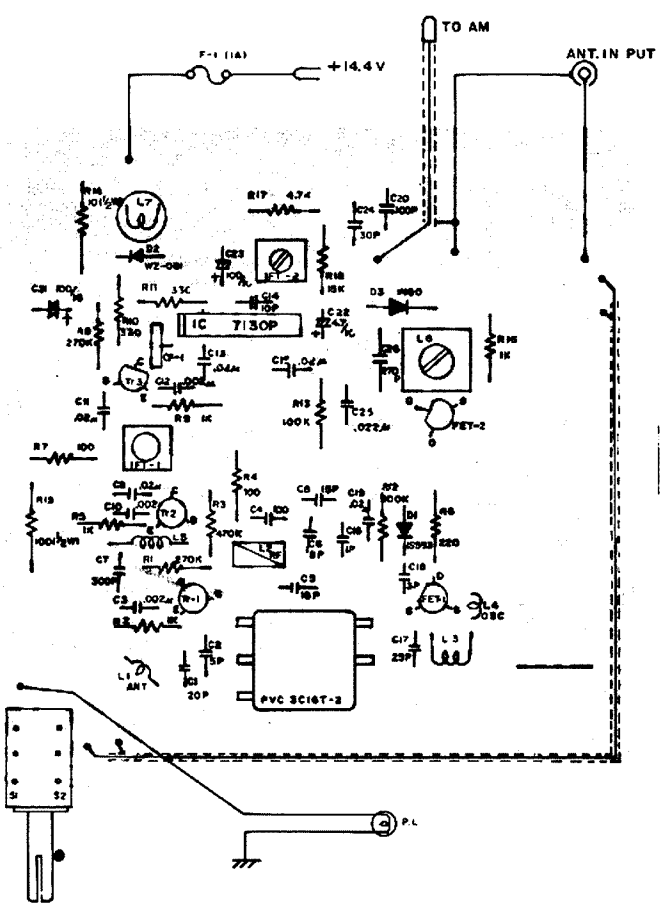


FIG. 2: (Above) Hook-up for other end of Simple Gunnpiexer Link (free running)

Left: Printed Circuit Board with Component Placing

TRY THIS

WITH THE TECHNICAL EDITORS

VOLTAGE REGULATOR NOISE SUPPRESSION

Bill Pearson VK2LH

Having fully suppressed the ignition system on my HQ I was still troubled by the rough noise caused by the vibrating voltage regulator. All my attempts to bypass with capacitors and shielded cable between alternator and regulator were only marginally successful. The noise was completely eliminated by winding 30 turns of about 18 SWG enamel wire on two small toroid cores and connecting them in series with the "D" and "F" leads at the terminals of the regulator.

The ignition system is fully shielded with braid and tinplate, but the toroids made a tremendous difference. ■

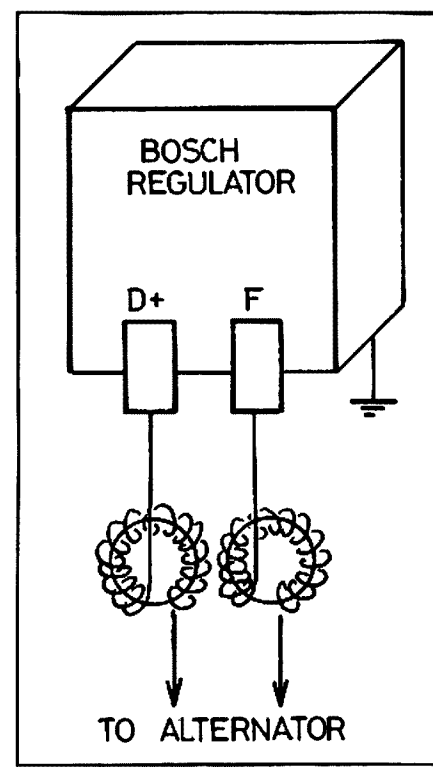


FIG. 1: Torroid Connections

QSP

10 GHz TESTS

A 10 GHz contact was made on 25th March 1978 between VK2AHC at Jervis Bay and VK2JJ at Stanwell Tops, a distance of 94 km. Signals were R5S5. Thus while no new records were made much valuable experience was gained. Various tests were also made on 3.3 GHz. — The Propagator, April 1978. ■

JOTA 1978

News from VK4ZNI, the National organiser, is that the Jamboree on the Air this year on 21st and 22nd October will be special as it is the 21st JOTA for Scouts and Guides. Make a note in your diary and contact your State Scout or Guide branch organizer. ■

IC-280, the Remotable 2meter Mobile

This microprocessor controlled unit provides memory and synthesis requirements for the most critical FM operator. The PLL control is located in the detachable front section of the radio, providing memory and frequency control for the main section, which is remotely mountable with an optional three meter, twenty-four conductor cable. With the use of the microprocessor, the **IC-280** can store three frequencies of your choice which are selected by a four position front panel switch. These frequencies are retained for as long as power is applied to the radio. Even when power is turned off at the front panel switch, the **IC-280** retains its memories. When power is completely removed from the radio the ± 600 KHz splits are still maintained.

Power is selectable high and low, with the low power level preset by an internal control. This internal control allows the low power to be anything from zero up to and including the full power output.

The main section of the **IC-280** uses the latest innovations in large signal handling FET front ends to provide excellent intermodulation character and good sensitivity at the same time. The IF filters are crystal monolithics in the first IF and ceramic in the second, providing narrow band capacity for today and tomorrow's crowded operating conditions. Modular PA construction with broad band tuning provides full rated power across the full 2 meter band (plus a little).

Bright, easy to read, large LED's and a new style meter grace the brushed aluminum "new look" front panel, and since the front of the **IC-280** is a separate control head, it is now possible to mount this radio in those small cars and tight spaces and to put the main unit out of sight and out of mind.

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IC-280 Specifications: ☐ Frequency Coverage: 143.90—148.11 MHz ☐ Operating Conditions: Temperature: −10°C to 60°C (14°F to 140°F), Duty Factor: continuous ☐ Frequency Stability: ±1.5 KHz ☐ Modulation Type: FM (F3) ☐ Antenna Impedance: 50 ohms unbalanced ☐ Power Requirement: DC 13.8V ±15% (negative ground) ☐ Current Drain: Transmitting: 2.5A Hi (10W), 1.2A Lo (1W), Receiving: 0.630A at max audio output, 0.450 at SQL ON with no signal ☐ Size: 58mm(h) x 156mm(w) x 228mm(d) ☐ Weight: approx. 2.2 Kg ☐ Power Output: 10W Hi, 1W Lo ☐ Modulation System: Phase ☐ Max. Frequency Deviation: ±5 KHz ☐ Spurious Output: more than 60 dB below carrier ☐ Microphone Impedance: 600 ohms dynamic or electret condenser type, such as the SM-2 ☐ Receiving System: Double superheterdyne ☐ Intermediate Frequency: 1st: 10.695 MHz, 2nd: 455 KHz ☐ Sensitivity: 1 uv at S +N/N at 30 dB or better, Noise suppression sensitivity 20 dB, 0.6 uv or less ☐ Selectivity: less than ±7.5 KHz at −6 dB, less than ±15 KHz at −60 dB ☐ Audio Output: More than 1.5W ☐ Audio Output Impedance: 8 ohms

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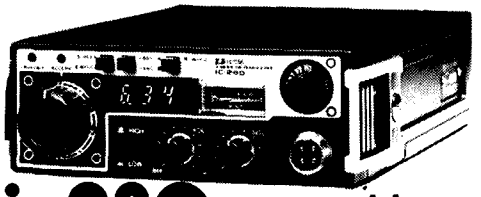

ic-280 rematable

The new REMOTABLE 2 METRE MOBILE from ICOM features microprocessor control with memory and synthesis control for the most critical FM operator. The PLL control is located in the detachable front section of the radio, providing memory and frequency control for the main sector, which is remotely mountable with an optional 3 metre 24 conductor cable. Bright, easy to read, large LEDs and a new style meter, the IC280 gives frequency coverage 144-148 MHz in 25 KHz steps. Since the front of the IC280 is a separate control head, it is now possible to mount this radio in those small cars and tight places and to put the main unit out of sight and out of mind. Introductory price $399 complete with mobile mounting bracket, mic and VICOM 90 day warranty.

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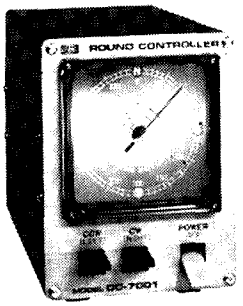

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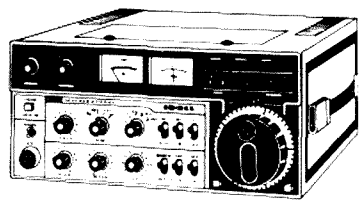

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TIMED MUTING

John Ingham VK5KG

The advent of 2 metre repeaters brought better quality communications between mobile stations, and the use of repeater channels as calling frequencies. Unfortunately these two do not mix very well.

WICEN provides a good example of this. On one hand it would be desirable to contact WICEN members by radio at any time, But on the other hand it is clearly impractical to leave a 2 metre FM receiver running for 24 hours a day in any ham shack or home. To do so would severely hamper operations on other bands. Not to mention possible divorce suits! What is needed, then, is a device which when attached to a receiver, will allow an *initial* call of a QSO to be heard, but which will mute the rest of the QSO. The circuit to be described is such a device based on several timers. In addition, short transmissions of a second or so duration (such as caused by "button pushers") are ignored.

In designing the device I decided to use CMOS ICs for simplicity and to avoid having to include a voltage regulator as would be the case if TTL were used. The particular 2 metre rig I use is an ICOM IC22S, but the concept is adaptable to any rig, particularly the more modern transceivers which feature a lamp which is lit upon receipt of a signal. More on possible adaptations later.

DESCRIPTION OF CIRCUIT

The indication of a signal being received is provided by zero volts on the "cold" side of the "signal received" lamp of the IC22S. The presence of 12 volts indicates absence of a signal. This line is fed to the outboard timed-mute unit via the multi-pin socket on the rear apron of the IC22S, whereupon it is integrated by an RC network. R1 is adjusted so that a signal must be present for at least a second before being accepted. (This is so as to ignore "button pushers".) The Schmitt-trigger squares up the leading and trailing edges of the logic signal so as to make it more acceptable to the following multivibators which require a sharp transition for correct operation.

In a nutshell, the operation of the device from here on can be summed up as follows: left to itself monostable "A" (which triggers on positive going transitions) would allow the first 5 or 6 seconds of *each* over to be heard, however monostable "B" (which triggers on negative going transitions) prevents "A" from working within 10 seconds of *loss* of a signal. Even at the end of those 10 seconds if a signal is present "A" will not retrigger because it requires a *transition* in order to work. Further, in the event of temporary loss of signal due to say QSB, monostable "B" is prevented from cutting short "A's" time out by the use of an inhibit from "A". This also retriggers "B" in the event that the duration of reception of the signal is less than the run time of "A".

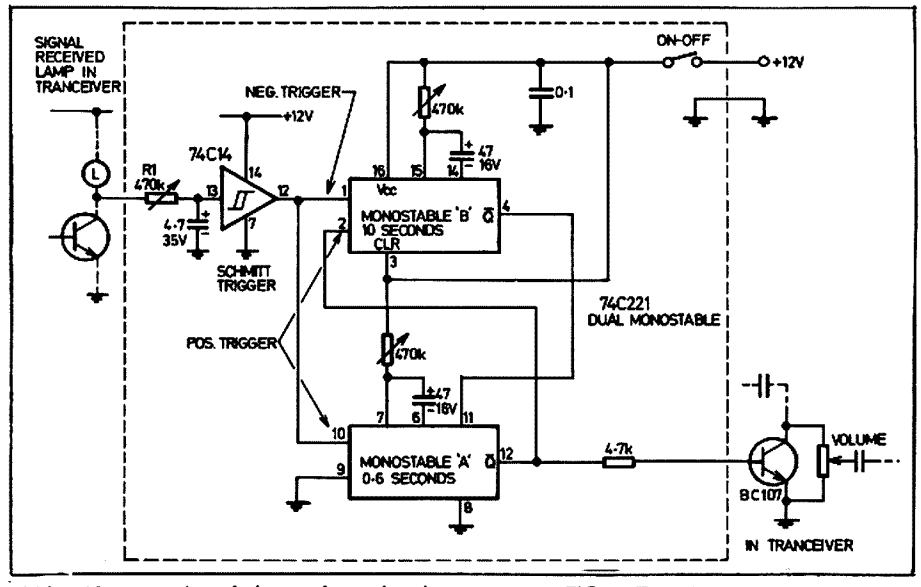


FIG. 1. Timed Mute Circuit.

The output of monostable "A" has the reverse of the polarity which might at first be expected, +12 volts means mute, zero volts means unmute. This is done deliberately so that by the simple expedient of switching off the power to the device, or by unplugging it, the transceiver continues to function as was originally intended.

The means of applying muting to the transceiver is, in the case of the IC22S, simplicity itself. ICOM have conveniently used decoupling capacitors on both the Input and output of the volume control. Thus without having to worry about upsetting DC levels an NPN transistor such as a BC107 can be connected across the volume control (emitter to ground) with the base connected via a current limiting resistor to the output of monostable "A". When the device is disconnected, switched off, or when monostable "A" is running, there is no forward bias on the transistor. It therefore is OFF and has no effect on the normal operation of the transceiver. However when muting is required the transistor is forward biased and in effect shorts out the audio at the volume control.

It is obviously impractical to give details of connections for every make of transceiver currently in use. However, several generalizations can be made. Any transceiver with a lamp to indicate receipt of signal can be used. If the polarity or sense of the logic so obtained is the reverse of that provided by the IC22S as described above, one of the spare Schmitt-triggers can be used to invert it. Those transceivers without capacitive coupling either side of the volume control could quite likely be modified accordingly. Where this is not possible the following might be tried. Those amateurs who do not wish to modify their rigs may also wish to try the following which, although it has not been tested, should work.

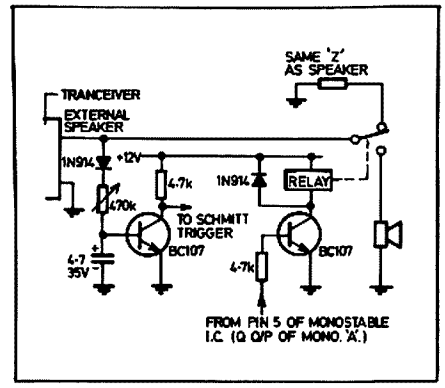


FIG. 2. Suggested Interface Circuit.

The transceiver audio output is connected to an external speaker via the contacts of a muting relay which is driven by monostable "A". A sample of this loudspeaker signal is rectified and used to trigger the time-mute device. (This signal, after rectification and integration-filtering, needs inverting and amplification before being presented to the Schmitt-trigger.)

Although this time-mute device has only been in existence a short while, the times given above are a result of experience and should be adhered to for the sake of uniformity. Unlike tone-encoded calling systems, this device allows amateurs without special equipment to call equipped stations. It also allows the receipt of CQ, Mayday and other type of general calls.

Reproduced from WIA SA Journal, April 1978. ■

A 144 MHz LINEAR AMPLIFIER

Greg Taylor VK7ZYT
94 Berriedale Road, Berriedale, 7011

A 144 MHz LINEAR AMPLIFIER

There are several fully solid state, low power SSB transceivers available commercially now and these have made a big impact on the activity on the VHF bands.

However, in most cases, the low power is a limtation to the serious DXer. This also applies to many home brew exciters and transverters with only 1-3W PEP output.

With this in mind an amplifier was designed for use with SSB drive from 1W to 5W PEP and 10W to 12W PEP depending on the configuration constructed.

The variations to the amplifier are as follows:—

(1) Driver stage only using a 2N5590 will deliver 10W with less than 1.5W PEP of drive.

(2) Driver stage only using a 2N5591 will deliver 20-22W with 4W of drive.

(3) Driver stage using 2N5591 and two 2N5591 in the output stage. This combination will deliver 40 to 45W with less than 2W of drive.

(4) If the drive available is only 1W, a 2N5590 can be used to drive two 2N5591s to about 40W output.

(5) The output stage only can be built using two 2N5591 and will deliver 50W with 10W to 12.5W of drive.

It is only necessary to construct the relevant section of the PCB.

A few years ago, I used 2N5591s in a broadband HF linear with very pleasing results. One aspect about using these transistors in linear service that became apparent is the lower output power obtainable with the output available in class C.

Although 30W or more can be obtained in class C service, only 20 to 25W can be obtained from a class AM linear when using a 2N5591, if intermodulation distortion products are to be kept low.

The use of a 2N5591 as a driver in this amplifier may seem extravagant, but this is necessary to keep intermodulation distortion to a minimum by allowing the driver to loaf along. The output stage can then be driven further into the gain compression region before the combined distortion of the two stages becomes excessive.

If the drive available is only 1W PEP and less than 40W PEP output is satisfactory, the 2N5590 is quite suitable as a driver.

POWER SUPPLY AND BIAS

Two important aspects that must be considered when designing and building transistor linear amplifiers are bias and supply regulation.

The power supply should be regulated to within 2 per cent for load variations from 1A to 10A. This includes the voltage drop due to leads, fuses, relay contacts and terminals.

To avoid these problem areas, I suggest:

(1) very short and heavy leads between the power supply and amplifier.

(2) a short circuit protected power supply Instead of line fuses; and

(3) Instead of switching the supply rail directly, switch the voltage regulator at a low current point, i.e., the base of the main pass transistor or driver.

BIAS

A very important subject.

There are two methods of biasing the RF power transistors.

(a) forward biased diodes;
(b) transistor regulated sources.

The transistor bias supply is preferred because of its lower output impedance and a wider degree of control over its operating parameters, however it is more complicated than the diode method and was considered unnecessary for an amplifier at this power level, where forward biased diodes can provide good results.

The diodes are in contact with the transistor package so that the bias voltage will approximately track the transistors' base-emitter voltage variation with temperature. The risk of thermal runaway in the transistors is thus minimised when the transistor junction temperature rises when dissipating heat with drive applied — linear amplifiers are typically 50 per cent efficient.

The second function of the bias network is to maintain the DC bias and hence the conduction angle of the base current — approximately 180° over the drive range.

If the bias network is poorly designed and has a high output resistance the DC bias voltage will be reduced by the reverse current flow in the network due to the rectification of the drive signal by the base/emitter junction. This results in a conduction angle of less than 180° and causes distortion to increase. If taken to extremes it is possible for a supposedly AB amplifier to shift into class C at or near full drive, if not sooner.

With simple bias networks such as the diode type a low impedance can only be achieved with high bias network current. In this amplifier each network passes approximately 200 mA.

Separate bias supplies are used for each output transistor to alleviate individual selection of the transistors for similar base turn-on characteristics. It is advisable to select transistors with the same batch number.

At this stage I would like to offer a simple test to those who already have transistor linear amplifiers. Measure the DC voltage on the base of the output transistor through a RFC or low value resistor (e.g. 1k). Apply drive and increase to full output, if the DC voltage (typically 0.5-0.6V) falls appreciably or reverses, the bias network is inadequate and should be revised.

Some variation is unavoidable with simple networks and must be accepted.

CONSTRUCTION NOTES

The amplifier is built on a double-sided fibreglass board to aid stability. The only active track on the underside of the board is used to link the supply rail between the two output transistors.

The PCB should be mounted approximately 2 mm away from the heat sink so that the transistor leads rest flat on the copper without bending. Before mounting the transistors the leads should be cut to 3/8 inch length, then the outer 1/8 inch bent up vertically, this enables easier installation and removal.

The 1000 pF chip capacitors are soldered to the PCB by first tinning the copper track then lying the chip capacitor on the tinned area. Apply the soldering iron to the top side of the capacitor until the solder melts underneath.

The links between both sides of the PCB are short lengths of No. 16 copper wire soldered to the copper tracks.

The three bias diodes are placed across the emitter leads of the transistors with some silicon grease or heat conductive glue between them and the transistor package.

All capacitors should be soldered to the PCB with leads as short as possible and take care not to overheat them when soldering.

Transistors are more prone to thermal instability and failure when operated In a linear mode than in class C. Therefore the heatsink should have a large effective area and should have good ventilation.

TRANSISTOR TYPES

The 2N5590 and 2N5591 transistors have been used in this amplifier as they are readily available and inexpensive. Also they have been proven to give good performance as linear amplifiers for amateur use.

Although it has not been possible to

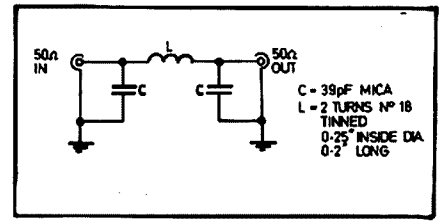
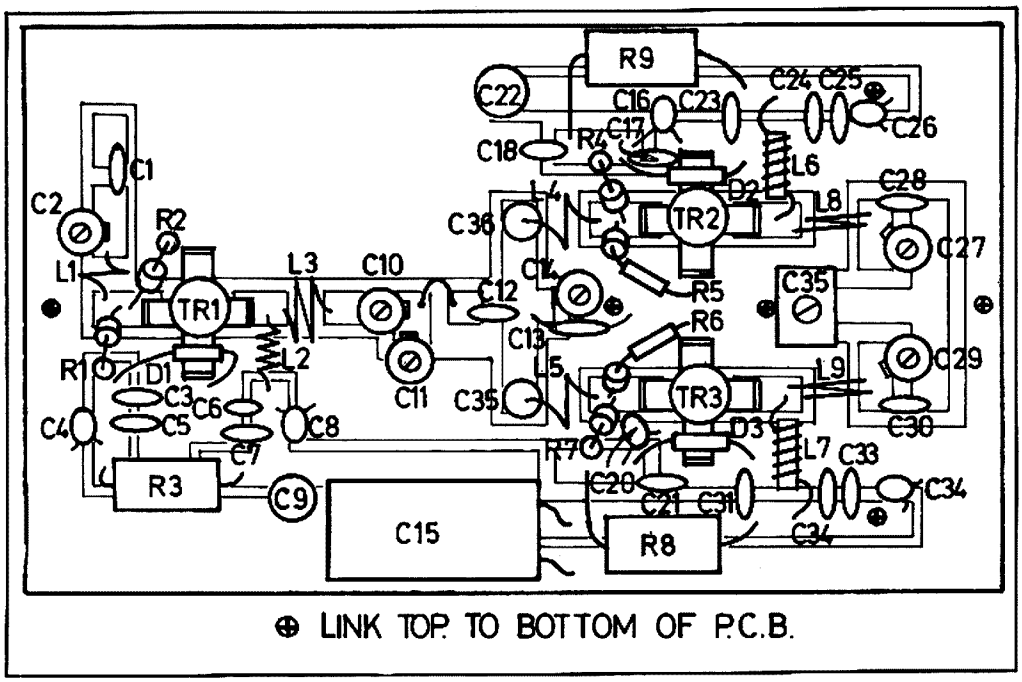
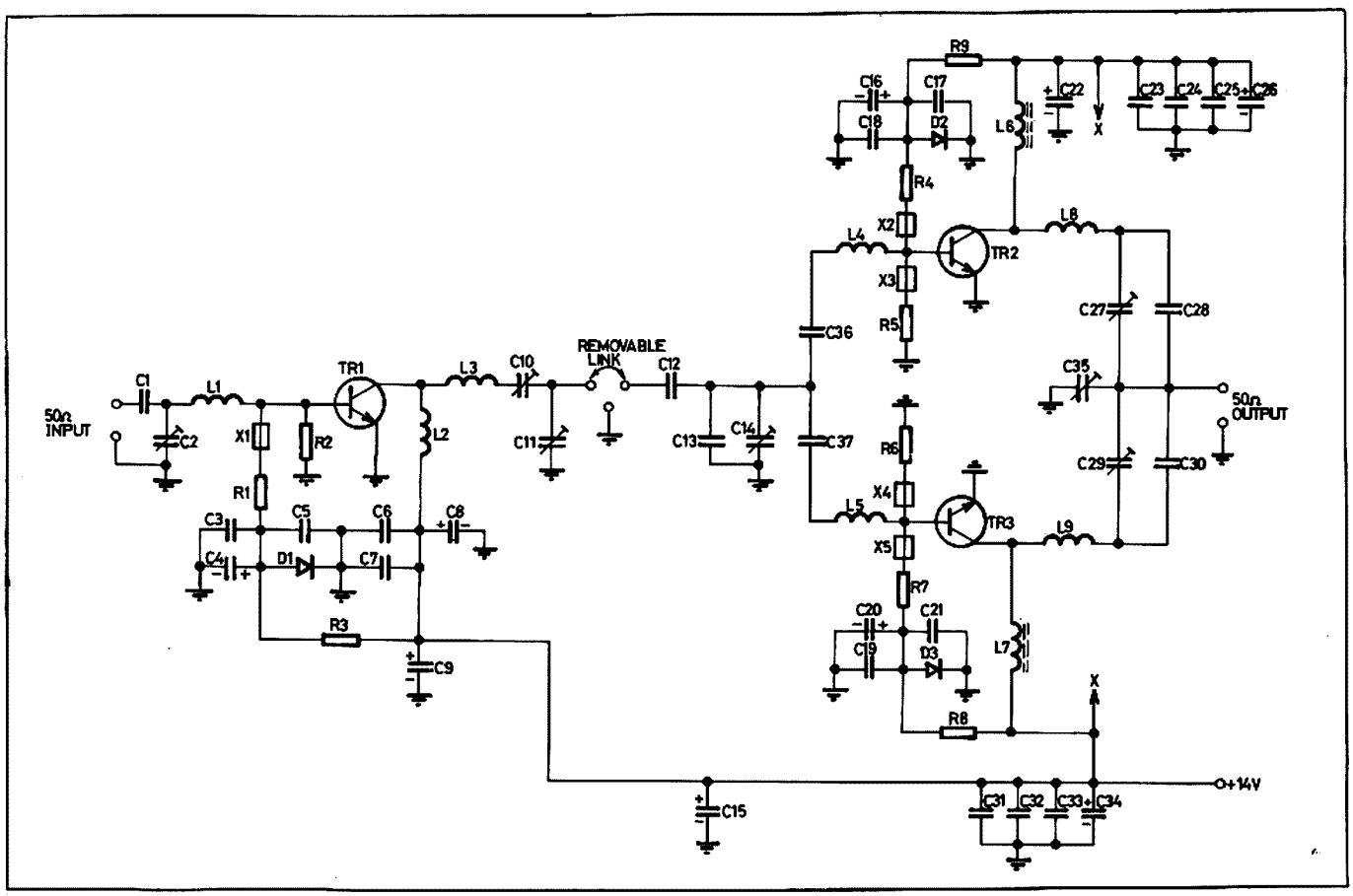


FIG. 1. Harmonic Fliter.



LEFT:
FIGURE 2.
PCB Component Layout (actual size).

BELOW:
FIGURE 4.
144 MHz Linear Amplifier Circuit.



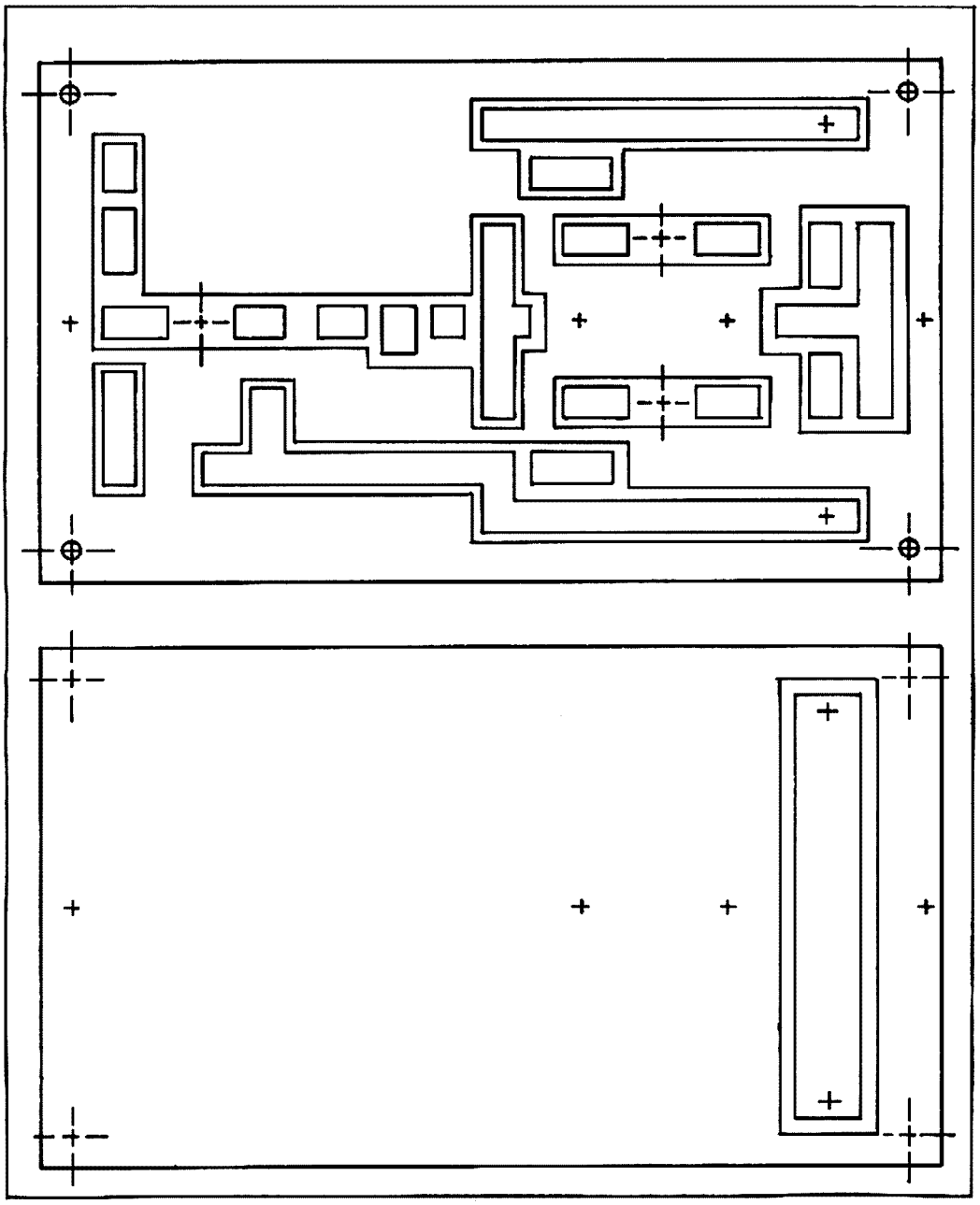


FIGURE 3
Double-Sided Printed Circuit Board Layout (actual size).

measure the intermodulation distortion of this amplifier, other amplifiers have exhibited i.m.d. of —25 dB at similar power levels using 2N5591s.

Other transistors that might be suitable are:—

- instead of the 2N5590 — B12-12, BLY88A, 2N6081.
- instead of the 2N5591 — B25-12, BLY89A, 2N6083.

TUNE-UP

TO ADJUST BIAS

(1) Terminate the amplifier input and output with 50 ohm.

(2) Disconnect the supply end of R3, R8 and R9.

(3) Apply 14.5V DC to the amplifier via a 250 mA meter.

(4) Connect R3 to the 14.5V supply before the above current meter, i.e. do not allow the current through R3 to indicate on the current meter.

(5) Adjust the value of R3 to give 100 mA to 120 mA of IC. Disconnect the supply from R3.

(6) Repeat steps (4) and (5) with R8 and then R9. Each time leave the resistor disconnected from the supply after selecting the correct value. The IC of TR2 and TR3 should be set at equal values between 100 and 120 mA.

(7) Disconnect the supply and solder the three bias resistors in place. Keep them away from the PCB and other components as they become very hot.

TUNING THE DRIVER STAGE

(1) Connect the output of the driver to a power meter. If possible, keep a load on the output stage. This stage is quite stable without a load, but it pays to be careful.

(2) Connect the output of the exciter to the driver input via an SWR bridge or directional power meter.

(3) Apply power to the amplifier.

(4) Apply CW drive to the driver at 0.5W to 1W. Start with C2, C10 and C11 at half mesh.

(5) Adjust C10 and C11 for maximum output power.

(6) Adjust C2 for minimum SWR. It should be possible to achieve better than 1.05 : 1. Minimum SWR should correspond to maximum output power.

(7) Increase drive to a maximum of 2W and repeat the adjustment of C10, C11 and C2. If necessary, adjust the spacing of the turns of L3 to obtain maximum output 10 to 12W.

TUNING OF OUTPUT STAGE

(1) Remove the load from the driver and connect to the output of the final stage.

(2) Join the links between the driver and final stage.

(3) Set C14, C27, C29 and C35 to half mesh.

(4) Reduce the output from the exciter to 0.5W.

(5) Apply drive and adjust C27, C29 and C35 for maximum output power. Then adjust C14 for maximum output.

(6) Repeat the adjustment of C27, C29, C35 and C14 for maximum output.

(7) Increase drive to 1W and repeat step (6).

(8) Increase drive to about 2W and repeat step (6). This should result in 40W to to 45W output power.

- DO NOT RE-ADJUST C2, C10 OR C11.
- DO NOT ATTEMPT TO TUNE THE WHOLE AMPLIFIER IN ONE GO.

If the drive available from the exciter exceeds 2 watts PEP insert small attenuators between the exciter and driver stage.

Use standard 50 ohm atten. networks and use resistors with power ratings consistent with the power being dissipated by the attenuator. Alternatively use lengths of lossy coax.

If only the driver stage has been built maximum drive for the 2N5590 is 2W PEP or 4W PEP for the 2N5591.

OPERATION

It is advisable to use a harmonic filter (Fig. 1) after the amplifier to suppress the second and higher order harmonics of the 144 MHz input.

Ensure that the load presented to the amplifier is 50 ohm as any mismatch will result in greater dissipation in the transistors and higher i.m.d.

The ability of these transistors to withstand high SWR at full output is not certain when operated in the linear mode.

I hope this article provides many readers with the necessary circuits or ideas to achieve more 2m DX.

PARTS LIST

TR1 — 2N5591 or 2N5590.
TR2, TR3 — 2N5591.
D, D2, D3 — EM402, etc.
X_2, X_1, X_3 X_4 X_5 — Ferrite head, 5 mm x 3.5 mm.
C1 — 19 pF disc ceramic NPO 100V.
C3, C6, C19, C18, C23, C24, C31, C32 — 1000 pF disc ceramic.
C5, C7, C21, C17, C25, C33 — 0.01 uF disc ceramic.
C4, C8, C20, C16, C26, C34 — 4.7 uF Tant. capacitor.
C12 — 22 pF disc ceramic NPO 100V.
C28, C30 — 68 pF disc ceramic NPO 500V.
C13 — 56 pF mica unencapsulated.
C2, C10, C11, C14, C27, C29 — 5-65 pF Philips 808 series.
C35 — 60 pF Trimmer Philips 809 series.
C9, C22 — 100 uF 16V tubular PCB mount.
C15 — 1000 uF 16V tubular PCB mount.
C26, C37 — 1000 pF chip ceramic cap.
R2 — 22 ohm ¼W or ½W.
R1 — 3.3 ohm ¼W or ½W.
R3, R8, R9 — select on test 5W wire wound. Start at 100 ohm (see text).
R4, R7 — 3.9 ohm ¼W or ½W.
R5, R6 — 27 ohm ¼W or ½W.
L1 — 1 turn No. 20 tinned copper ¼ in. ID.
L2 — 3 turns No. 20 tinned copper 1/8 in. ID, ¼ in. long.
L3 — 2 turns No. 18 tinned copper 3/8 in. ID, ¼ in. long.
L4, L5 — 1 turn No. 18 tinned copper 3/8 in. ID, with 3/16 in. leads.
L6, L7 — 6 turns No. 18 tinned copper wound over length of neosid F29s.
L8, L9 — 1 turn No. 16 tinned copper 3/8 in. ID, with ¼ in. leads.

ADDENDUM

The amplifier was tested by Steve VK7SC with an IC202 driver and 13.5V supply. The intermod. products are —24 to —26 dB down (3rd order) and —34 dB (5th order) at an output power of 40W PEP.

The IC202 had 3rd order products of —30 dB at this drive level.

A six metre version of the driver only has been built and tested and is now in use at my QTH.

The new components for use with a 2N5590 are as follows:—

C1 — 150 pF styro plus 5-65 pF trimmer.
C2 — 270 pF styro plus 5-65 pF trimmer.
L1 — 2 turns No. 18 tinned, ¼ in. diam.
R1 — 3.3 ohm ¼W.
X_1 — 2 Ferrite beads.
R2 — 22 ohm ¼W.
R3 — as for 144 MHz amp.
C3, C4, C5, C6, C7, C8 C9 — as per 144 MHz amp.
L2 — 18 turns No. 26 enam. wire on 680 ohm ½W resistor.
L3 — 5 turns No. 18 tinned, spaced one wire diam., ¼ in. diam.
C10 — 150 pF styro plus 5-65 pF trimmer.
C11 — 100 pF styro plus 5-65 pF trimmer.
D1 — EM402, etc.

The bias resistor R3 should be adjusted to give IC = 25 mA with no drive.

Tune up as for the 144 MHz amplifier.

The 52 MHz version has considerable gain and only requires very low drive.

The gain is typically 15 to 16 dB and only requires about 200 mW for 8W PEP output.

The amplifier was tested on a Marconi TF2370 spectrum analyser and gave the following results:—

At 8W PEP output —
3rd order intermod. — 24 dB.
5th order intermod. — 34 dB.

The driving signal had a 3rd order intermod. of only — 28 dB.

This amplifier is suitable for following a low power transverter only. ■

TRY THIS

WITH THE TECHNICAL EDITORS

RTTY MOTOR AUTO-START

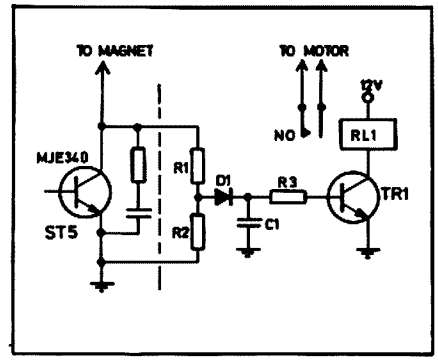
Here is a cheap and reliable motor autostart to fit on the ST5. It features delayed start to stop noise starting the motor when monitoring a mark condition, i.e. monitoring a commercial teleprinter station, and a run on period when the remote station stops sending but maintains a mark carrier.

The circuit diagram is shown below and typical values shown in the table. These values are those used in my motor autostart but may need altering if you use a different transistor. I used an obscure type which looked like it would do the job! The transistor should be silicon as the leakage is important. With these values my motor will start on the second character and stops after 15 seconds. Noise and dips in the signal, if of short duration, do not start the motor.

If used with an Auto-start/Anti-space system it will allow you to monitor a VHF channel unattended.

Barry VK6IF.

(Reproduced from ARTG RTTY Newsletter No. 8, May 1978.) ■



RTTY Auto Start Circuit.

R1 10K ½ watt.
R2 1K 1 watt.
R3 12K ¼ watt.
C1 220 uF.
D1 1N914 or equivalent.
TR1 Any silicon transistor of adequate ratings.
RL1 6-12 volt relay with heavy contacts or commoned contacts.

EQUIPMENT REVIEW—

THE YAESU FT-901DM HF TRANSCEIVER

Ron Fisher VK3OM

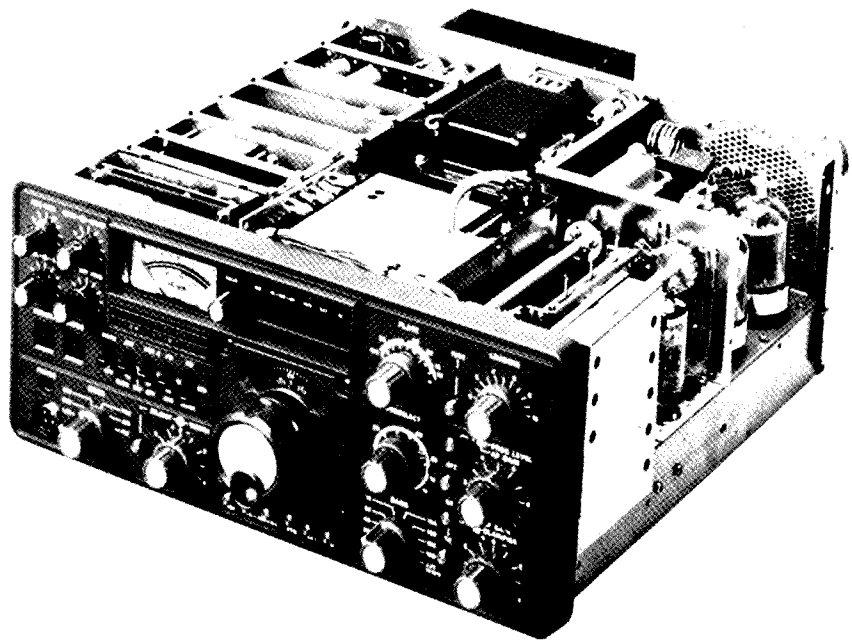
When Mr. Fred Bail, of Bail Electronics Services rang and suggested that I might like to try out the new Yaesu FT-901DM transceiver, I was delighted to do so. The 901 has been the subject of quite extensive advertising and it has been billed as a COMPETITION - GRADE HF Transceiver. Whether this refers to competition with other transceiver manufacturers or competition in the form of amateur contests is not quite clear. However, it seems that it could qualify in both areas. Well, just what does the FT-901DM do that other HF transceivers don't do? Perhaps this depends on your particular requirements, but it is clear that the Yaesu design team must have spent a long time and did a lot of head scratching to think up all the features that have gone into this transceiver. It would in fact be very hard to think of any other feature that could have been added.

Let's look at the list. Digital frequency readout with one hundred hertz resolution, Yaesu's new memory frequency control, Curtis electronic keyer, rejection tuning, variable IF bandwidth tuning, audio peak frequency tuning, RF processing, a squelch system on the transmit audio to eliminate background noise between words, which Yaesu term their AMGC system. In addition to all these there is provision to transmit and receive FM presumably for use on VHF bands with external transverters. A squelch control is included for FM receive.

For the first time as far as I can remember, Yaesu have decided to use 6146s In the transmitter output stage. They also employ negative RF feedback over the final stages to reduce distortion products. All of the usual Yaesu features are of course still there. Ten to one-sixty coverage, selectable AGC, VOX, noise blanker, AC or 12 volt DC operation.

Let's now look a little more closely at the overall design of the FT-901. It bears a similarity with several earlier Yaesu transceivers. Perhaps at first glance it could be called an updated FT-101, and there is no doubt that the 101 must have influenced the designers to quite a large extent. When we look inside, though, there is a resemblance to the FT-301 series.

While we normally don't make mention of competing equipment in these reviews, I am sure that the Yaesu Co. won't mind me saying that the overall appearance is very reminiscent of the Kenwood TS-820. Perhaps the undoubted success of that transceiver reflects in the 901. Whatever, the FT-901DM is a very attractive rig. The new style dial is now fully illuminated with two rotating scales, the larger of which is the kilohertz indicator, and the smaller or inner the 100 kilohertz indicator. The rear illumination is a soft blue which is very easy on the eyes over a long



period of operation. "S" meter illumination is also excellent, and is the first translucent rear lit type that Yaesu have used.

A look at the circuit reveals that a great deal of effort has been put into producing a cleaner received signal. A single conversion scheme has now replaced the old double conversion of the FT-101 and the IF used is 8.9875 kHz. The receiver front end uses the usual 3SK40M dual gate MOSFET as an RF stage feeding a source follower stage with two FETs in parallel. The first mixer is balanced with two FETs. In fact a great deal of use has been made of balanced stages throughout circuitry. The IF signal receives some amplification through two parallel connected FETs, and is then fed through a ±10 kHz monolithic filter before going Into the switchable filter and the noise blanker. This assures low cross modulation when the blanker is in use. Three filters can be specified in the 901 with the 2.4 kHz SSB unit supplied as standard. A 600 Hz filter for CW and a 6 kHz filter for AM are both optional extras. Output to the FM IF strip Is taken out before the switchable filters and taken off to a special FM board which ocntalns both the transmit and receive facilities for that mode. The bandwidth control has some very interesting circuitry behind it. The IF signal at 8.9875 kHz is converted to a frequency of 10.76 MHz, where It passes through another filter. However, as the heterodyning crystal oscillator frequency for this conversion Is controlled by the bandwidth setting; the actual bandpass can be varied in relation to the normal first SSB filter.

It should be noted that in both the AM and FM modes the bandwidth control is not available. The rejection tuning control operates in a similar way to the FT-301 transceiver set-up. The series resonant frequency of a crystal at the IF frequency Is tuned across the bandpass by means of a varactor diode. In the review of the FT 301D we commented on the simplicity of this arrangement and also its effectiveness.

The receive audio section is worth looking at. It Incorporates the APF circuitry which used an MC3403P op. amp. as a selective amplifier in a very effective and yet simple circuit. The peak frequency is variable between 400 and 900 Hz.

The digital frequency display on the FT-901DM is controlled by the VFO frequency only and hence requires to be recalibrated when bands or modes are changed. It seems a pity that Yaesu didn't go the whole way and provide mixing for all internal oscillators to give accurate readout. This does not infer that accurate readout cannot be obtained, It can, but the display must be calibrated against the transceiver calibrator to be sure. While on the subject of calibration, it is high time that Yaesu devised a means of changing modes without changing frequency and hence the need to recalibrate. With a transceiver of this complexity there is just no excuse for the lack of this feature.

At long last Japanese designers have discovered that RF inverse feedback produces cleaner signals — a very necessary

thing on today's crowded bands. The FT-901DM is in fact the second Japanese transceiver to incorporate RF feedback but when we consider that the American Collins Co. introduced this back in the late 1950s we wonder why it took so long. Yaesu claim 6 dB of feedback and state their 3rd order distortion products at better than 31 dB below rated output. As this would bring the distortion up to about —25 dB without the feedback, one wonders how the FT-101 and other transceivers produced their "better than —30 dB" specs.

Be that as it may, the 901 does put out a very clean signal. The difference under local strong signal conditions is very noticeable.

The 901 uses the excellent permeability tuning system well perfected in the 101 d 301 series. Combined with the other features mentioned earlier, this helps yet in to contribute to a clean signal on both transmit and receive. The new Yaesu memory is an interesting albeit complicated system. It is a complete synthesizer locked to the normal transceiver VFO. When the memory button is pushed, the VFO counter is latched and the VCO is locked on to that frequency. When recall is required, the output from the VCO is fed into the system in place of the normal VFO.

THE FT-901DM ON THE AIR

Basic operation of the 901 is soon mastered, however it takes time to become acquainted with all the accessories. The new tuning dial is smooth and a pleasure to use. The front finger hole on the tuning knob makes it easy to spin from one end of the range to the other. From personal preference I still like the old protruding spinner that we got used to on most of the older design Yaesu gear, however the new type does look smoother. With both the power and heater switches on, the transmitter can be put straight into the tune mode by using Yaesu's new ten second automatic tune up device. Just push the tune button, the red LED indicator comes up, the transmitter goes into TUNE and you have ten seconds to complete the operation. This feature might help the final tubes live a bit longer when used by some of those perpetual "Tuner-uppers" that we hear so often on the bands. Received audio quality sounded rather restricted and no amount of playing with the bandwidth control seemed to put this right. In fairness, though, it must be said that another member of our technical staff found the audio response to his liking, particularly when using the headphone output. The operation of the bandwidth control was not quite as expected. Having been brought up on the old style communications receivers, I expected the selectivity to increase in a symmetrical manner. This does not happen. Instead one can push the response either higher or lower and so achieve either a lopping off of high or low frequency audio but not both. It is now clear to see why Yaesu offer a CW filter as an optional extra.

The bandwidth control is useful in eliminating interference to some extent, useful for balancing up poor transmitted quality from other stations, but the reject control is by far the more useful of the two. AGC action is smooth in either the fast or slow position — attack time is fast with no hint of any distortion on strong signals.

On the transmit side, audio quality reports were excellent and the RF processor proved to be effective although a little hard to adjust first off. Amateurs who don't possess a monitor scope should take their time and get plenty of reports from locals. Better perhaps, borrow a scope.

Back to receive, the clarifier operates on either transmit or receive or both. Quite a handy feature if you want to shift onto the received frequency when offset.

Not being an ardent CW man I can only say that the built-in Keyer worked very smoothly. The only external attachment needed is a paddle. The keying speed can be adjusted by a front panel control. With the adjustable audio filter, rejection filter and keyer, the FT-901DM makes a superb CW rig. Here at last is a transceiver that has given some thought to the keen CW operator.

The AMGC or automatic microphone gain control, could be useful in reducing unwanted household noises particularly when the processor is in use. It works by providing a threshold level on the microphone amplifier. Input via the microphone below normal close talking conditions just does not come through. Handy if you have noisy children.

The memory system proved a useful feature. While not quite as handy as an external VFO, it does enable split frequency operation. It is possible to transmit on a fixed channel and the receive elsewhere. Very useful if a DXpedition is listening up 10 kHz or you like to work the "Ws" on 40 metres. As we didn't have a two metre transverter available, we were not able to fully check out the FM mode. It does appear to be an economical way to get on to two metres with all modes.

One point mentioned in the FT-901 advertising that needs comment is *Yaesu's unique slug tuning system provides tor the possibility of expanded amateur bands at WARC 79.* Perhaps so, but the band switch on the 901 does not have an auxiliary position. So where does the new band fit in?

INSTRUCTION BOOK

The FT-901DM instruction book is in the usual excellent Yaesu manner. Clear operating instructions explain every control in full detail. The circuit description section will enable the new owner to fully understand just how his set operates. A full schematic and block diagram is included, but no circuit board layouts are provided. All points that might need adjustment are clearly indicated.

CONCLUSIONS

While we could not say that the FT-901DM is a "State of the art design", it does offer a startling array of facilities that would be hard to duplicate in any other available transceiver. While the total package is fairly expensive, the 901 is available, less some of these features, at of course a lower price. For the CW man it offers perhaps the best performance package available anywhere and for the SSB man a smooth operating set with just about every convenience he will ever need. Our FT-901 was loaned by Ball Electronics Services, to whom all enquiries on price and delivery should be directed. ■

A SECRETARY'S CONSOLATION

If a secretary writes a letter, it is too long.
If he sends a postcard, It's too short.
If he issues a bulletin, he's a spendthrift.
If he attends a committee meeting, he's butting in.
If he stays away, he's a shirket.
If he offers a suggestion, he's a "know all".
If he says nothing, he is useless.
If the attendance at the meeting is slack, he should have called the members up.
If he calls them up, he's a pest.
If he asks a member for his subscription, he is insulting.
If he doesn't, he is lazy.
If the meeting is a big success, the committee gets the praise.
If it is a failure, the secretary is to blame.
If he asks for advice, he is incompetent.
If he does not, he is swollen headed.
Ashes to ashes, dust to dust,
If the others won't do it, the secretary must.

Anon.—Submitted by Ron Jardine VK3PR. ■

QSP

HOME TRUTH

"It is operating and technical investigation, not regulatory hassling, which are the essence of amateur radio. Were it not for the sheer enjoyment we amateurs derive from the former, we wouldn't concern ourselves with the latter." From QST editorial, Feb. '78.

OX ITEMS

From Feb. '78 QST it is learned that US maritime mobiles must always observe US phone band limitations even when they are outside Region 2. Also that any amateur or club in Quebec province may substitute the prefix VZ for VE to 12.10.1978 inclusive to celebrate Radio Canada TV's 25th anniversary.

LONG DELAYED ECHOES

LDEs have been recorded over a period of many years on HF but nobody has come up with any acceptable answers. A recent impetus was the observation of LDEs by 0Z9CR during EME tests on 7.7.1974 at a time when many solar flares were observed. The frequency of observations however was 1296 MHz and the echoes some two seconds after the return EME signals. This alone has triggered much speculation as set out in two articles in Feb. '78 QST. ■

SOME MODIFICATIONS TO THE VK2BGZ FT101 DIGITAL READOUT

Noel Lavelle VK3ABH
4 Wembley Court, Forest Hill 3131

As it appeared in AR for January 1978, Keith Gooley's Digital Readout is line, but, as is usual, when I build something designed by someone else, I modified it a little.

I don't question Keith's statement that no birdies are present when using his filter, but looking at the input (not connected to the FT101) a considerable amount of pulse noise was present. If the input impedance of the readout was to be reduced sufficiently to eradicate these pulses it would present a quite considerable load to the VFO line.

With the changes shown to the filter (Fig. 1), the input impedance is high and even with the readout input open circuit no significant pulse noise is present. With the input terminated in about 3000 pF, like the VFO line in the FT101, any pulse noise present is further reduced by a ratio of about 140 : 1 and no pulse noise is detectable. The high input impedance imposes no loading on the VFO line.

I prefer not to use rotary switches when I can avoid them, and felt that the megahertz readout didn't justify setting another rotary switch when changing bands. Keith's method of switching ensures that you will be presented with the correct frequency for the usual mode of operation on speech on any band, but accurate frequency readings are limited to the preselected mode. Use of a different mode on any band would require some mental effort to arrive at the correct frequency. CW readings would, of course, be inaccurate on all bands for which the preselected mode was other than USB.

In my case (Fig. 2) USB, LSB and AM are available on any band at the flick of a toggle switch, and the band start of 0 or 500 kHz is available at the flick of another toggle switch. The price you pay is lack of megahertz display and the necessity of ensuring that both readout and transceiver are in the same mode to obtain accurate frequency readings.

I couldn't find a miniature three position toggle switch which made connection in the centre position (all seemed to be centre — off), so I used a logical NAND gate to provide the required ground for the centre (AM) position. The NAND gate is made up of a logical AND gate driving a saturated transistor as the current is in excess of that which a Cmos NAND gate can sink safely.

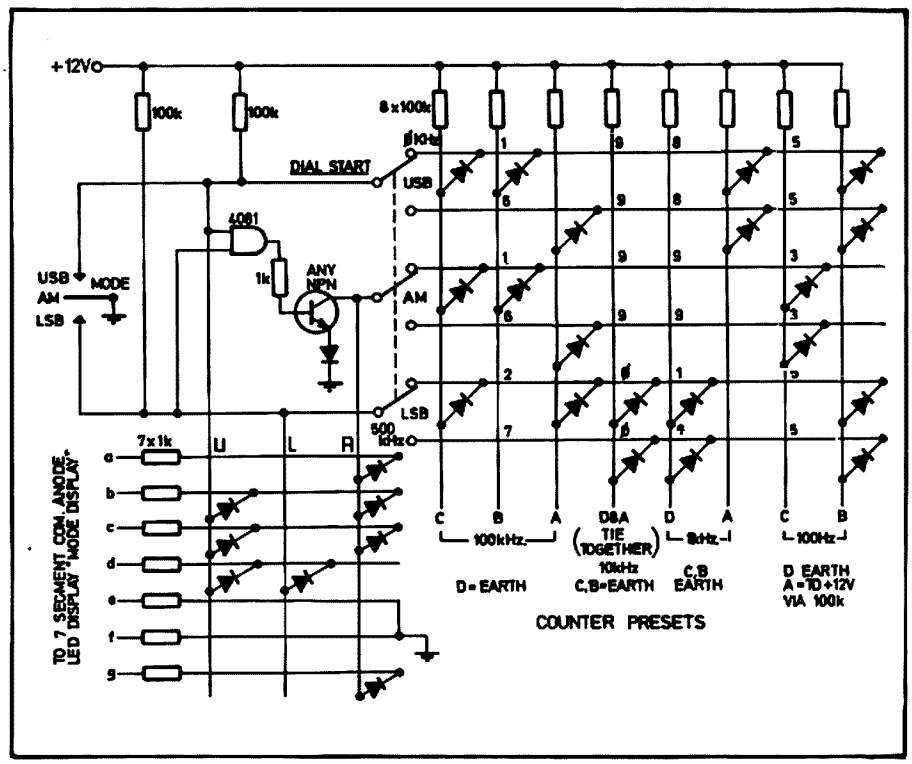


FIGURE 2: Encoding matrix.

The binary encoding matrix for presetting the counters shown in Fig. for an FT101B.

The displayed frequency makes it obvious whether one has selected the correct band start (0 or 500 kHz). But I decided that it was worthwhile to precede the frequency display with "U", "L" or "A" as a reminder of the mode for which the display was an accurate presentation (i.e. an upper sideband signal on 14198.5 kHz would be displayed as "U198.5"). ■

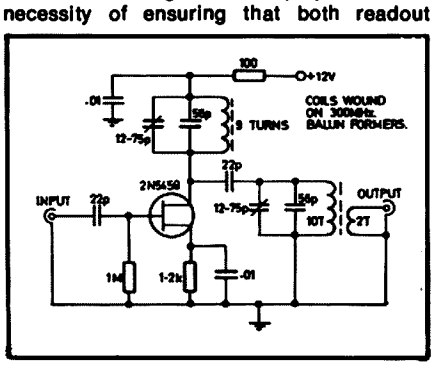


FIGURE 1: Input Filter.

THE HAM OPERATOR

My Dad operates a ham radio,
He is a very interesting person,
He has fun with it, talks to it, eats with it and sleeps with it,
I don't know what else but I have my suspicions,
Ham Operators usually treat their rig like a trainer breaking in a colt or training hunting birds.
He spends most of his time with it,
Yes, we see him sometimes,
Yes, we see him go past the table to the back door,
I suppose it's all right, he is a technician, but what Mum gets upset about is that I'm interested in that stuff too, but my Dad's a good Dad and I love him.

Chris

(14-year-old daughter of Wilf VK4ZNZ).

—From S.A. Journal, June 1978. ■

AMATEUR RADIO REPORTS ON COMMERCIAL RADIO STATION

Sam Voron VK2BVS
2 Griffith Ave., East Roseville, N.S.W. 2069

**"YOU'RE TUNED TO 2GB IN SYDNEY 870 kHz
— NOW FOR TONIGHT'S REPORT FOR AMATEUR RADIO ENTHUSIASTS"**

A guide to help you get some amateur radio public relations going within your community via your local disco radio station.

A problem with many PR exercises, whether they be an article in the press, an outdoor demo of amateur gear or what have you — is that they lack regularity and thus some form of continuity which is important if the aim of one's PR is either to —

(a) Let the general public find out what amateur radio is and what makes it tick, or

(b) If one hopes to encourage within individuals (newcomers) a growing interest towards one day becoming radio amateurs.

Here are details of a project which has been running in Sydney for some weeks now which could help you in organising amateur PR via your local radio station.

1. Your approach will initially make or break your project — So let's look at the philosophy involved.

(A) **What is in it for amateur radio?** The idea of broadcasting regular amateur propagation reports is of direct interest to amateurs who don't want to miss interesting activities which may be occurring on certain bands at certain times. At the same time this information is excellent amateur PR since the general public are getting to know more and more of what amateurs are doing.

(B) **What is in it for the radio station?** By providing nightly on-air announcements the station can expect to attract a whole group of new listeners who will identify that station as being their station. The station can expect that these new listeners will acquire an identification with and an interest in its programmes as a consequence of this mutual involvement.

2. Tailor your project to the strategy the station wishes to employ and ensure that not only the aims of your project but also the aims of the station are compatible with the way you design your project.

In the case of the 2GB project the strategy used was to design a programme format which would not cause the station to offend or lose any of its existing listeners, and at the same time construct a framework whereby new listeners could be gained. Both aims were achieved by —

(a) Keeping all radio reports to items which were highly descriptive, interesting and entertaining in character.

Disc jockey Chris Curtis goes into action after the weather report over 2GB, giving his listeners a taste of Amateur Radio as he describes the state of the bands 3 minutes past the hour starting from midnight.

(b) Avoiding technical jargon.

(c) Employing the period from midnight till 5 a.m. which the station could make available for such a new project (with possibility of other times available if the project went well and the station's time commitments allowed).

DESIGNING YOUR PROGRAMME FORMAT

The 2GB project involves —

(1) Hourly announcements at 3 minutes past the hour (just after the weather report), commencing from midnight.

(2) The format used was "Today's radio report for amateur radio enthusiasts comes from John VK2XYZ of Lindfield and he reports that . . . and we will have another amateur radio report immediately after the news at . . ."

ORGANISING A ROSTER

I spent a few nights on the air calling "CQ anyone able to join a roster system for compiling propagation reports between midnight till 5 a.m."

(1) Decided to concentrate our effort in the midnight till 2 a.m. segment to start off with and later expand to the 5 a.m. time as volunteers increased.

(2) You want a person to be in charge of organising, maintaining the roster and briefing volunteers' reports to the ins and outs of what's involved including a run-down of the aims of the project from both station and amateur points of view. Briefings on formulating reports into an interesting segment is also important.

(3) Amateurs or short wave listeners were rostered for certain days in the week and advised to phone in their report to the station half an hour before the item was due for broadcast. The organiser, the station manager and those involved in the project had a roster list copy to keep track of those authorised to feed reports into the station.

(4) Any enquiries received at the station regarding reporting or enquiries about amateur radio were directed to phone the organiser of the amateur roster between 8 and 8.30 in the evening.

(5) Contact is maintained with those on the roster by the organiser phoning them the weeks Oscar passes, as well as discussions about new approaches to try. These nets are on 28.5 MHz on Fridays and Saturdays and 1.825 MHz on Sundays. Those on the roster are advised of feed-

back from the station as well as from the public.

Some of the on air announcements within the basic format which identifies the amateur's call sign, name and location have included — "American amateurs are coming in well this morning on the 14 MHz band and to receive the amateur satellite signals turn your aerials skywards for the 7.46 pass."

"Before going to work, Australian country amateurs on the 3.5 MHz amateur band are exchanging news and technical gossip, the amateur satellite will orbit at 5 past 6 this evening, so point your antennas to the sky, that's for the amateur satellite orbiting at 5 past 6 this evening."

"The 28 and 21 MHz bands are dead, but 14 MHz is going flat chat wtih high powered amateurs in the USA and Canada making long distance contacts."

"Conditions on 14 and 21 MHz are very poor and 3.5 MHz is good for communications around Australia, the amateur satellite, by the way, will be available for use at 5.57 this afternoon."

"The conditions which were good for the USA on 14 MHz have now deteriorated and are getting worse and worse."

"7 MHz has been open all morning and the South Pacific stations are coming through loud and clear, and Oscar 8, which is the amateur satellite, will pass over Australia at 9.30 tonight, so make sure that your antennas are pointed up to the sky."

"There are local contacts on 28 MHz and similarly on 3.5 MHz with good signals from New Zealand, the 14 MHz band is holding up well with amateurs from the United States being received well, the most interesting band is 7 MHz where strong signals can be heard from the Pacific area, Asia and South America."

"Conditions on the 15 metre band are unusual this evening in that strong signals are coming in from the States."

Those involved in the roster over the first few weeks of the project who have helped to make it a success are: Mondays and Thursdays, Alex VK2BYO, of Turramurra; Tuesdays and Fridays, Horst VK2BHF, of Dee Why; Wednesdays and Saturdays, Don VK2BXM, of Roseville; Sundays, Simeon VK2NIC, of Killara.

Take a listen — As the project is on a trial basis, its continuance depends on feedback received from listeners. If you hear it and you like it — then send a letter to the Station Manager, Radio Station 2GB, Sydney, NSW. If you'd like to join the roster then phone Sam VK2BVS on 407 1066.

The final point, then, in any project whether you are involved in an article in a paper, a demonstration in a park or at a radio station — provide feedback to those you are involved with if you hope to maintain or expand it. ■

PORTABLE ARMY WIRELESS SETS OF WORLD WAR II

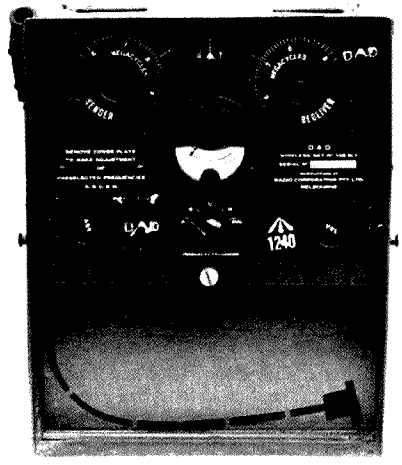
Compiled by R. Champness VK3UG

1. The Wireless Set No. 208 is a 0.6 watt input CW only battery powered HF transceiver. The set operates in the 2.5 to 3.5 MHz band in the Mark II version. The transmitter and receiver are both VFO controlled. The receiver can be used for telephony signals as well as telegraphy. Battery power source consisted of a combination pack with 1.5 volts for filaments and 99 volts for the high tension supply.

The sets were designed to provide CW communications within an infantry battalion, and I believe were also used by commandos. It is a portable set weighing in at 8.3 kilograms complete with spares, battery and aerials. The set came out of the same factory (Radio Corporation) as the better known No. 108 set, to which it bears a more than superficial resemblance.

2. The Wireless Set No. 108 is a 0.45 watt input AM battery powered HF transceiver and in the case of the Mk. II operates in the 6 to 9 MHz range. The Mk. III version operates from 2.5 to 3.5 MHz. The transmitter and receiver are both VFO controlled. The receiver is designed to receive AM or MCW transmissions. The Mk. I and III have a 455 kHz IF and the Mk. II a 1600 kHz IF. The battery power source is a 1.5 volt battery for LT and two 45 volt batteries in series for the HT.

The sets were designed to provide AM (AM/MCW in the case of the Mk. III) communications within an infantry battalion. The set is tuned up by the operator and then put on his back, whereupon the send receive switch action is extended by bowden cable to the front of the operator. I suppose this set could be considered to be one of the early attempts at a walkie-talkie, although at an all up weight of 18.2 kilograms it could be called a struggle-talkie. The normal range set to set in the manpack mode was at least 3 kilometres. ■



No. 2: Set No. 108

No. 1: Wireless Set No. 208 — Photos by Ken Reynolds VK3YCY.

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INCREDIBLE BARGAIN SALE

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As a community service, and in the interests of Amateur Radio in general,
DICK SMITH is donating the
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from the sale and auction of his surplus warehouse stock of spares, samples, shop-soiled returns, etc., to the
WIRELESS INSTITUTE OF AUSTRALIA'S FEDERAL EDUCATION SECTION
for the benefit of Youth Radio work throughout Australia.

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All items will be sold on Saturday, 28th October, at the W.I.A. Centre,
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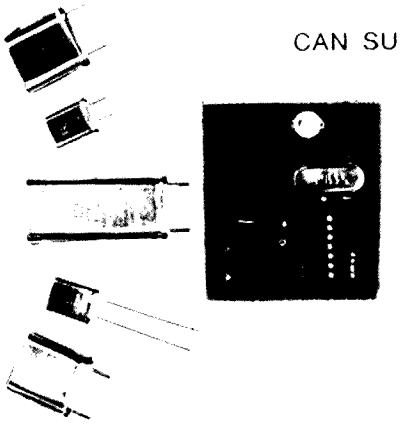

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Hobart:	DILMOND INSTRUMENTS — Phone 47 9077

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MODEL 76P

Enquiries:
JAMES GOODGER VK2JO

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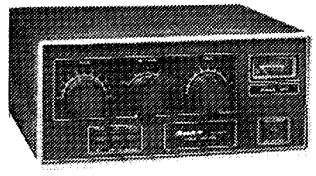
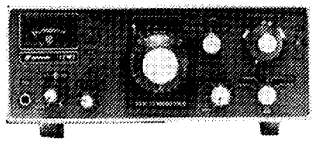
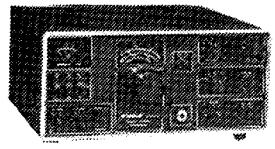
SWAN ELECTRONICS — SOLE AUSTRALIAN AGENTS. — KENWOOD

MODEL	DESCRIPTION	PRICE
HF 700S	Transceiver	$
MX 100	Mobile Transceiver	$
350B	Transceiver	$
350D	Transceiver	$
	ACCESSORIES:	
VX-4	(700CX/750CW/HF700S)	$
DD76	Digital Readout	$
444	Desk Microphone	$
MKIV	Linear Amplifier	$
WM2000	RF Watt Meter	$
PSU3	(700CX/750CW/HF200S) 230V	$
PSU5	(100MX/B.8 VDC 20 amp) 230V	$
	ANTENNAE:	
TB 4 HA	4 Element Triband	$
TB 3 HA	3 Element Triband	$
1040V	10-40m Vertical Deluxe	$
40-10V	10-40m Economy	$
75MK	Resonator Kit 1040v	$
75AK	Resonator Kit 4010v	$







MODEL	DESCRIPTION	PRICE
VFO-520S	VFO for TS-520S	149.00
SP520	Speaker for 520	40.00
YG-3395C	Crystal Filter	51.00
BS-5	Pan Display for TS520S	58.00
DG-5	Digital Display and Frequency Counter	200.00
DK-520	Digital Adaptor Kit (Connects old TS-520 to DG5)	18.00
TV-520S	2 m Transverter for 520 & 820	275.00
TV-506	6 m Transverter for 520 & 820	235.00
TS-600	6 m All Mode Transceiver	635.00
TS-700A	2 m All Mode Transceiver	705.00
TS-700SP	2 m All Mode Transceiver	85[illegible]
VOX-3	VOX Unit for TS-700	2[illegible]
SP-70	Speaker for TS-700	40.00
VFO-700S	Remote VFO for TS-700SP	1[illegible]
AT-200	Antenna Tuner	1[illegible]
TR-2200A	2 Metre FM Portable	18[illegible]
VB-2200A	Power Booster for TR-2200A	64.00
MB1A	Mtg. Bracket for 220	17.00
TR-7200A/G	2 Metre FM Mobile	240.00
VFO-30C	VFO for TR-7200	105.00
	Crystals for TR-2200 and 7200 (Pair)	13.00
TR-7010	2 Metre SSB Mobile	285.00
TR-3200	70 cm FM Portable	230.00
TR-7400A	2 Metre Digital Mobile (800 CH 25 W)	485.00
TS-820S	H.F. Transceiver with DG-1	1,250.00
DG-1	Digital Display	195.00
VFO-820	VFO for TS-820	175.00
SP-820	Speaker for 820	58.00
BS-8	Pan Display for TS820/820S	57.00
DS-1A	DC Converter for TS820/TS820S/TS520S	75.00
YG-88C	Crystal Filter	57.00
R-820	Communications Receiver	
YG-88A	AM Crystal Filter for R800	45.00
YG-445C	C.W. Crystal Filter for R820 (500 HZ)	76.00
YG-445CN	Narrow C.W. Crystal Filter for R820 (250 HZ)	92.00
TS-520S	H.F. Transceiver	769.00
TR-7500	2 m Transceiver (100 Ch 10 W)	285.00
PS-6	AC Power supply for TR-7500	99.00
PS-8	AC Power Supply for TR-7400A	160.00
R-300	Communications Receiver	240.00
MC-50	Desk Microphone 500 & 50K	45.00
MC-10	Hand Microphone 50K	
MC-35S	Hand Microphone 50K	19.00
HC-2	Ham Clock	28.00
MC-30S	Hand Microphone 500	18.00
HS-5	Headphones	29.00
HS-4	Headphones	14[illegible]
LF-30A	Low Pass Filter	3[illegible]
SM-220	Station Monitor	30[illegible]
TL-922	Linear Amplifier (2KW PEP)	1,200.00

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P.A. VALVES:
6MJ6
8950 to suit 750CW

DRAKE

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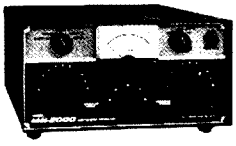
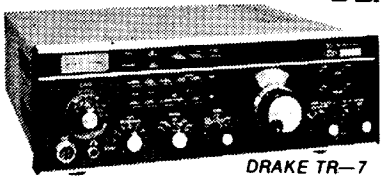
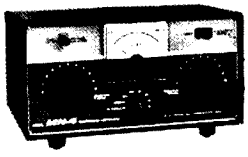


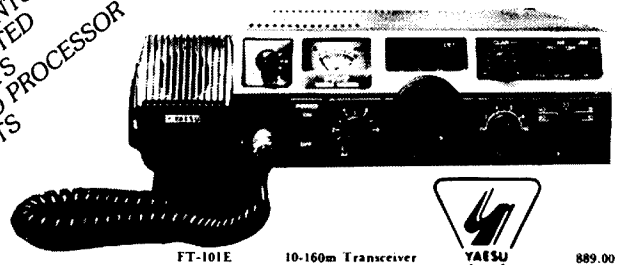


DRAKE TR—7

TR-7 (INCL. DR-7)	1480.00
DR-7	230.00
NB	99.00
PS-7	230.00
RV-7	216.00
FA-7	34.00
FILTERS	69.00
MN-7	228.00
WH-7	118.00
AUX-7	33.00



* COMPONENTS
* INTEGRATED CIRCUITS
* MICRO PROCESSOR PARTS



YAESU

FT-101E	10-160m Transceiver	889.00
FT-901DM	The Ultimate	1,575.00
FT-7	10-80m Mobile	555.00
FL-2100B	Linear Amplifier	575.00
FRG-7	Comm. Receiver	375.00
QTR-24	24 Hour Ham Clock	33.00
FRG-7000	Digital Comm. Receiver	675.00
FT-301D	Deluxe Digital Transceiver	1,269.00
FT-301S	Novice Transceiver	789.00
YO-100	Monitor Scope	299.00

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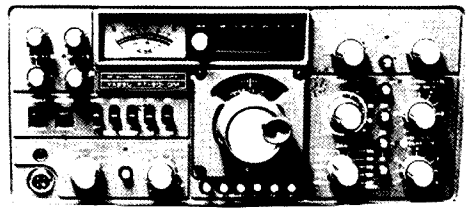

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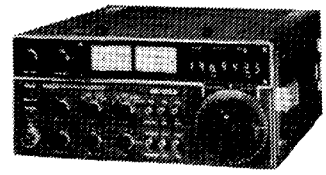
VICOM

	NAGARA ANTENNAS:	
SS56	6 m 5el Beam Antenna	122.00
V4Jr	Trap Vertical 40-10m, 5.2m High, No guys required	99.00
V5Jr	Trap Vertical 80-10m, 6.7m High, No guys required	159.00
	RAK ANTENNAS:	
RAK	Midy VN 80-10m Trap Horizontal Dipole	105.00
RAK	Midy AL48DXN 40-80m Trap Horizontal Dipole	62.00
RAK	Midy AL24DXN 20-40m Trap Horizontal Dipole	60.00
	HUSTLER MOBILE ANTENNAS:	
BM-1	Deluxe Universal Bumper Mount incl. Ball Socket	25.00
MO-2	Fold-over Mast (reqd. lor all resonators)	29.00
RM20, RM15, RM10, 20m, 15m, 10, Resonators		20.00
RM40	40m Resonator	22.00
RM80	80m Resonator	24.00
RSS-2	Medium Duty Spring	12.00
	DISCONE ANTENNA:	
CDX-1	80-480MHz Commercial Discone	79.00
	RINGO ANTENNA:	
ARX-2	Ringo Ranger Gain Omni-Directional for 2 m.	49.00
	JAYBEAM ANTENNAS:	
	88/70cm 88el. 70cm, 18.5dBd Gain	99.00
	48/70cm 48el. 70cm, 15.7dBd Gain	76.00
	PBM18/70cm, 18el, 70cm, 14.9dBd Gain	69.00
	D8/70cm, twin 8el, 70cm, 12.3dBd Gain	59.00
	10XY/2M 2m Crossed Yagi, 10el, 11.3dBd Gain in each plan	89.00
	8Y/2M 8el Beam, 9.5dBd Gain	45.00
	10Y/2M 10el, 2m Beam, 11.4dBd Gain	77.00
	PMH/2C Phasing Harness	17.00
	HY—GAIN ELECTRONICS:	
HY-QUAD	10/15/20m, 2 elements	349.00
204Ba	4el Monobander for 20m	279.00
203Ba	3el Monobander for 20m	210.00
14AVQ/WB	40-10m Trap Vertical	109.00
18AVT/WB	80-10m Trap Vertical	155.00
TH3MK5	10/15/20m 3 el Beam	299.00
TH3Jr	10/15/20m 3el Beam	229.00
TH6DXX	6el Tribander Beam	399.00
LONG HOHN	5el Wide-spaced 27, MHz Beam	180.00
	MISC. ANTENNAS & ACCESSORIES:	
LINDENOW	5/8ths 2m Mobile, Heavy Fibreglass	35.00
BELLING-LEE	Base for above	4.00
KLAMG	Magnetic Bases	19.00
AS-KDA	Spring Mount (Base)	20.50
	COAXIAL CABLE (MIL SPEC):	
RG58AU	1,000 ft. Reels	50c/m
RG58AU	500 ft. Reels	50c/m
	BALUNS:	
AS-BL	For Beams	31.00
BL50A	50 ohm 4Kw for Dipoles	25.00
BL70A	70 ohm 4Kw for Dipoles	26.00
	ANTENNA COUPLERS:	
CNW-217	Incl. swr/pwr Direct Reading, 200w pep max	179.00
CNW-417	Incl. swr/pwr Direct Reading, 500w pep max	219.00
	ANTENNA CHANGE—OVER RELAYS (DAIWA):	
CX-2L	1.8 thru 170MHz, 100w pep max	45.00
CX-2H	1.8 thru 450MHz, 200w pep max	59.00
	COAXIAL SWITCHES (DAIWA):	
CS201	2 Position, high pwr, up to 500MHz, Commercial Qual.	24.00
CS401	4 Position, bigh pwr, up to 500MHz, Commercial Qual.	49.90
	SWR/PWR METERS:	
VC2	Twin Meters, 3-150MHz with Calibration Chart	34.00
OSKERBLOCK	SWR200, 5-200 MHz, 2/20/200/2000w	75.00
SW410A	UHF 140-500MHz Direct Reading	105.00
SW210A	1.8 thru 150MHz 20/120w Direct Reading, Professional	85.00
SWX777	Professional 1.8 thru 30MHz Direct Reading	131.00

ICOM

MODEL	DESCRIPTION	PRICE
IC701	HF Solid-State 160-10 m Transceiver	1,180.00
IC701PS	Matching Power Supply/ Speaker for above	245.00
IC202E	2 m SSB Portable, 3 watts	219.00
IC502	6 m SSB Portablem 3 watts	219.00
IC22S	2 m fm Synthesised Tranceiver	299.00
IC211	2m All-Mode Transceiver, AC/DC	785.00
IC245	2 m fm Digital Mobile Transceiver -SSB Attachment for above	465.00 142.00
IC402	70 cm SSB Portable Tranceiver	
RM2/3	Remote Controller for IC701/211/245	169.00
	Crystals for IC215/22 Series (Pair)	10.00
	Crystals for Oscar (IC202E) (Each)	7.50
BC20	Nicad Pack & Charger for Portables	59.00
ICSM2	Condenser—Electret Desk Microphone for ICOM Rigs	56.00
	Brackets for IC22S Series	17.50
	Brackets for Portables	18.00



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WE CARRY RECONDITIONED PAGE PRINTERS, TAPE PERFORATORS, TAPE DISTRIBUTORS, DEMODULATORS, LOOP SUPPLIES, ETC.

15	Page Printer 110V	150.00
14	Tape Reperforator 110V	150.00
14	Tape Distributors 2 Heads 110V	150.00
DT-600	Demodulatro fully build up 170Hz-850Hz	270.00
DT-600	Demodulator Kit Inclusive 12V Power Supply, Meter, all Plugs & Connections	150.00
AFSK	Oscillator, Fully built up Kit includes 6V Power Supply X-Tals for 170 and 850 Hz	60.00 40.00
	SLOW SCAN T.V.	
OM-7M	Ham Vision Monitor 4 inch Monitor Screen	1400.00
OM-7C	Ham-Vision Camera	
	LOW PASS FILTERS (DAIWA):	
FD50M	52MHz Fc, 1Kw, 5 stages, good qual.	35.00
FD50LS	52MHz Fc, 1Kw, 5 stages, good qual.	20.00
	OMEGA NOISE BRIDGE:	
TE7-01	Up to 100MHz	44.00
	POLAMAR PRODUCTS:	
	IC Keyer	149.00
	VLF Converter	89.00
	Receiver Noise Bridge	79.00
	QM70 PRODUCTS:	
	432/144MHz Converters	59.00
	432/28MHz Converters	59.00
	144/28MHz Converters	59.00
	1296/28MHz Converters	70.00
	28/144 "SCORPION" high power Transverter	225.00
	2m Linear amp 70w max pep	129.00
	2m/432MHz Transverters	125.00
	COMPRESSORS & PROCESSORS (DAIWA):	
RF440	Speech Processor, phasing type, 6dB Gain	125.00
RF550	Speech Processor, Crystal Filter Type, 6dB Gain	165.00
	MORSE KEYS (HI-MOUND):	
HK702	Delux Key with Marble Base	38.00
HK708	Economy Key	21.00
HK706	Operator's Key	25.00
MK701	Manipulator (Side-swiper)	43.00
EK103Z	Electronic Keyer	165.00
	MICROPHONES:	
VM-1	Noise-cancelling, Dynamic, Low Z	9.50
VM-2	Desk Mike with Pre-amp, Dynamic, Low Z	29.80

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WAREHOUSE: 78 CHAPMAN PARADE, FAULCONBRIDGE

TELEPHONE: (047) 51 1394 A.H. (047) 54 1392

HYGAIN antennas have finally arrived, sorry to have to increase the 204-BA price, they cost me now only a few dollars less than the TH3-MK3. The Japanese YEN is now so dear to us that the equivalents of the FT101E, TS-520S and TS-820S retail prices in Japan are now $820, $660 and $1,070 respectively. Importers pay more than 25 per cent in freight, insurance and sales tax, so new imports of these and other YAESU and KENWOOD items will have to go up.

Still available are XEROX copies of service notes for various KENWOOD transceivers and HYGAIN antenna manuals. $1 for most (no cheques please, they cost now 22c to process), $2 for more bulky manuals. TS-520S or TS-820S **service** manuals are 40-80 pages or $6-$12 our cost to copy.

HYGAIN ANTENNAS:

18-AVT/WB 10-80m vertical 23 ft. tall	$125.00
TH6-DXX 10-15-20m senior 6 el Yagi 24 ft. boom	$300.00
TH3-MK3 10-15-20m senior 3 el Yagi 14 ft. boom	$240.00
TH3-JR 10-15-20m junior 3 el Yagi 12 ft. boom	$175.00
204-BA 20m 4 el Tiger array 26 ft. boom	$230.00
HY-QUAD 10-15-20m full size Cubical Quad	$260.00
11m 5 el Yagi suitable 10m. w/elements adjusted	$70.00
2m 8 el Yagi with balun 12 ft. 6 in. boom	$30.00
BN-86 balun for HYGAIN beam buyers only	$20.00
BU-8 Japanese baluns suitable for 5 el 10m beams	$14.00

YAESU MUSEN PRODUCTS:

FT-101E, FT-901D, FT-7, FL-2100B	P.O.A.
FRG-7 .5-30 MHz general coverage receiver	$350.00

ROTATORS:

CDR HAM III rotators on order, expected early October 1978.

KEN KR-400 Azimuth rotator w/28V AC control box	$115.00
KEN KR-500 Elevation rotator w/28V AC control box	$140.00

ACCESSORIES & COAX CONNECTORS:

SWR-50A twin meter 3.5-150 MHz 1 kW SWR/Pwr. meter	$22.00
FERRIS SWR/Field strength meter	$15.00
Bumper mount with 3/8 in. thread antenna mount	$7.00
Gutter mount with 3/8 in. 24 thread antenna mount	$4.50
5m lengths RG-58U with PL-259 one end	$3.00
M-ring body mount	$3.00
12V regulated supply	$26.00
GLP Right angle RG-58U to SO-239 w/lock nut and weatherproof cap	$3.50
MLS Right angle RG-58U to PL-259	$0.90
PL-259 standard or solderless — RG-8U and RG-58U	$0.75
In-line splice RG-8U and RG-58U	$0.75
SO-239 chassis connector 2-hole or single w/lock nut	$0.75
Right Angles and T-connectors	$1.50
Double male connectors	$0.85
Mic. sockets, chassis or in-line, 3 or 4 pin	$0.85
3 circuit mic. jacks	$0.85
2 ft. 6 in. coloured leads w/crocodile clips — 5 for	$3.00
Crystals for QUARTZ-16 2m transceiver: Channel 51 T/R 146.55; Channel 64 T/R 147.22 — pair	$5.00
No. 14 hard drawn copper wire — per metre	$0.10

KENWOOD PRODUCTS:

TS-520S 10-160m SSB/CW transceiver, 240V AC	$700.00
TS-820S 10-160m SSB/CW w/digital readout	$1,100.00
TS-700SP 2m all-mode transceiver	$800.00
TR-7400A 2m transceiver	$475.00
TR-7500 2m transceiver	$275.00
DG-5 digital display for TS-520S	$200.00
TV-506 6m transverter	$225.00
TV-502 2m transverter	$250.00
AT-200 antenna matchbox	$175.00
DS-1A DC-DC converter	$70.00
DK-520 adaptor for DG-5 to TS-520 use	$20.00
LF-30A low pass anti-TVI filter	$30.00
VFO-820 external VFO for TS-820S	$175.00
VFO-520S external VFO for TS-520S	$150.00
SP-820 external speaker for TS-820S	$60.00
SP-520 external speaker for TS-520S	$30.00
YG-88C CW filter for TS-820S	$55.00
YG-3395C CW filter for TS-520S	$50.00
MC-35S hand-held microphone	$20.00
HC-2 Ham clock	$25.00
SM-220 Station monitor	$300.00
BS-5 (TS-520S) and BS-8 (TS-820S) pan adaptors for SM-220 — each	$55.00

OTHER TRANSCEIVERS:

ATLAS 210X 10-80m Mobile transceiver w/HD cable	$825.00
ICOM IC-202 2m SSB portable transceiver	$175.00

NOVICE SPECIALS — still available at these low prices: Transceivers for 10m coverage, AM/USB, 15W PEP —

(a) SIDEBAND SE-502 240V AC/12V DC inbuilt SWR/RF meter 28.300-28.600 MHz	$150.00
(b) UNIVERSE 224m 12V DC 24 ch. 28.480-28.595 in 5 kHz steps, Clarifier operates on transmit and receive	$125.00
Sets of Crystals for Amateur licence holders for converting 23 ch. 27 MHz CB units to 28 MHz, suitable SIDEBAND SE-501A, SE-502, UNIVERSE, KRACO, HY-GAIN V, etc. SSB/AM units:	
Set of 4 crystals converts to 28.3-28.6 (limited quantity)	$15.00
Set of 8 crystals converts to 28.480-28.595	$40.00

All prices quoted are net, ex Springwood, NSW, cash with order, subject to change without prior notice. All risk insurance is free; freight by air, road, rail or post at cost. All orders cleared on a 24 hour basis after receipt with payment.

ARIE BLES (VK2AVA), Proprietor.

ROY LOPEZ (VK2BRL), Manager.

NOVICE NOTES

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Sam Voron VK2BVS
2 Griffith Ave., East Roseville, NSW 2069

With around 400 keen hobbyists having just passed the last novice exam in NSW, a group of amateurs, with the help of the NSW Council, organised a welcome to amateur radio party at the WIA repeater and broadcast site at Dural.

About 80 people, including newly licensed, novice students, old licensees and a host of newcomers, came together for a Sunday of relaxation — BBQing, talking and meeting amateurs for the first time in many cases.

Some of those attending included the new members of the Novice Amateur Radio Group who are conducting novice classes each Saturday afternoon at the local WIA HQ. About eight newly licensed novices from the Amateur and Citizens' Radio Club, which included a complete family team, showed fellow club members the ins and outs of the various home made transmitters and other goodies which were on display.

The Killarney Heights Novice Radio Group (membership of which is restricted to those who have at least a 160 metre modified tranny radio) helped to conduct a coverage test on 160 metres from Dural, where it is hoped that a high power AM signal will soon be spanning the State. You should have heard the 160 metre callbacks after the broadcast! 1825 kHz was packed, stations calling on top of other stations — it was bedlam — it was like a 20 metre dogpile — and it was midday! After about 15 callbacks and numerous subsequent listeners' reports from as far afield as Gosford, we realised Dural must be a 160 metres paradise — and we were only using 20 watts to an inverted Vee antenna.

The welcome to amateur radio party was an opportunity for WIA members to meet all our newcomers and give them a big welcome to the hobby.

In this day and age where the individual newly licensed operator in many cases must fend for himself or herself — this concept of an open invitation certainly encouraged some personal contact between the new and old licensees, many of whom had not yet set up their stations. Lots of practical advice on how to put up aerials for the different bands and what type of gear to start off with, certainly made involvement with this WIA supported activity relevant to the new amateur. In fact so much so that WIA membership applications were going like hot cakes.

Publicity to attract new licensees was via WIA broadcasts on 10 metres (which is very popular for local novice working nowadays), on 11 metres (for those lucky CBers who passed the last novice but still didn't have any amateur gear and were still awaiting their amateur call signs), at the novice group meetings to let the newcomers get involved in the thing they are studying towards, and over 2GB commercial radio to let the general public find out at bit more about our hobby.

The concept of a welcome to amateur radio party was such a success that it is hoped the interest generated within the new licensees and newcomers will spill into other WIA activities.

It is hoped that prior to each amateur exam (four per year) an amateur radio week-end will be held for newcomers and those studying for their licences, and that after the exams a welcome to amateur radio party becomes part of the regular Sydney scene.

Special thanks for organising the Dural site and helping the concept take off goes to Roger VK2ZIG, Jeff VK2BYY, Tim VK2ZTM, Henry VK2ZHE and all the rest of the gang who came along and helped.

PHOTO No. 1

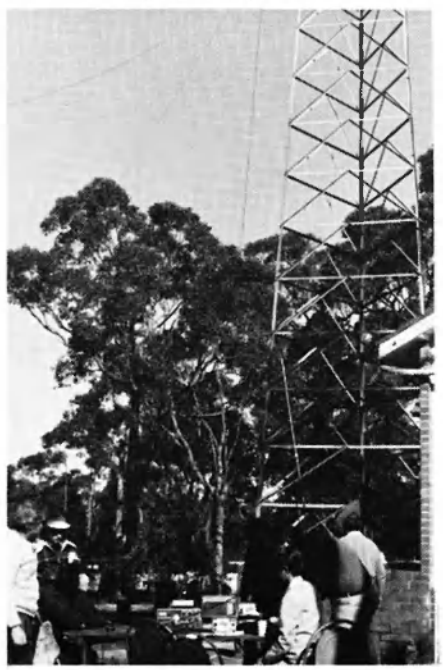


PHOTO No. 2

PHOTO No. 3

PHOTO No. 4

PHOTO No. 5

PHOTO No. 6

PHOTO No. 7

PHOTO No. 8

PHOTO No. 1
The welcome to amateur radio week-end takes off with the salute to the 160m test relay of the broadcast on 1825 kHz from Dural. Results showed a superior coverage over the suburban site normally used to originate this relay.

From left, a TS520S, a modified 7 transistor tranny modified on to 160 metres after 3 minutes work, two 10 watt AM portable transceivers on 1825 kHz and a 2 metre FM transceiver. Operating the gear you see Martin Landsdown from the Killarney Heights Novice Radio Group and WIA Councillor Tim Mills VK2ZTM.

PHOTO No. 2
Would you believe that Roger VK2ZIG climbed 50 feet up the tower to put up the 160 metre inverted Vee — shows how keen he is — and he doesn't even have a full call! 1.8 MHz sure must have something going for it.

PHOTO No. 3
Here is part of the display at the Dural welcome. Well known 6 and 2 metre personality Graham VK2ZZV decorates the display with support from Jeff VK2BYY, officer of our VHF and TV group and Dural maintenance team.

PHOTO No. 4
Here is Jeff Pages VK2BYY. Jeff is in action showing the newcomers what makes the Dural repeater channel 8 system tick.

DEMONSTRATIONS

PHOTO No. 5
Brother Cyril Quinlan VK2ACQ, Convenor of the week-end activities, shows us what makes things tick.

MEETING OTHER LICENSEES

PHOTO No. 6
Meet Steven Tilley. Steve and Dad passed their novice exam and are waiting for their call signs and have come along to take a crack at the full licence. Steve, by the way, is one of at least two 12-year-olds who passed the last novice exam in Sydney. His rig is an FT7 and his portable antenna is a chopped down 11 metre ringo. By the way, fingers crossed that the P. and T. drop the age limit on the AOCP by the time Steve is set to go for it!

THE YOUNGEST YL NOVICE?

PHOTO No. 7
Keira James is only 11 years old, she already knows the morse code and wants to become the youngest YL novice at the next novice exam. You also see Mack Craig VK2NIV, he got his licence when he was 15 and he is giving Keira some pointers in radio operating.

OPERATING PORTABLE

PHOTO No. 8
Paul Phelan VK2NYO is 14. He likes to come along and help those getting started up at the amateur week-end activities. Paul himself started with 100 milliwatts, then 1 watt, 23 channels AM then 23 channels SSB, and now he's got an FT101E.

So what will happen on the October week-end? Come along and find out, we only have food and accommodation available for 160 people, so be quick. If you would like to set up your gear or just come along and help, if you're new to rallo or an oldtimer we would like to have you aboard.

It's only $17 for the lot. If you bring your family then it's only $10 for mum and $5 per kiddy.

To have everything prepared for you contact Bill or Mildred Newton, 64 Valley Road, Epping, NSW 2121, or phone Sydney on (02) 85 6321. ■

AMATEUR RADIO WEEK-END, 21st, 22nd, 23rd OCTOBER, AT KATOOMBA, NSW
A big get together of newcomers, prospective novices and licensees is being organised by the Wireless Institute of Aust. Education Service (NSW) incorporating the Youth Radio Service.

The fun starts at 8 p.m. on Friday, 21st October, 1978, and concludes on Sunday, 4 p.m., 23rd October. The venue is the St. Marie's Education Centre, just a few hundred metres from Katoomba railway station on the Sydney side of the Great Western Highway.

In July over 60 people from around NSW, Victoria and Queensland attended this fun study week-end. And now it is time to get set for the November novice exam or maybe you only just heard about the hobby and want to find out more — well then the July activities will give you an idea of what to expect. ■

ALIGNING YOUR MODIFIED CB TRANSCEIVER DEAD ON FREQUENCY
Some people who are using transceivers such as the Sideband Electronics SE502, which contain a set of four 16 MHz crystals to achieve operation on 28 MHz, and others who have obtained similar crystals in place of the existing set of four 14 MHz crystals have found that they have been 1 to 2 kHz off frequency.

This problem is easily solved by removing the four 22pF capacitors which are in series with the four 16 MHz crystals. You will now find that the trimmer capacitors which are in series with each of the 4 crystals will be able to zero your transceiver dead on to channel.

The fixed 22 pF capacitors are easiest removed from the printed circuit board by simply lifting one lead out of the board.

See also the articles "Modifying CB Transceivers to 10 Metres" and "More on Modifying 11 Metre Transceivers" published in AR for August and September 1978 issues.

Sam Voron VK2BVS ■

WIA CORRESPONDENCE

POSTAL AND TELECOMMUNICATIONS DEPARTMENT

GPO Box 5412CC,
Melbourne, Vic. 3001

Reference: RB4/11/30.

The Secretary,
Wireless Institute of Australia,
PO Box 150,
TOORAK, VIC. 3142.

Dear Sir,

Reference is made to your letter of 25 May, 1978, in which a request was made to extend the upper limit of the 80 metre Novice band from 3575 kHz to 3625 kHz.

Following Departmental investigations into the use of 80 metre band by Novice amateurs, the Department is pleased to advise that, effective forthwith the authorised 80 metre transmitting band for Novice amateurs will be 3525 to 3625 kHz.

The Department has taken the necessary steps to amend the licence accordingly and advise the relevant offices. Would you please give this matter publicity through the avenues available to the Institute.

Yours faithfully,

J. D. Williamson, for Secretary.

(The above letter was received at the Federal office on 8/8/78.) ■

AMATEUR SATELLITES

Bob Arnold VK3ZBB

A NEW SATELLITE

According to Information in HR Report published by Ham Radio Magazine an Amateur Transponder could fly on Hughes' SYNCOM 4 in 1980 or 1981. The proposed satellite would be launched by Space Shuttle and placed in synchronous orbit over the 'Americas'.

AMSAT Canada has made proposals for this project and has already revitalised its organisation and elected officers and Directors, VE2DNM is President, VE3ACF Secretary and the mailing address Box 7306, Vanier, Ontario K1L8E4.

A little bird says that SYNCOM 4 could be located over the Pacific Ocean; if so, there is a possibility of communication to Australia and New Zealand If the antenna points In this direction!

Don't be confused, this proposal is not the well publicised Phase 3 OSCAR which is scheduled for eliptical orbit.

OSCAR 8

Communication on Mode J, 145.95 up, 435.15 down is obviously a tough assignment if the number of operators is any guide.

ZL1BDU is the most consistent and powerful signal in VK3 with occasional sorties by ZL3AAD, VK4TL, VK3ACH, VK5HI and yours truly. Mode A is consistently good with many stations working both local and DX stations. I wish local 10 metre stations would remember that 29.3 to 29.5 is allocated to satellite operations and avoid this segment, both morning and evening.

A NEW COUNTRY

Graham VK0GM at Casey Base, has been active on OSCAR 7 Modes A and B and OSCAR 8 Mode A.

It is particularly pleasing to have a new OSCAR country to work and we all thank Graham for his interest.

I am proud to have a QSL card confirming the first contact on AO7 Mode B between VK0 and VK3. Col VK7LZ made the first contact on Mode A. Graham's QSL Manager is Steven VK3OT who QSL's by return if a SASE is sent. Thanks also to Steve.

THE WANDERER RETURNS

Welcome to Les VK3BKF formerly VK3ZUR who has returned home after a two-year sojourn in England, and congratulations on the new call. Les worked OSCAR using his G call and was astounded at the activity In Europe. He is presently refurbishing his gear and should be communicating with us again by the time these notes are printed.

ANOTHER NEW COUNTRY

On a number of occasions FK8BB has been heard working many VK's and ZL's. Peter, who is located In Noumea, New Hebrides, gives an excellent signal on Mode A particularly on the early passes accessible to the Eastern States. Good work Peter, we hope to see you on Modes B and J In due course.

YET OTHERS

Stalwart OSCAR operator, Charlie VK3ACR, reports a scratchy and uncompleted contact with YB1CS In Indonesia. This was on a late pass in Melbourne on ascending node 220 and again on Mode A. Perhaps further contacts will be made before this report is published — keep trying Charlie. John, VK4TL, reports receiving a QSL from KG6PO confirming his contact last Summer. John has also heard YB1CS and has made contact with KR6 in Saipan on Mode A.

RUSSIAN OSCARS

A comment in AMSAT Newsletter indicates that the long-awaited Russian satellites should be launched this year and at a high altitude — how high and when remains to be seen, but we shall certainly be thrilled to have them in service.

BROADBAND OPERATIONS

One of the most prolific operators is Frank VK2ZI. From Broken Hill, Frank operates both OSCAR 7 and 8 on Modes A, B and J with excellent results. Many OSCAR operators appreciate Frank's cheery voice and persistence in completing contacts under difficult conditions.

APPRECIATION

Thanks to our Editor, Bruce, for agreeing to provide larger print for our notes. I hope the readers of this column will appreciate this improvement.

ORBIT PREDICTIONS — NOVEMBER, 1978

OSCAR 7				OSCAR 8			
		Time Long.				Time Long	
Date	Orbit	Z	°W	Date	Orbit	Z	°W
1	18120B	0144	86	1	3352A	0026	46
2	18132A	0044	71	2	3366A	0031	47
3	18145B	0138	85	3	3380A	0036	49
4	18157B	0037	69	4	3394J	0041	50
5	18170A	0132	83	5	3408J	0047	51
6	18162B	0031	68	6	3422A	0052	53
7	18195B	0125	81	7	3436A	0057	54
8	18207A	0025	68	8	3450A	0102	55
9	18220B	0119	80	9	3464A	0107	57
10	18232B	0018	65	10	3476A	0113	58
11	18245A	0112	78	11	3492J	0118	59
12	18257B	0012	63	12	3506J	0123	60
13	18270B	0106	77	13	3520A	0128	62
14	18282A	0005	62	14	3534A	0133	63
15	18295B	0100	75	15	3548A	0139	64
16	18308B	0154	89	16	3561A	0001	41
17	18320A	0053	74	17	3575A	0006	42
18	18333B	0148	87	18	3589J	0011	43
19	18345B	0047	72	19	3603J	0016	44
20	18358A	0141	86	20	3617A	0021	45
21	18370B	0041	71	21	3631A	0027	46
22	18383B	0135	84	22	3645A	0032	48
23	18395A	0034	69	23	3659A	0038	49
24	18408B	0129	83	24	3673A	0043	50
25	18420B	0028	67	25	3687J	0048	52
26	18433A	0122	81	26	3701J	0053	53
27	18445B	0022	66	27	3715A	0059	54
28	18458B	0116	79	28	3729A	0104	46
29	18470A	0015	64	29	3743A	0109	57
30	18483B	0109	78	30	3757A	0114	58

Tlmas for OSCAR 8 have been corrected and based on the best Information available as at the end of August. ■

OSCAR PHASE III PROGRESS REPORT

Jan King W3GEY

(Reprinted from AMSAT Newsletter)

Considerable progress has been made on the satellite and ground equipment; however, all of us are beginning to understand and appreciate the problems associated with developing a spacecraft some five times more complex than AMSAT-OSCAR 7. It's really quite a big project. The following is a summary of our progress and problems to date —

ESA/AMSAT AND ARIANE

On March 22, 1978, the European Space Agency (ESA) conducted a payload interface meeting to which AMSAT was invited. Since the meeting involved launch operations as well as integration of Phase III to the vehicle, it was mandatory that AMSAT send a US representative. The meeting was held in Toulouse, France, and Karl Meinzer DJ4ZC and myself attended. Many of the detailed interfaces to the ARIANE vehicle were discussed and many safety Items relating to our kick motor (as could be expected) were reviewed in detail. I am happy to report that AMSAT's scheme for firing the motor and for "keeping it safe" while on the launch vehicle were accepted by ESA. This is important because other proposed schemes would have cost AMSAT several thousand extra dollars and would have increased the satellite weight by about 3 kg. ESA announced during the meeting that there is some chance that the launch could be advanced by one month, to November 1979. This would make an already tight development schedule even tighter.

During the visit to ESA, Karl and I were able to see a considerable amount of hardware. Perhaps the most impressive to me was a one-third scale model of the upper stage of the ARIANE rocket for launch test flight L02, Including all the satellites. A complete scale model of Phase III was mounted at its appropriate place on the side of the larger mock-up. A message I came away with from this meeting is that ESA is not taking any chances. This vehicle is going on schedule and based on the things I saw, it's going to be reliable.

PHASE III GROUND STATIONS AND IPS

Ground operations for the Phase III launch are far more demanding than those needed for Phase II satellites. For this reason, ground equipment needs to be finished well ahead of the satellite. Since Randy Smith VE3SAT will be away on extended leave during the first part of the Phase III-A mission, John Fox W0LER and Ron Dunbar, W0PN together will be prime command and telemetry stations for Phase

III. Randy will join in upon his return. Located approximately 200 miles apart, Ron and John will have a truly complimentary system. Each ground station can back up the other. In fact, each can control the other's station from his own location via telephone or radio link. The Minnesota team expects to complete their ground station check-out by this fall and begin a one-year training period in preparation for the launch. Included will be several simulations for the launch day.

In order to facilitate writing software for the new spacecraft, Karl DJ4ZC has developed a high-level language for the RCA CDP-1082 processor and for the 8080s which will be used at the ground stations. This language, known as IPS (for a German acronym), is a structural language which has some similarities to a language known as FØRTH. Among its features, many of them unique, is the fact that the mnemonics themselves are bilingual. They may be changed from German to English (or vice versa) under software control. AMSAT hopes to make this language available to its members as part of a Phase III package which will also include printed-circuit boards needed for demodulating the engineering beacon telemetry and interfacing to a microprocessor, as well as needed documentation. We still have a way to go before this can be done.

Ron WOPN recently went to Germany (taking along and bringing back an 8080 system) to visit Karl and complete needed documentation to interface IPS to the 8080 system he and John WOLER are using. This visit also served to bring Ron up to speed on all the engineering details on the Phase III spacecraft.

AMSAT-OSCAR SPACECRAFT LABORATORY

On May 5, 1978, NASA and AMSAT signed a contract to jointly pursue a project that will allow AMSAT to demonstrate to the public how amateurs build spacecraft (specifically Phase III). Under the terms of the contract, AMSAT and NASA will jointly fund a facility at the Goddard Space Flight Center to be used by AMSAT to construct our new Phase III satellites. In return, AMSAT will demonstrate to NASA visitors our approach to low-cost aerospace construction. The facility, about 700 square feet in area, includes an integration area, an assembly laboratory, a much-needed storage area for high reliability components, and an office area. The building should be ready in August and will be dedicated at our Annual Meeting on October 14th.

PHASE III SPACECRAFT

(A) Structure:

More than any other part of the spacecraft, the structure has undergone an evolutionary process. After a number of preliminary concepts were discarded and two different models were built, a structure known as the ETU (Engineering Test Unit) was built in West Germany. The structure was then sent to the US where a "dummy" kick motor and wooden modules were installed to simulate the flight spacecraft. In December of 1977 the ETU was sent to the Cal. Tech. Jet Propulsion Lab. In California where it was subjected to vibration qualification tests at levels specified for the ARIANE vehicle. While the structure passed the tests successfully, a number of changes were suggested by the test results. These changes are now being incorporated into the final design and materials are being ordered in preparation for assembly of the flight structures (two will be built). In the meantime, the ETU was returned to AMSAT-DL for inclusion of engineering model electronic modules. The completed ETU will then be sent to ESA for further testing starting in September of this year.

(B) IHU:

Of the electronic system in Phase III, the *Integrated Housekeeping Unit* (IHU) is the most tested and ready for flight. The IHU which contains the COSMAC microprocessor has been tested at the prototype level for many thousands of hours. The command detector and telemetry encoder schemes have been tested in prototypes with CDP-1801 COSMAC while located at a remote repeater site (60 miles distant from the control site). The results (in terms of bit error rate) are extremely close to the theoretically predicted performance. With the ever-improving technology in CMOS devices, it now will be possible to fly 16K of RAM memory in the flight IHU instead of the originally-planned 2K of memory. Features have been added to the IHU to allow range measurements to be made via the command and telemetry links, and to allow retransmission of the results of range measurements from one command station to another, again via the IHU.

(C) Power Sub-system:

AMSAT is presently working with NASA and NOAA to obtain 48 battery cells remaining from the ITOS satellite program (enough cells for several spacecraft). In addition, some 10,000 solar cells may also be obtained from the same source. While the cost of the cells is itself high, even if the cells are donated the cost of the cover slips and fabrication will still amount to approximately $10 per cell. (Those members who sponsored solar cells take note — at $10 per cell (assembled) It's a bargain!) We should know the prospects of obtaining this leftover hardware by the time you read this.

The battery charge regulator (BCR) for Phase III is very similar to that flying in AMSAT-OSCAR 8. Although A-O-8's BCR is less sophisticated than that for Phase III, it verifies the concept of converting power from 28 volt solar arrays to a 12-14 volt battery system which is the same for both satellites. In Phase III, the BCR and all other DC-to-DC converters will be contained in a single power module.

(D) Attitude Control Sub-system:

The concept that makes Phase III so different from previous satellites is that it has an "active" attitude control system. This difference is quite profound. While former satellites were mere "boxes" with electronics inside, this spacecraft is a robot which can be instructed to assume any attitude we choose in space under remote control and it can tell us when it gets there. We have one constraint with our robot though: It wants to spin about one axis. In fact, with the IHU, we may store nearly any number of motions of the spin axis for execution at a later time or under a certain set of conditions.

The components for this system have now all been selected. One "eye" of the robot is similar to a sun sensor used previously on another NASA mission. The sensor tells the spacecraft where the sun is in relation to the spin axis and when the sun passes by one of the three arrays The second "eye" is an earth sensor which gives the relationship of the earth to the satellite at various points in the orbit. The earth sensor is being developed by DJ4ZC with components provided by Leitz, a West German optics manufacturer. The force applied by the satellite to cause it to attain the proper attitude is via interaction of the earth's magnetic field with a large magnetic torqueing coil network aboard the spacecraft. Most of the electronics required in this subsystem is to interface these components with the IHU. Many of the logic operations which were once handled by discrete logic controllers can now be performed by the software. A prototype of the torquer coil assembly and the earth sensor are now being assembled in West Germany.

The remaining component in the attitude control system is a fluid damping system; it consists of small tubes partially fill up with a viscous fluid, and will stop a nutation (wobble) of the spin axis in a matter of seconds. Prototypes of these tubes have been built and tested and are being incorporated into the ETU.

(E) Transponder:

The 50-watt version of the 70 cm to 2m transponder is still in breadboard at AMSAT-DL. Werner Haas DJ5KQ has completed the design of the front-end and IF stages and is working on the power amplifier and modulator stages. On flight-quality transponder is expected to be completed by early fall. Unfortunately, due to schedule problems, it presently appears unlikely that the first Phase III spacecraft (Phase III-A) will carry both frequency combinations as had originally been hoped for. The 70 cm-to-2m transponder was chosen for development first because it provides better link performance. The 2304 MHz S-Band beacon is likely to be dropped for the same reason and because no allocation can be assured until the 1979 World Administrative Radio Conference.

One particularly continuing problem associated with the transponder has been solved. Until recently it was not possible to find a good quality crystal filter with a bandwidth of 150 kHz. JAMSAT members have approached the Japanese firm which provided the filter for the A-O-8 Mode J transponder regarding this problem and they een provide a 150-kHz bandwidth filter to AMSAT specifications.

(F) Antenna Sub-system:

The antenna system is indeed a very critical system to proper Phase III performance and more work needs to be done in this area. A computer model for predicting antenna patterns for Phase III has been developed by Tom Clark W3IWI (ex WA3LND). With this model, it was possible to determine that one antenna system at the end of the arms could not be used on two metres as well as 70 cm. It is now felt that a separate 70 cm antenna will be placed along the spin axis of the spacecraft on the end opposite the motor. A one-third scale model of Phase III was recently constructed by Bill Hodzik WA2UDT so that detailed antenna pattern measurements could be made. These measurements are planned to take place in the next few months at NASA so that flight antennas may be built from this data.

SUMMARY

To date, I feel we have made reasonable progress on Phase III, particularly considering the many other activities in which AMSAT has been involved. We do, however, have a long way to go and not much time is left. I would like to personally thank all those who have so generously donated to the Phase III effort and those who have offered their technical help. For those in the latter category, please be patient. Very little of the design information for "production" of the flight electronics has been released by AMSAT-DL. Much of this documentation is expected very soon and we will try to give some work to everyone. ■

THE INTRUDER WATCH COMES OF AGE IN GREAT BRITAIN

Alf Chandler VK3LC
Federal Intruder Watch Co-ordinator

The following is mostly a direct quotation from an article in "Radio Communication" by Stan Cook G5XB and Colin Thomas G3PSM Intruder Watch Co-ordinators in Great Britain. The theme of the article is relevant in Australia also.

"This year marks the 21st anniversary of the RSGB Intruder Watch system. With a little over a year to go before the world administrations and telecommunication organizations find themselves plunging into the next World Administrative Radio Conference, it is perhaps appropriate to report in general on the International Amateur Radio Union Monitoring System and, in particular, the part played by the RSGB IW.

Due chiefly to the energy and foresight of early pioneers, the foundations laid down by the RSGB in 1957 have led to the establishment of a world-wide network of amateur band monitoring stations under the direction of the IARU, bringing together some 30 or more IARU member societies and forging links with nearly as many government regulatory administrations.

Since 1972 G3PSM has taken the responsibility of co-ordinating the world-wide activity of the IARU Monitoring System.

A measure of the work involved in this last operation can be judged by the monthly inflow of intruder reports which now average 2,500.

These reports are cross-checked, integrated, summarized and published in the Intruder Monthly Summary, a document of some 20 pages, which is distributed to contributing monitoring stations and societies, and to official bodies (including the International Telecommunication Union in Geneva).

In any monitoring operation, accessibility of information and feedback of results is of prime importance. To this end, once monitoring stations are established they are supplied with a copy of the general procedures and instructions in order to regularize reports as regards classification of emissions, traffic description and other salient features of intruding signals. Although the sheer size of the task of logging intrusions of broadcasting stations in the 7 MHz and harmonically related segments is in itself a problem, an even greater one is posed by the proliferation of binary data and teleprinter communications throughout the high frequency spectrum.

The 14 and 21 MHz amateur bands are apparently well known as "happy hunting grounds" for diplomatic, military and commercial systems displaced by interference from their normal operating channels. As a result, QRM from these sources, being of a transitory nature, but nonetheless troublesome, is difficult to identify and even more difficult to trace and make the subject of a meaningful official complaint. However, in recent months, the RSGB Intruder Watch has achieved a measure of success in identifying some of the simpler systems by a kind of delayed action.

Several watchers possessing cassette recording apparatus have co-operated in this venture by sending with their monthly logs a tape of the aggregate signals, i.e. mark and space tones of the intruders normally logged as "unidentified printer". These, when up-converted from audio to radio frequency by the simple expedient of feeding the tone in question into a low level A3J exciter, are then tuned on a conventional narrow band communication receiver and offered to a time frequency spectral display and, eventually to a hard copy printer. Offenders, hitherto unidentified, who have responded to this treatment include examples of simple FSK (F1 U5) at 50 and 75 bauds, four frequency diplex (F5 U5 and U7) and individual components of independent sideband frequency-division complexes (A7b). In general an intruder is not reported to the Home Office unless the incident is logged and confirmed on two occasions at the same time of day and in two different geographical locations.

This is why the Intruder Watch needs more monitoring stations to produce the necessary evidence to initiate prompt action.

With WARC 79 imminent the assistance of enthusiasts is needed to preserve our exclusive amateur allocations."

Thus, from the above can be seen the difficulties and the aspirations of the Intruder Watch personnel in the UK.

The Intruder Watch in Australia is only 11 years old, but it will be interesting to see how we shape up when we *"Come of Age"*. ■

TECHNICAL CORRESPONDENCE

K. W. Gooley VK2BGZ
2/38 Watars Rd., Cremorne 2090
2/7/78

FT101 DIGITAL READOUT

The Editor,

Dear Sir,

Would you please publish the following corrections to Fig. 6 of my outside "Digital Readout for the FT101" of January 1978 issue.

Thank you.

Yours faithfully,

K. W. Gooley VK2BGZ ■

The Editor,

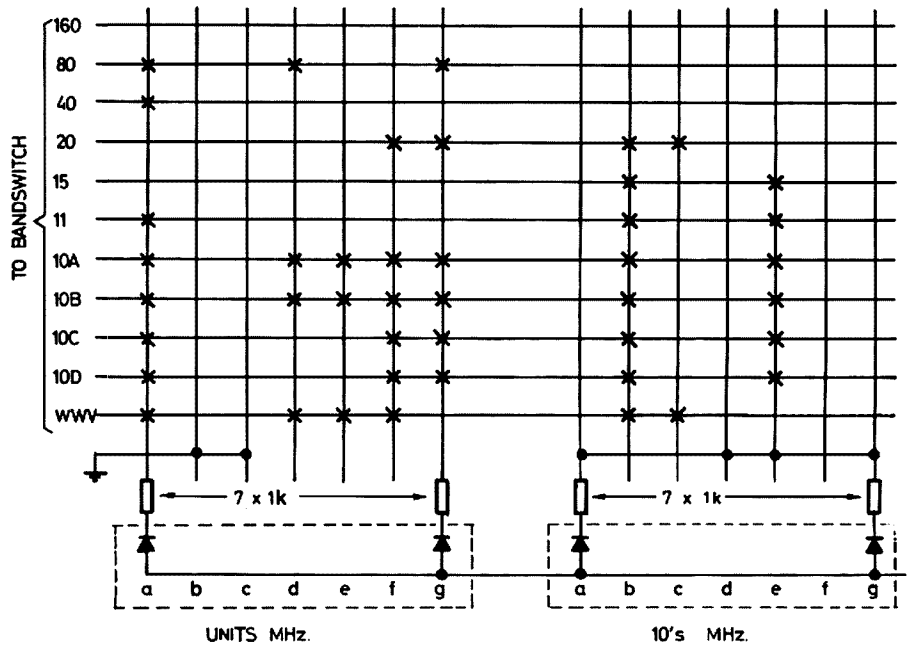
Dear Sir,

The following errata apply to the article "Delayed braking action for rotators", page 27, August 1978 AR.

First paragraph: "The Ham II control unit does not have . . ." should read "The Ham II control unit does have . . ."

Second paragraph: "When an undeveloped stop is required . . ." should read "When an undelayed stop is required . . ."

Geoff Wilson VK3AMK ■



FT101 Digital Readout Corrections — VK2BGZ

GFS FOR THE BEST AT LESS

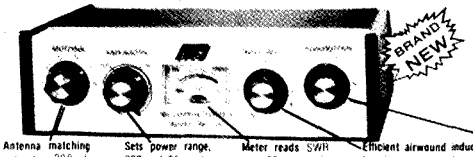
GFS electronic imports

You have the choice of YAESU or KENWOOD and we buy direct from Japan, (not just from a local distributor) therefore, we sell to you at lower prices. Both are supplied with English handbooks, wired for 240 Volts AC and have 3-core AC power cables, with Australian 3-pin plugs. For a high quality product and personal service call GFS.

GREG WHITER
VK3CA

Introducing the MFJ Versa Tuner II...

with SWR and dual range wattmeter, antenna switch, efficient airwound inductor, built in balun. Up to 300 watts RF output. Matches everything from 160 thru 10 Meters: dipoles, inverted vees, random wires, verticals, mobile whips, beams, balance lines, coax lines.



Antenna matching capacitor 208 pf 1000 volt spacing

Sets power range, 300 and 30 watts Pot for SWR

Meter reads SWR and RF watts in 2 ranges

Efficient airwound inductor gives more watts out and less losses

Transmitter matching capacitor. 208 pf. 1000 volt spacing.

GFS INTRODUCTORY PRICE

Only **$124.00**

Only MFJ gives you this MFJ-941 Versa Tuner II with all those features at this price:

A SWR and dual range wattmeter (300 and 30 watts full scale) lets you measure RF power output for simplified tuning

An antenna switch lets you select 2 coax fed antennas, random wire or balance line, and tuner bypass.

A new efficient airwound inductor (12 po in. ...) gives you less losses than a tapped toroid for more watts out.

A 1:4 balun for balance lines. 1000 volt capacitor spacing. Mounting brackets for mobile installations (not shown)

With the NEW MFJ Versa Tuner II you can run your full transceiver power output — up to 300 watts RF power output — and match your transmitter to any feedline from 160 thru 10 Meters whether you have coax cable, balance line, or random wire

You can tune out the SWR on your dipole, inverted vee, random wire, vertical, mobile whip, beam, quad, or whatever you have.

You can even operate all bands with just one existing antenna. No need to put up separate antennas for each band

Increase the usable bandwidth of your mobile whip by tuning out the SWR from inside your car. Works great with all solid state rigs (like the Atlas) and with all tube type rigs

It travels well, too. Its ultra compact size 5x2x6 inches fits easily in a small corner of your suitcase.

Also available:

MFJ-901 VERSA TUNER $93

MFJ-902 T-200 TUNER $78

New efficient air wound coil for more watts out

BEFORE YOU BUY ANYTHING NEW FOR YOUR STATION CHECK US OUT FOR PRICES AND SERVICE.

HF WADLEY LOOP COMMUNICATION RECEIVER

STANDARD. Model C-6500

A state of the art communication receiver covering the range 0.5-30MHz using a Wadley Loop for rock solid stability. Unlike some other receivers that use only one filter in the IF and exhibit poor selectivity, The C-6500 has two filters, giving good selectivity on SSB and AM. For more details write to us for a brochure. Only $359

YAESU AND KENWOOD

FT-101E	160-10M 260W TCVR
FT-901DM	160-10M 200W TCVR
FT-7	80-10M 25W TCVR
FT-301S	80-10M 25W TCVR
FT-301	160-10M 200W TCVR
FT-301D	Digital 200W TCVR
FP-301	20 Amp 301 Series PS
FL-2100B	80-10m Linear Amp
YO-301	301 Series Monitorscope
YO-100	101 Series Monitorscope
YP-150	Dummy Load/Wattmeter
FRG-7000	Digital Comm Rx
TS-520S	120-10m 200W TCVR

DX-555D COUNTER GENERATOR

Featuring a 220 MHz counter upper limit and 30 MHz generator upper limit.

Generator frequency is read directly on the counter.

A MUST FOR EVERY HAM SHACK. $249

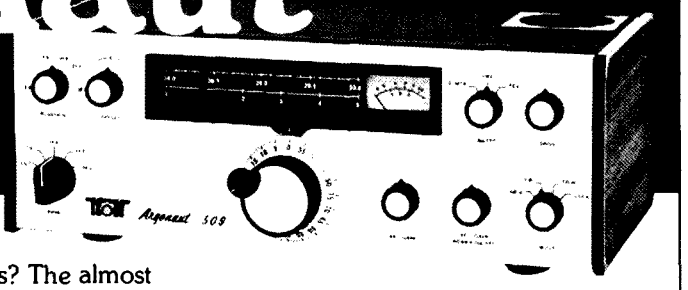
Also available Towers, Antennas, Morse Keys, Co-Ax, Rotators, Power Meters, and many other accessories. Now open Saturday mornings.

90 DAY LIMITED WARRANTY APPLIES TO ALL EQUIPMENT BUT DOES NOT COVER FINAL TUBES OR SEMI-CONDUCTORS. PRICES AND SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

G.F.S. ELECTRONIC IMPORTS 15 McKEON ROAD, MITCHAM, 3132. (03) 873 3939

An invitation to join the TEN-TEC

"Argonaut Club"



TEN-TEC Argonaut 509

Tired of push-button QSOs? Had it with the KW killers? The almost too easy life of power hamming? Then the excitement of Argonauting is for you. The QRPp world is different. A challenge? Of course. The test of an operator? Perhaps. But above all it is the thrill of working the world with 5 watts.

The Argonaut club is exclusive, not everyone is a member. But if you enjoy the spirit of conquering distance with lower power, you are "in." There are no dues — just the price of an Argonaut.

Join the thousands of fellow members in the Argonaut club, get in on the Argo fun. Your membership awaits you at your Ten-Tec dealer.

SPECIFICATIONS:
Five band: 3.5-30 MHz. SSB and CW modes. ½μV receiver sensitivity. 5 watts transmitter final input. Fully solid-state. Permeability tuning. Instant break-in. Instant band change without tune-up. Receiver offset tuning. Automatic sideband selection, reversible. Direct frequency readout. Built-in SWR bridge. S-Meter. WWV receive. Internal speaker. Plug-in circuit boards. 12-14 VDC or AC supply power. Wt. 6 lbs. Size HWD: 4½" × 13" × 7".

509 ARGONAUT TRANSCEIVER	$415.00
215-P CERAMIC MICROPHONE	$ 45.00
A.& R. PS-353 P. SUPPLY	$ 38.00

Of Course . . . You can Add the Matching Linear Amplifier in the Future. Please Phone, Write or Call, for Further Particulars of the Range.

graham e. stallard
27 WHITE AVE., LOCKLEYS 5032
SOUTH AUSTRALIA - PHONE 43 7981

Authorised Australian Distributor for
TEN-TEC

New Release $295

TRANSVERTER MODEL MMT 432/144S
UTILIZING an IF of 144MHz * 10 WATTS DRIVE of ½ WATT * VOX
OPERATED, TWO SELECTABLE RANGES
FEATURES EXTENDED COVERAGE FOR OSCAR 8

This 432 solid state linear transverter is intended for use with a 144 MHz transceiver to produce a high reliability transceive capability. A 10 watt load and RF sensing network eliminates the need for any anciliary circuitry. A single coaxial connection is all that is required between the transverter and the associated 144 MHz transceiver.

A wide range of applications is offered by the MMT432/114 transverter, which by virtue of its linear mode of operation will enable 144 MHz SSB, FM, AM or CW equipment to be used at 432 MHz. to 436 MHz.

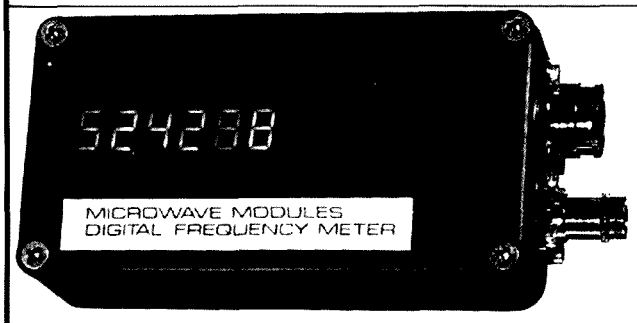
Simply connect direct to your 2 metre rig, 12 volt supply, fit 70 cm antenna for instant SSB, FM, AM, CW operation, coverage 432-434/434-436 in two ranges.

FEATURES: High quality double-sided glass fibre printed board * Highly stable zener controlled oscillator stages * PIN diode aerial changeover relay with less than 0.2 dB through loss * Extremely low noise receive converter, typical 3 dB * Separate receive converter output gives independent receiver facility * Built in Automatic RF VOX with override facility * Built in 10 watt 144 MHz termination, selectable attenuator for ½ watt * Use of the latest state of the art Power Amplifier transistors provide reliable 10 watts continuous output

MODEL MMT432/144S Price $295

TRANSVERTER MODEL MMT 432/28S Features extended coverage for Oscar 8
Second Crystal Oscillator gives two ranges: Low 432 – 434 MHz – High 434 – 436 MHz. Programming available to either Transmit/Receive both Low, both High, or a mixture of the two. Adjustable Drive Level is now provided by an input potentiometer. Optional RF VOX. Power Output 10 watts minimum * 28 MHz IF * Drive 1 mW to 500 mW * Aerial Changeover by PIN diode switch * Modern Microstrip Techniques * Power requirements 12 volt nominal at 150 mA 2.5 amp. peak * Case size 187 x 120 x 53 cm * Spare 432 input socket.

MODEL MMT 432/28S Price: $245 **MODEL MMT 144/28 Price: $185**



500 MHz COUNTER Model MMO050/500

SPECIFICATION:

Digit Height	10 mm
Display Width	45 mm
Case Size	111 x 60 x 27 mm
Frequency Ranges	0.45 - 50 MHz, 50 - 500 MHz Better than 50 mV RMS over 0.45 - 50 MHz. Better than 200 mV RMS over 50 - 500 MHz
Input Connector	50 ohm BNC
Input Impedence	200 ohm approximately
Power Connector	5 pin 270 deg. locking DIN socket (supplied with plug).
Power Requirements	11 - 15 volts DC at 300 mA approximately

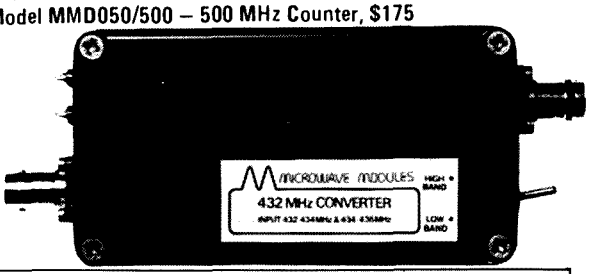
Model MMD050/500 – 500 MHz Counter, $175

DUAL RANGE 432 – 434 MHz & 434 – 436 MHz CONVERTER
TYPE: MMC432/ 28S & MMC 432/144S **Price: $67.00**

FEATURES:
* Extra Range (434-436 MHz) For Satellite Reception
* Ultra Low-Noise First RF Amplifier Stage
* Highly Stable Zener Diode Controlled Crystal Oscillator and Multiplier Stages

SPECIFICATIONS:

Input frequency ranges:	432-434 MHz (low) 434-436 MHz (high)
I.F. output frequency:	28-30 MHz or 144.146 MHz
Typical gain:	30dB
Noise figure:	3dB Maximum
D.C. Power requirements:	11-13.8 volts 12.5V nominal
Current consumption:	50 mA Maximum



BNC CONNECTORS – Excellent quality, fully imported from U.K. – U.S. Mil. No. UG88E/U. Price: $1.35 each.

NEW READY-TO-OPERATE MODULES AVAILABLE IN THE SALES PROGRAM OF VHF COMMUNICATIONS.
All modules are enclosed in black cast-aluminium cases of 13cm by 6cm by 13cm and are fitted with BNC connectors. Input and output impedance is 50 ohms. Completely professional technology, manufacture, and alignment. Extremely suitable for operation via sattelite or for normal VHF/UHF communications.

6 METRE MOSFET CONVERTER
Featuring 24 MHz local oscillator output for transverter use:

Input frequency:	52-54 MHz
I.F. Output Frequency :	20-30 MHz
Typical Gain:	30 dB
Noise Figure:	2.5 dB
Typical Image rejectoin:	65 dB
Crystal Oscillator Frequency:	24 MHz
Power requirements:	12 volt ± 25% at 35 mA.

MODEL MMC52/28LO Price: $49.00

1296 MHz CONVERTER
Mircostripline, Schottky diode mixer.
IF: 28-30 MHz or 144-146 MHz
Noise figure: typ. 8.5 dB
Overall gain 25 dB **Price: $65.00**

CONVERTERS
PACK & POST $2.00

144 MHz MOSFET CONVERTER
Noise figure: typ. 2.8 dB.
Overall gain: typ. 30 dB.
IF: 28-30 MHz. 9-15 V 20 mA.
Price: $45.00

VARACTOR TRIPLER 432/1296
Max. input at 432 MHz. 24 W (FM, CW) - 12 W (AM)
Max output at 1296 MHz: 14 W
Price: $74.00

AMATEUR ELECTONIC IMPORTS IS THE EXCLUSIVE AUSTRALIAN DISTRIBUTORS FOR THESE PRECISION BRITISH MADE UNITS FROM MICROWAVE MODULES LTD.

All prices subject to change without notice. Onwards forwarding please add sufficient for freight or postage. Excess will be refunded.

Amateur Electronic Imports
P.O. BOX 160, KOGARAH. N.S.W. 2217
TELEPHONE: (02) 547-1467
CABLE: "AMATEURIMPORT, SYDNEY"

NEW

MML 432/100, 100 WATT 432 MHz LINEAR POWER AMPLIFIER

FEATURES

* 100watts minimum output 10dB minimum gain
* Fully protected against poor load VSWR, overheating and excessive or reverse supply rails.
* Equipped with RF VOX and manual override
* Supplied with power lead and all connectors

Frequency bandwidth:
435 MHz ± 15 MHz @ – 1 dB
Power requirements: 12.5 V nominal @ 20 amps for 100 output. 13.8 V maximum.
RF Input connector : 50 ohm BNC
RF Output connector: 50 ohm 'N' type
Weight: 4kg (8lb. 13 oz.)
Overall Size: 315 x 142 x 105 mm.
12 3/8 x 5 5/8 x 4 1/8")

SPECIFICATION:

Power Gain	:	**10 dB minimum**
Power output	:	**100 watts RMS output @ 1 dB compression**
Power input	:	**10 watts nominal for 100 watts output**

PRICE $395

DESCRIPTION

This solid state 432 MHz linear power amplifier, MML432/100, is intended for use with any existing 432 MHz equipment having an output power of 10 watts. When used in conjunction with such a drive source this linear amplifier will provide a power output of 100 watts minimum.

The inclusion of the latest state of the art power transistors (each of the final transistors being rated at 145 W dissipation), guarantees a highly reliable and ultra-linear unit which is suitable for all modes of operation. (SSB, FM, AM, CW, RTTY and TV).

The amplifier utilises recently developed matching techniques which allow safe operation even when improperly subjected simultaneously to 50% overdrive and a supply voltage of 15 V.

However, as a further safeguard against damage to the final transistors, the following protection circuitry has been included to shutdown the unit in cases of poor load VSWR, overheating, and excessive or reverse supply rails.

(i) HIGH VSWR: The amplifier will automatically shutdown into the straight through mode should the sensing circuitry detect a load VSWR of worse than 2.5: 1 at the antenna socket.

The mode of shutdown will be indicated by the illumination of an LED status light on the front panel.

The sensing circuitry will test for an improvement in the load VSWR every 8 seconds. When the load VSWR returns to less than 2.5:1 the sensing circuitry will allow the unit to return to normal operation.

(ii) THERMAL: Should the heatsink temperature reach 65°C or more, the amplifier will automatically shutdown into the straight through mode, until the heatsink falls well below this temperature.

This mode of shutdown will be indicated by the illumination of an LED status light on the front panel.

(iii) OVERVOLTAGE AND REVERSE POLARITY: The incorporation of a crowbar circuit protects the transistors against reverse polarity or an excessive supply voltage. This will automatically shutdown the unit should the supply voltage exceed 15 V or should the supply be reversed.

By means of an internal RF vox circuit the linear will automatically switch onto transmit when 432 MHz drive is applied to the input socket. However, this facility may be overridden by the application of an earth to the phono socket located on the rear panel. This may be achieved by connection to the transceiver PTT switching line.

An integrated circuit network provides a well-regulated bias supply for the final transistors, and each transistor is individually thermally tracked against ambient temperature variation and operational temperature rise.

All RF circuitry is constructed on high quality double-sided TEFLON PC board and the use of broadband stripline techniques gives the unit a bandwidth of 420-450 MHz, without the need to re-tune.

The unit is housed in a highly durable, black steel case, RF input and output sockets are located on the rear panel, together with the 12 volt supply fuse, and the push to talk line phono socket. The unit is supplied fitted with a 12 V supply cable, plugs for both input and output connectors, a phono plug for the PTT line, and a spare fuse.

Amateur Electronic Imports

P.O. BOX 160, KOGARAH. N.S.W. 2217
TELEPHONE: (02) 547-1467
CABLE: "AMATEURIMPORT, SYDNEY"

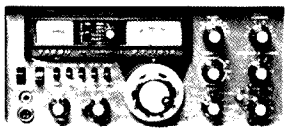
CHIRNSIDE ELECTRONICS

DIRECTOR: FRED SWART
VK3NBI

CHIRNSIDE ELECTRONICS THE BEST ON PRICE AND SERVICE SAVE $$$

YAESU

KENWOOD



YAESU

P.O.A.

FT-901DM.160-10M Transceiver.
FT-101E. 160-10M Transceiver.
FT-301. 160-10M Transceiver.
FT-301S. 160-10M Transceiver.VOX Cal.&AM.
FT-301D. 160-10M Digital Transceiver.
FT-7. 80-10M Transceiver.
FP-4. Matching Power Supply.
FRG-7. General Coverage Receiver.
FRG-7000. Digital General Coverage Receiver.
FT-227R. 2m. Mobile Transceiver.
FT-225RDM. 2M. ALL Mode Transceiver.
FR-101D. Receiver.
FR-101DD. Digital Receiver.
FL-2100B. 1200 Watt Linear Amplifier.
FL-110. 200 Watt DC Input Linear Amplifier.
YO-100. Monitorscope for FT-101E.
YO-101. Monitorscope for FT-101E.new model.
YO-301. Monitorscope for FT-301 series.
FP-301. Matching Power Supply for FT-301 series.
FP-301D. Digital Power Supply.
YP-150. Dummy Load-Watt Meter.
YD-844. Desk Mic.
QTR-24. 24 hr.World Clock.
FV-101.. Matching VFO for FT-101E.
FV-301 Matching VFO for FT-301 Series.
FC-301 Antenna Coupler inc.SWR and PWR Meters.
YC-500S. 500 Mhz. Frequency Counter.
YC-500J. 500 Mhz. Frequency Counter.
FL-101. Transmitter.Companion unit for FR-101.
FTV-650B. 6M.Transverter.
FTV-250. 2M.Transverter.
R-301. Relay box for FT-301 to FL-2100B.
SP-101. Matching External Speakers for FT-101E.FR-101.FRG-7,FT-301.
YC-601. Digital readout Adaptor for FT-101E.
YD-846. Hand mic.
FT-625D. 6M.ALL Mode Transceiver.
FT-225R. All Mode Transceiver.Analog Dial.
Optional Crystal Filters.

FT-227R. 2m.

$369

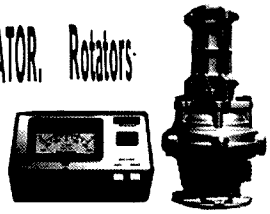
QTR-24.

$33.

YD-148

MORSE KEYS.
HK-707. On standard base with dust cover
HK-710. De Luxe heavy duty morse key.
TC-701. Practice keyer with built in Osc.
EKM-1A. Morse Practice Osc.

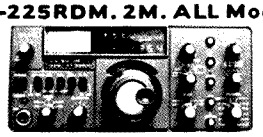
EMOTATOR. Rotators



103LBX. Medium Duty.
502CXX. Heavy Duty.
1102MXX. Extra Heavy Duty.
1103MXX.
1211 Mast Clamp for 103LBX.
1213 Mast Clamp for 502CXX.
1215 Mast Clamp for 1102-3MXX.
300 Mast Stay Bearing.
VCTF-7. 7 Core Cable.per Metre.
VCTF-6. 6 Core Cable.per Metre.

YC-601. Digital readout Adaptor for FT-101E $279.

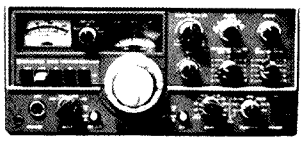
FT-225RDM. 2M. ALL Mode



$995

INCLUDES FREQ. MEMORY UNIT

GIVE US A CALL NOW!



TS-520S. P.O.A.

KENWOOD

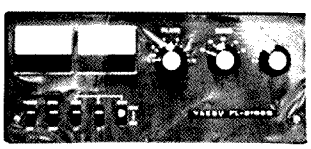
KENWOOD Equipment available ex-stock

TS-520S HF Transceiver ac only
TS-820S HF Digital Transceiver ac only.
SP-520 Matching speaker for TS-520S.
SP-820 Matching speaker for TS-820S inc.filters.
VFO-820 Matching VFO for TS-820S.
VFO-520 Matching VFO for TS-520S.
SM-220 Monitor Scope Kenwood series.
DG-5 Digital Display for TS-520S.
DS-1A DC Converter TS-520-820.
AT-200 Matching Antenna Tuner Power meter including antenna switch.
Optional crystal filters.
MC-35S Hand Mike HI Z.
MC-50 Base Mike HI and LO Z.

All Equipment pre-sales checked and wired for 240v ac operation!!!!

MISC.
SWR-200. Large dual meter SWR.
FS-600A. Peak Reading Wattmeter SWR Meter.
ME-11X. Twin SWR-PWR Meter. 3.5-150Mhz.
RS-101. Small single SWR Meter.
Western 5 Pos.Coax Switch.
Diawa 2 Pos. Coax Switch.
TWS-120. 2 Pos.Slide Coax Switch.
VS-1. Mini Mic. Compressor.
VS-BN. Ferrite Balun 2Kw.for Beams and Doblets.
TV-42. Drake 3 Section Low Pass Filter.1.5Kw.
Multi-band dipole traps and centre insulator 80-10M.
Porcelain Egg Insulators.
Wide Range of Coax Cable and Connectors in stock.
Yaesu Gutter Mount Mobile Whips.Complete set 80-10Minc. 2M.
Asahi AS-303. HF Mobile antenna setINC. ball mount and spring.
AS-NK Matching SS Bumper Mount for AS-303.

YAESU FL-2100B



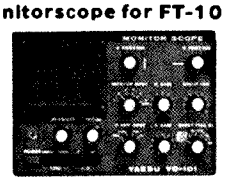
FEW ONLY. **$519**

YP-150

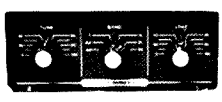
$108.

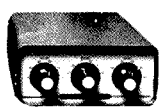
YAESU YO-101

Monitorscope for FT-101E.



NEW MODEL. $379.





ANTENNA COUPLERS.

HC-75. Tokyo Hy-Power Labs.Transmatch 75W PEP.
HC-250. Tokyo Hy-Power Labs.Transmatch 250W PEP.
HC-500. Tokyo Hy-Power Labs.Transmatch 500W PEP.Inc.160M.
HC-2500. Tokyo Hy-Power Labs.Transmatch 2.5Kw. PEP.
AT-200. Kenwood. 200 Watts.
FC-301. Yaesu.Inc.SWR and PWR Meters.

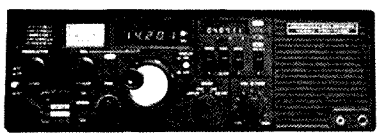
HIDAKA.
Antennas.
VS-33. 3el.Triband Beam 20-15-10M.Inc.Balun.
VS-22. 3el.Duoband Beam 15-10M Inc. Balun.
VS-41-80KR. 80-10M Trapped Vertical.
VS-RG. Radial Kit for VS-41-KR.

HY-GAIN ANTENNAS.

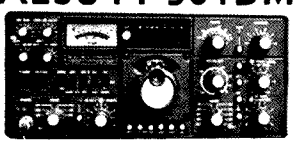
18-AVT 80-10 M Vertical.
CB-5 Select 11-10 M Beam.
TH-3 Mk.3 20-15-10 M Beam.
TH-3 Jr. 20-15-10 M Beam.
TH-6 DXX 20-15-10 M 6 EL.
HI-QUAD 3 El.Quad 20-15-10 M.

hy-gain

YAESU FRG-7000 . . . $679.



YAESU FT-901DM



$1599

CHIRNSIDE ELECTRONICS
26 EDWARDS RD.
LILYDALE 3140.
PHONE (03)726 7353

All prices include Sales Tax. Freight and Insurance extra.
Prices and specifications are subject to change without notice.

2 METRE REPEATERS

The list below is published from material kindly supplied by the WIA NSW Repeater Committee and is dated August 1978.

AUSTRALIAN REPEATERS

Ch. No.	Frequency	Call	Location	Remarks
AUSTRALIAN CAPITAL TERRITORY				
46/6	146.300/.900	VK2RAC	Canberra City	Operatoinal
47/7	.350/.950	VK2RGI	Mt. Ginini	Op. late 78
NEW SOUTH WALES				
602	146.025/.625	VK2RYY	RTTY Maitland	Op. late 78
41/1	.050/.650	VK2RDX	Mt. Binda via Oberon	Op. late 78
607	.075/.675	VK2RTY	RTTY Sydney	Prov. & Plan.
42/2	.100/.700	VK2RPM	Port Maquarie	Operational
42/2	.100/.700	VK2RAO	Orange	Operational
42/2	.100/.700	VK2RMU	Ulladulla/Milton	Operational
612	not allocated			
43/3	146.150/.750	VK2RAG	Gosford/Wyong	Operational
43/3	.150/.750	VK2RWG	Wagga	Operational
43/3	.150/.750	VK2R	Bega	Prov. & U.C.
617	not allocated			
44/4	146.200/.800	VK2RLE	Heathcote	Operational
44/4	.200/.800	VK2RIC	Lismore	Operational
622	not allocated			
45/5	146.250/.850	VK2RGF	Griffith	Operational
45/5	.250/.850	VK2RAW	Woolongong	Operational
45/5	.250/.850	VK2RAB	Gunnedah	Operational
627	.275/.875	VK2RMB	Manly	U.C. late 78
46/6	.300/.900	VK2RAN	Newcastle	Operational
632	.325/.925	VK2R	Gladesville	U.C. late 78
47/7	.350/.950	VK2RMI	Moree	Testing
637	not allocated			
48/8	.400/147.00	VK2RWI	Dural	Operational
702	147.025/.625	Test Ch.		
9	.050/.650	VK2RBM	Blue Mts./Medlow Bath	Op'tional
707	not allocated			
10	147.100/.700	VK2RWC	Westlakes/Watigan Mts.	,,
712	not allocated			
11	147.150/.750	VK2R	City of Sydney	Provisional
717				
12	147.200/.800	VKR2	Upper Hunter	Provisional
722	.225/.825	VK2RST	Hornsby/SSTV	U.C.
13	147.250/.850	VK2RHD	Hornsby	Testing
727	not allocated			
14		VK2R	Nat. ATV Liaison	Provisional
732	not allocated			
15	146.350/.950	VK2RHR	High Rang Mittagong	Late 78
15	.350/.950	VK2R	Forster	Planned
VICTORIA				
42/2	146.100/.700	VK3RML	Mt. Dandenong	Operational
43/3	.150/.750	VK3RBA	Ballarat	Operational
44/4	.200/.800	VK3RAM	Bendigo	Operational
44/4	.200/.800	VK3RLV	Latrobe Valley	Operational
45/5	.250/.850	VK3RMM	Mt. Macedon	Testing
46/6	.300/.900	VK3RSH	Swan Hill	Operational
46/6	.300/.900	VK3REG	East Gippsland	Operational
47/7	.350/.950	VK3RWZ	Grampians	Operational
48/8	.400/147.00	VKARMA	Mildura	Operational
48/8	.400/147.00	VK3RGL	Geelong	Operational
48/8	.400/147.00	VK3RWE	Wodonga	Operational
QUEENSLAND				
42/2	146.100/.700	VK4RGC	Gold Coast	Operational
42/2	.100/.700	VK4RAT	Townsville	Operational
42/2	.100/.700	VK4RAP	Rockhampton	Operational
44/4	.200/.800	VK4RDD	Toowoomba	Operational
44/4	.200/.800	VK4RGU	Bundaberg	Operational
46/6	.300/.900	VK4RAI	Ipswich	Operational
48/8	.400/147.00	VK4RBN	Brisbane	Operational
SOUTH AUSTRALIA				
42/2	146.100/.700	VK5RMN	Port Pirie	Operational
45/5	.250/.825	VK5RHO	North Adelaide	Operational
46/6	.300/.900	VK5RMG	Mt. Gambler	Operational
48/8	.400/147.00	VK5RAD	Adelaide	Operational
WESTERN AUSTRALIA				
42/2	146.100/.700	VK6RAP	Perth Hills	Operational
44/4	.200/.800	VK6RAH	Perth City	Operational
44/4	.200/.800	VK6RAA	Albany	Operational
46/6	.300/.900	VK6RBY	Bunbury	Operational
48/8	.400/147.00	VK6RAW	Wagin	Operational
48/8	.400/147.00	VK6RAK	Kalgoorlie	Operational
TASMANIA				
42/2	146.100/.700	VK7RHT	Mt.Wellington/Hobart	Operational
43/3	.150/.750	VK7RNW	NW Coast/Ulverstone	Operational
48/8	.400/147.00	VK7RAA	NE Coast/Mt. Barrow	Operational

COMMONLY USED SIMPLEX CHANNELS

Ch. 40—146.00 Ch. 49—146.45 Ch. 50—146.50 Ch. 51—146.55
Ch. 52—146.60 Ch. 68—146.40 Ch. 69—147.45 Ch. 70—147.50
Ch. 71—147.55 Ch. 72—146.60

EXPLANATION OF STATUS INDICATORS

(a) Provisional — Allocation subject to confirmation when more detail is available.
(b) Planned — Repeater at planning stage.
(c) U.C. — Repeater under Construction..
(d) Testing — Indicates Repeater under trial operational period on a part or full time basis.

The channel numbering system varies from State to State: Two systems are shown in prime channels i.e. 1-15 in N.S.W. and 41-48 in Victoria. The numbers shown in the 25 kHz splits i.e. three digit numbers are at this time suggestions only. ■

RETURN OF THE SIX METRE BAND TO AMATEURS — PART 1

Eric Jamieson VK5LP

About 12 months ago I asked interested amateur operators to write to me setting out their views on any moves likely to be made for the return of the 50 to 52 MHz segment of the International six metre band to the Australian Amateur Service. Typically some replied straight away, some a little later, others wrote after further prodding, many did not write at all. This of course is a standard amateur response, and not unexpected, but I was surprised at some of the missing call signs. However, life is full of surprises — like the morning a few months ago when you awoke to the news of the likely escalation of the use of Channel 5A (right alongside our 2 metre band) in Australia. That's another matter, and I may be having more to say on that later.

HISTORICAL AND PREVIOUS RECOMMENDATIONS

Perhaps you should be reminded, a lot of our problems, if not all, came with the advent of television, first with a 10 channel system and later 13 channels, which grew from "The Report of the Radio Frequency Allocation Review Committee", led by Professor Huxley, and tabled in 1961. The Terms of Reference for the Committee were:—

(a) To examine the existing frequency allocations and those arising from the Geneva Conference 1959, insofar as they affect Australia with the object of ascertaining —

(i) the sections of the allocation table in use;
(ii) the sections not being used;
(iii) the extent to which any re-arrangements are possible and/or desirable so that each Department, Authority and the licensed users with a legitimate interest in the administration and/or operation of approved Radio Services have their reasonable interest and needs for spectrum space safeguarded:
(vi) the manner in which any further distribution of available radio frequencies might be effected in the overall National interest.

(b) To examine specially any aspects of the radio frequency position as it affects the Australian

Broadcasting and Television Services as may be referred to the Committee after preliminary review and report to the Postmaster-General by the Australian Broadcasting Control Board.

(c) To make any necessary recommendations on the above matters to the Postmaster-General.

Under (a) (ii) the Amateur Service could expect to have their interests considered along with the other services.

ITEM 6.1. THE AMATEUR SERVICE

The proposed allocations provide for the following changes . . . Allocation of 52 to 54 MHz, the same amount of space as the 56 to 58 MHz Geneva allocation, but 2 MHz less than the existing Australian allocation. . . . Summary: In respect to the Amateur bands the recommended allocations are generally in close agreement with those of the Geneva Table. Where departures from that Table have been recommended they have been considered necessary because of the needs of other Australian services.

ITEM 6.4. THE DEFENCE GROUP

The basic aim of the Defence Group as far as frequency allocations are concerned, is to ensure, as far as possible, global operational compatibility with our Allies both in the military and scientific fields. Thus ideally, all frequency allocations for the Defence Group must be in very close agreement with the Geneva Table.

A problem which arises from time to time is caused by the use,of necessity, of military equipment primarily designed for use in other regions.

Recommendation No. 8 in the Huxley Report is interesting: "Relating to the protection of frequency users in areas of marginal reception of radio signals. The Radio Frequency Allocation Review Committee, NOTING: 'that there have been instances in which users of properly assigned and properly used frequencies have been required to change frequency or close down to protect television reception in areas of very low signal strength; RECOMMENDS: that the assigning authority to be directed to support any user who conforms to the official requirements and place the onus of satisfactory reception of radio signals on the individual receiver.'

Originally the amateurs were to lose the use of 50 to 52 MHz in 1963 when the former 1 metre band (288 MHz) was discontinued, but the six metre enthusiasts received a respite until 1st April, 1964, when the lower two MHz disappeared with the full time operation of Channel 0, which covers 45 to 52 MHz. But that certainly did not end the story. The amateurs of Australia are permitted to operate 52 to 54 MHz providing they do not cause interference to other services, and the one we are concerned with at present is television. Equally troublsome is the fact that Channel 0 interferes with amateurs operating legally in their own band. Interference is experienced principally when operating reasonably close to the transmitter, and consists of extraneous signals spaced every 15.625 kHz across the band. These TV component signals have a rough sound because in effect they are subcarriers at the line oscillator frequency and have their own sidebands of 50 Hz frame and video components. This type of interference will be worse on test patterns than the normal programmes since the test patterns are electronically generated with better waveshapes with consequently more sideband frequency components. Thus despite the best in filter design, it will be inevitable that some energy must escape from a 100 kW transmitter located a few miles away.

There are two main problems:

If the amateur transmits in a Channel 0 area he will interfere with TV receivers due to their front end design having a wide bandwidth and thus inherently poor selectivity, though this may vary with some brands of TV sets. The second problem is continual rubbish on the amateur band from the Channel 0 transmitter!

The Region III area in which Australia is situated, along with many other Pacific nations, is an area where the full 50 to 54 MHz amateur operation is permitted, notably in Japan, Siberia, Hong Kong, Phillipines, Hawaii, USA, Mexico, Noumea, New Hebrides, plus other call areas such as KG6, KL7, CE2, FK8, and most recently P29, who also have been granted full 50 to 54 MHz status. New Zealand has 51 to 53 MHz. Most of the areas mentioned above have already been worked from Australia since the increasing sunspot numbers of cycle 21 have been observed. The remainder and many more will be available for working before the cycle wanes once again in two to three years.

Cycle 19 in 1958-59 provided many outstanding contacts from Australia, and the September 1978 issue of AR carried words from a letter published in my notes from Bill VK2HZ, outlining the extent of the six metre coverage by amateur stations at that time. In the light of the experience then which should surely have been still vivid in the minds of those members who compiled the Huxley Report, how a proposal for a TV allocation between 45 and 52 MHz could have been made is beyond comprehension.

AUSTRALIA

Australia is unique in the world in having two non-standard television allocations, Channel 0 and 5A, both of which are immediately alongside an amateur band, our two most used VHF bands. Additionally, because there are three main Channel 0 stations in Australia, Melbourne, Brisbane and Wagga, spaced just the right distance apart for maximum interference to one another during periods of sporadic E activity, the mind fails to centre on any sound reasons for this allocation. Cycle 19 showed it possible for overseas stations to be heard in Australia at tremendous strength, and that was before a Channel 0 allocation — I am sure the proprietors of the existing Channel 0 stations now will be looking with some trepidation to the extent of the likely interference pattern in 1979-80. I have personally monitored a number of TV video and sound signals in and around 48 MHz from Korea, China and other Asian areas, and signals can be up to 5 x 9 + 30 dB, and that will cause a lot of QRM to Australian Channel 0 stations, and I will suggest, given the right conditions, those overseas stations will be there for many hours of the day at that strength, and if TEP conditions prevail as well, the signals may well continue right through until midnight local time!

NEW ZEALAND

Our near neighbour New Zealand suffers from interference from the Australian Channel 0 stations on their Channel 1 allocation of 44 to 51 MHz, and it would seem likely they interfere with Channel 0. Perhaps the only good luck story one could speak of is that the Channel 0 stations are lone operators, not like New Zealand where Channel 1 feeds a number of low power translators, so anything which upsets the originating stations affects all the others, with the result people in hidden valleys share the QRM with their wealthy neighbours in the cities!

The shortsighted thinking at the time which allowed Channels 3, 4 and 5 to be placed in an international FM band is also beyond comprehension. Now that an FM service has been rightfully established in its correct place in the spectrum, other channels have had to be brought into use to allow the original stations to continue operating. That this has or is being achieved is credit to the licensing authorities except for the proposed increased usage of Channel 5A.

The part which hurts me the most I think is the point I have written about before, is the fact that the USA with something like the land area of Australia, with well over 200 million people, this being 15 times as many as Australia, they have only the same spectrum space that we have, yet they are able to give their amateur population more frequency space, to the extent of 7 MHz in the VHF spectrum alone (an extra 2 MHz at 50 MHz, and 5 MHz at 220 MHz!), yet it would be fair to assume, I venture to say, that they would have many times the requirements for space for commercial and military communications that we do, but they seem to manage. The USA has considerably more television stations in the VHF area, but in addition, they have made good use of the UHF spectrum for additional TV services, ethnic and otherwise. The great number of large population towns there must compound any problems they have of frequency allocation, but they seem to manage! And they have never found the necessity yet to consider the introduction of any Channel 0 or 5A allocations, nor have I heard of any reports of reducing the amateur bands similar to that in Australia.

ABOLITION OF CHANNEL 0

And so the case for the abolition of Channel 0 is started! In the paragraphs which follow soon are variations and thoughts for alternatives which should be studied first by anyone looking to ridicule them. The 52 to 54 MHz band in Australia for the amateurs is a Primary Service. But this is in name only. Any amateur who dares to operate a transmitter which causes any interference to a television viewer is under threat of closure, even though he is operating his station technically correct, and able to pass any inspection likely to be made at Departmental level. At best he could be placed on restricted hours of operation such as outside television hours, etc. Others have to live with their neighbours, and this can become dangerous if the ire of certain types of neighbours is aroused, broken aerials, rocks on roof and broken windows are not unknown. So for peace, the amateur is likely to stop operating voluntarily. Certainly amateur bands other than 52 MHz can also cause TVI, but the risk is not as great when operating HF if the equipment is suitably enclosed and filtered, but that's quite another story.

COLOUR TV

The average modern colour TV with its coaxial antenna lead is helping to keep the QRM problem in a better position, and most CTV sets are either fitted with UHF tuners or have provision for them to be fitted so it seems ridiculous to put off the day when the UHF TV band should be opened. The almighty dollar in the eyes of some commercial interests seems to take precedence over sane thinking, UHF coverage of the populated areas of each State would be pretty good, with solid signals being the order of the day. Perhaps not entirely relevant, but I have noted with interest over the past two years since the fitting of a UHF (470 MHz) two-way radio system to my work vehicle with the base station suitably situated on a high hill just like the television transmitters, the fantastic coverage I can get with a 25 watt transmitter feeding into a 15 cm whip on the roof of the van, and a 25 watt base station to a unity gain antenna. I work over most of the area of the Adelaide Hills and there are very few places, including valleys and townships where it is not possible to operate. If I had a 100 kW e.r.p. to play with I think the coverage might even be better!

COMMERCIALS SUMMARY

That generally sums up the commercial position as it affects the operation and interference to television stations and viewers. Recapping: Every summer sees considerable interference to Channel 0 viewers due to sporadic E making available stations from other areas on the same Channel, and this also includes New Zealand. With the advent of greatly enhanced sunspot numbers in cycle 21 not only will this QRM persist, but it will be added to by stations from Asia and Pacific areas which will be quite capable of causing as much QRM and perhaps for longer periods. Additionally, it is well known power lines cause interference to radio and TV reception during hot weather, and as this form of QRM peaks around 50 MHz, Channel 0 will further suffer. In VK5 we get enough grumbles from TV viewers who complain of ignition QRM on our Channel 2, what it must be like in Melbourne and Brisbane on Channel 0 I shudder to think!

THE AMATEUR OPERATOR

Having said all that, let us now turn to the more specific situation as it confronts the amateur operator, who has lost out badly over the years through the loss of 50 to 52 MHz in the first place, and then by not being able to operate when desired in Channel 0 areas due to TVI. Thanks to as much publicity overseas as wa have been able to generate, other countries are slowly coming around to accepting we are operating 2 MHz higher than they do. The lost opportunities for rare stations must be great, however, as whan conditions are good overseas, those stations will continue to operate around 50 MHz until conditions continue to wane or stations run out — then they may think of us down here who have been calling in vain.

This article will be concluded in the next issue. ■

QSP

RFI

The editorial in CQ of April '78 deals with the age-old problem of interference resulting in controls over amateur and CB equipment. It continues "The frustrating part of the situation is that there is no control at the other end of the interference chain, nor is there an effective means of securing a reciprocity in dealing with interference. What I am getting at is that we (amateurs) have been conditioned to accept the blame in toto for rectifying a situation hat cannot be resolved by one side. The manufacturers of consumer devices apparently have been set aside as a privileged class, the consumer has been absolved of responsibility by his retail payment and the culprit is still you and me".

AMATEUR RADIO — SERVICE

Writing in The Propagator for June '78, the President of the Illawarra ARS, VK2BBG, crystallises some aspects of modern thoughts, thus —

"The Citizens Radio Service has been with us for some time. For better or worse, it remains a starting point for many future amateurs. How many future amateurs come from this and other areas, depends upon the communities awareness of amateur radio. Not only its existence, but its utility. The days of "we're here because we're here' have gone. We can no longer look down our noses at the uninformed public. For without that public, amateur radio will not survive the upheavals that are taking place within and without the amateur service. For that is what we must carefully cultivate, the service of amateur radio.

"Service is a doing thing. Not a thinking or talking thing. The amount of time available is in direct proportion to the importance of the task. I would suggest that helping the service aspect of amateur radio is as important as tomorrow.

For these reasons, I commend the workings of your club, the WIA, the novice course at the tech, and the Wireless Institute Civil Emergency Network. Look at them carefully, they are dependent upon your service."

In similar vein in relation to CB is the editorial in "Zero Beat" of June 1978 —

"One thing seems to have become obvious over the last few months and that is the fact that the combination of CB radio and the novice licensing has opened the way to a spectacular increase in the number of amateurs — providing that advantage is taken of the situation. The biggest danger is that there may arise hostility and lack of communication between the amateurs and the CB organisations. And unfortunately it seems that if this postility does arise it will mainly be the fault of the amateurs. There are too many amateurs who have the attitude that getting a licence was hard for them so why should it be made easier for others. This is selfish and illogical and can only damage the amateur cause. The other harmful attitude is that of looking at CBers as though they were second class citizens. There are a lot of ratbags, but don't let us forget that there are also quite a few among the amateur fraternity themselves. Many of the CBers are becoming really interested in radio communication and with sympathetic help will turn into first class amateurs. We have a tremendous potential for recruits. Let us make the best of the opportunity." ■

VHF-UHF
AN EXPANDING WORLD

Eric Jamieson, VK5LP
Forreston. 5233

AMATEUR BAND BEACONS

VK1	VK1RTA, Canberra	144.475
VK2	VK2WI, Sydney	52.480
	VK2WI, Sydney	144.010
	VK2RHR, Mittagong	144.120
VK3	VK3RTG, Vermont	144.700
VK4	VK4RTL, Townsville	52.440
	VK3RTT, Mt. Mowbullan	144.400
	VK4RBB, Brisbane	432.400
VK5	VK5VF, Mount Lofty	53.00
	VK5VF, Mount Lofty	144.800
VK8	VK8RTV, Perth	52.300
	VK8RTU, Kalgoorlie	52.350
	VK6RTW, Albany	52.950
	VK8RTW, Albany	144.500
	VK8RTV, Perth	145.000
VK7	VK7RNT, Launceston	52.400
	VK7RTX, Ulverstone	144.900
	VK7RTW, Ulverstone	432.475
VK8	VK8VF, Darwin	52.200
JA	JA2IQY, Nagoya	52.500
KG8	KG6JDX, Guam	50.110
KH8	KH6EQI, Hawaii	50.104
TI	TI2NA, Costa Rica	50.080
W	WA6JRA, Los Angelas, USA	50.091
ZL1	ZL1VHF, Auckland	145.100
	ZL1VHW, Waikato	145.150
ZL2	ZL2VHP, Palmerston North	52.500
	ZL2VHF, Wellington	145.200
	ZL2VHP, Palmerston North	145.250
ZL3	ZL3VHF, Christchurch	145.300
ZL4	ZL4VHF, Dunedin	145.400

I note from "Break In" that the Waikato VHF Group in ZL1 area has under construction a 70 cm beacon, which is planned to run 10 watts output to an omni-directional antenna, with FSK ident. In the Upper Hutt area of ZL2 a six metre beacon is being constructed, and will eventually operate on 52.510 MHz. I also note some attempt is being made to arouse a fresh interest in six metres in ZL, which appears to have been very low of recent times, so much so that VK and JA and KH6 operators have been asking where the ZLs are, especially as their Channel 1 TV station has been heard overseas with some frequency. Certainly at my QTH it's a red letter day if you work a ZL on six metres. Without an increase over there on six there is very little likelihood of working ZL on 2 metres, as the state of the band on six is quite often a good pointer to where the MUF is, and a guide to when calls should be on 144 MHz.

DARWIN NEWS

Graham VK8GB sends along some fresh news of activity in the Darwin area, if only to make our mouths water down here with the continuing epic.

20-6-78: 52.050 JR1AUW at 1300Z. 22-6: 52.050 JR1AUW, JH6TEW, JJ1THA, JR6NSZ and JA2HMO 1150 to 1235Z. 1-7-78: 52.050 KG6JIH, JR1AUW, JH6TEW and JA2ODM 1025 to 1310Z. 14-7: 52050 KG6JIH, 1100Z. 16-7: 52050 KG6DX, JA4HPU 1115 to 1220Z. 17-7: 52.050 JR1AUW, JJ1BRN, JF3SDD; 52.033 JA4MBM, 1149 to 1225Z. 18-7: 52.030 JR1AUW; 52.050 KG6JIH, JA2BZY, JA2DDN and KG6DX, 1245 to 1345Z. 19-7: 52.030 JR1AUW, JH1JHA; 52.052 KH6JSG/KG6, 1245 to 1305Z. 20-7: 52.050 JR6NSZ; 52.033 JA4MBM, JH1USR, 1315 to 1340Z. 22-7: 52.047 JA4MBM; 52.050 KG6DX; 52.048 JH4EVU, JR1AUW, JH6TEW, 1045 to 1358Z. 24-7: 52.050 JA1 to 6 inclusive for 17 contacts, 1053 to 1415Z; KG6JDX at 1135Z; 144.150 JH6MTJ, JH6OYA, JH6DVD, JH6IHN, JR6HSO, JR6BVG, JR6TEI, 1250 to 1308Z. 27-7: 52.050 KG6JIH, 1233Z.

2-8-78: 52.050 KG6JIH, 1254Z. 3-8: 52.050 JH4XJH, JH6TEW; 52.033 JA4MBM, JR1AUW; 144.110 JH6TED, 1155Z. Six metre contacts between 1145 and 1240Z. 4-8: 144.100 JH6EPS, JR6EKD, JH6PWK, JH5XTN and JH6IFF, 1137 to 1154Z; 52.0505 JH1LZC, JI1ETU, JA5RVY, JA4MBM, 1200 to 1218Z. 5-8: 52.033 JA4MBM, 1135Z; 52.050 JH6TEW, 1140Z; 144.39 JH6TEW, 1152Z. 7-8: 52.050 JA2HMO, JA5GVF, JF2DEJ, JR6OTM, JH1JHA, JH6TEW, JR6OST, KG6JIH, 1117 to 1210Z; 52.033 JA4MBM, R1AUW, 1226 and 1237Z; 50.195 4D88UT, 1254Z.

Graham remarks: "Compared with this time last year conditions have been excellent. As you can see there has been virtually no break in six metre openings, and two metre openings are occurring again! I would predict a very good season for all stations in VK this spring.

"DXpeditions: There are two six metre DX-peditions planned for August. One to Manila by JA amateurs. Call sign 4D8UT and operating on 50.195 SSB/CW beacon. The other to KG6 Saipan, call sign KG6RO. Some JA amateurs and KG6JIH were involved. Running FT625 plus 100 watt linear to 8 element yagi, beacons 50.110 and 50.210 MHz.

"The following stations in Russia contacted JA stations on 144 MHz Es this year: Vladivostok: UA0LFK, RA0LAN, RA0LFI. Sakalin: UW0FBG, UA0FDA, UW0FZ, UA0FAM, UA0FBE. Kharbarovsk: UA0CAA, UA0CAF, UA0CBO, UA0FDA. Opening times were between 0800 and 1000Z and around 0300Z with many openings. I am hoping to organise some 144 MHz skeds with some of the Russian stations.

"Brian VK8VV and myself checked up on our two metre contacts and he holds the longest distance, and understand he will be making a claim for an Australian Record."

Thanks once again, Graham, for keeping us all up with the news. We certainly do look forward to the Spring openings, and will be keeping a weather-eye on late evening TEP conditions in the hope 144 MHz may decide to come this far!

Because of the interest which revolves around these winter time contacts in Darwin, I have this month included the actual call signs of the stations Graham worked, for those of you who have been making a study of the conditions and areas covered, times and frequencies, this will be of some use to you. It is still interesting to note the 2 metre path still only covers the JA4 and 6 call areas, which are virtually in a north-south path to Darwin over a very small angle. A similar narrow angle path would exist between the Tokyo area and Adelaide, and contacts may some day be possible to there if the right conditions can be found. We are trying down here!

John VK2ZBD of Tea Gardens, 40 miles north of Newcastle, has written to say he has decided to start up again on six metres after an absence of 6 to 7 years, with a home-brew transverter feeding a pair of six element yagis at 60 feet! He plans to eventually run 200 watts PEP. He felt a bit disappointed when on 12th August he had removed the transmit driver stages for modification to hear VK2AIP at Springood on shortskip, and later strong signals from VK7MT, VK7JG and VK7ZAH all on 52.050. Just shows even in the winter time you can scarcely afford to have your six metre equipment out of action! Good luck, and thanks for writing, John.

A letter to hand from Ray K5ZMS of SMIRK, contains a few points of interest as follows: Ray refers to the breakdown of WARC 79 proposals which, amongst other things, indicated Region 1 has allocated 47 to 68 MHz for broadcasting. He says this is not entirely true as countries like Gibraltar, South Africa and others have allocated a six metre band for amateurs. There are about half a dozen other countries who seem to be leaning towards allowing amateur usage in the future. (Again probably due to increased QRM from other countries. . . . 5LP.)

Ray goes on: "If the present trend of reception of VK/ZL 6 metre signals in USA continues, Channel 0 hasn't seen anything yet in the way of interference, till they start getting TVI from our 6 metre repeater stations, plus those in JA, KH6, KG6, etc. I had a report also of two VK5 stations being heard in Alaska! ZL TV has been received in Mexico. The aim of SMIRK is to try and obtain 6 metres 50 to 54 MHz as a world-wide allocation." Good to hear from you, Ray, we are doing what we can down here about Channel 0.

A SMIRK newsletter received as I write this details an extraordinary amount of 50 MHz activity right throughout the world, but more particularly in the northern hemisphere. It's already incredible what is being worked. G3COJ says they are listening for beacons and signals on 6 metres in the UK and are hopeful of being allowed to run a beacon again this cycle. Cyprus beacon (5B4CY) on 50.5 heard 599 in UK, 1726Z on 4-8-78. ZS6PW beacon is on 50.030. ZB2VHF, the Gibraltar beacon, is to be re-located right at the top of "The Rock". ZS6HVB beacon is on 50.1 MHz. Scandinavian Radio Amateur Societies are making a strong pitch for 50 to 54 MHz in their WARC 79 petition.

"KGJIH runs beacon on 50.110. VS6BE also has beacon. Formosa could also be on six with VB2 prefix. KL7 Alaska very active on six, and there is a beacon running at Anchorage, on 50.110. 6Y5RC also has a beacon! There is just so much activity being reported one doesn't know where to start and stop. Bob K6RNO says six metres will

open on trans-continental F2 when sunspot count reaches 120, and when CPRL charts indicate an MUF of 42 MHz, the MUF will reach 50 MHz on 10 per cent of the days of the month indicated."

From QRM I note VK4ZNC has sent an IC 502 and linear to FK8AB, who is now looking for VK signals, and monitors 52.050 MHz. They also advise the possibility of a six metre beacon in Hobart on 52.475, and when this happens the Launceston beacon will change frequency to 52.470 MHz.

INTERESTING EVENTS ON SIX METRES

David VK5KK has done some research on early six metre activities, and the following should be of interest.

"25-8-47: On this day the first of the more unusual long distance openings attributed to that which later was to be collectively called TEP. VK5KL in Darwin worked W7ACS/KH6 Pearl Harbour, distance of 5350 miles. On 27-8-47 another "first" when XE1KE Mexico worked LU6DO in Temperley, Argentina, distance 4900 miles. On 7-10-47 W6UXW California had a partial contact with J9AAO Okinawa, but not a confirmed contact.

"Meanwhile, the North/South American path was being hotly worked. 14-9-47 'first' USA to South America contact, W5FSC Houston, Texas, to OA4AE Lima, Peru. On 15, 16, 17, 18, 19 and 20 September many Mexico to Argentina contacts were made, all within 1700 to 2000 local.

"Yet another 'first' on 12-10-47, W7ACS/KH6 worked W5, W6 and W7, the first time six metres had been worked to mainland USA from Hawaii.

"At this time propagation was thought to be almost completely accounted for but with openings at later than expected times (for F2 layer that is) and consistent Trans-equatorial paths changed the situation. The theory we now know was largely formulated in the late 1950s and early 60s. However, MUF on these paths were only reported to 60 MHz. (1.5 times previous days F2 MU.) Some predictions as to the MUF of night-time single hop TEP were, until recently, only put to about 100 MHz. It is now thought that something like 250 MHz is more in order, but it would seem at the moment it becomes a more North-South path as frequency is increased. Because of this I think all efforts should be made to get back 50 to 52 MHz so as to place us on even terms with other 6 metre countries and make co-ordination of higher frequency experiments possible.

"On 27-10-56 'first' Japan to USA contact, JA1AUH (a call that is still active and has been working recently from VK5 at least) to K6EOX. It is interesting to note that by May 1958 JA1AUH had worked 16 USA States.

"With the opening of 50 to 54 MHz to VKs in late 1957, it became possible to work JAs without trying splits from 56 MHz, etc. During 1958 there were 6000 JAs and about 10 per cent were on six metres. By March 1959 VK4NG had worked 532 JAs. Also 400 JAs had worked USA during 1958. One notable contact, JA7JU to VE7KW on 23-11-59.

"Also first VK to mainland USA 6 metre contact occurred 15-3-58, Bob VK4NG to W6BJI. Other calls from both sides involved on the same day included VK4HD, VK4ZAZ, VK4ZBF, VK4XJ and K6ERG, K6PXT, K6RNQ, K6MMT and W6RLB and W6WWD. Time 0450Z to 0530Z. Band also opened on 20-3-58. USA stations were having more luck with ZL, band being open on February 1, 7, 20, 21, 22, 23, 28 and March 19 and April 16. There were still being contacts to ZL after they were shifted to 52 MHz in 1959. And VK3ALZ worked KE1FU on 1-5-59."

Many thanks, David, for that interesting round-up. Incidentally, David VK5KK, and his father, Keith VK5SV, worked at least 113 different stations during March and April 1978, all JAs except a contact to KG6DX on 1-4, which was the first KG6 to VK5 contact that we know of. There were two night time TEP openings on 13-4 and 16-4. Calls were made on 144.1 and 144.110 with 32 elements pointing north, but no results.

By the time you read these notes there should have been some interesting six metre contacts from Australia to other lands, if the previous pattern continues to be followed. It will hardly be necessary for me to remind VHF operators to listen and call on the band. But do please take off enough time to write to me and report what you have worked and heard. Keep a good ear on 50 MHz because that's where most of the action will be.

Nothing outstanding has occurred on two metres apparently as nothing has arrived on my desk in the way of reports. But keep your ears on that band, too, from September through to at least April or May next year, interesting contacts could result.

During September I shall be making a journey to Western Australia and hope to meet up with Tony VK6BV in Kalgoorlie, Peter VK6ZDY in Perth, and of course all the boys in Albany. (Don't forget to take your camera to VK6, Eric, and send me some photos of the VHF activity in that area.—Ed.) Maybe I shall have something worth reporting from the west on my return. I will be making other arrangements for this column for the November issue, which is normally prepared at the end of September. I won't spoil your surprise by telling you.

Closing now with the thought for the month: "Life is like a grindstone — whether it grinds one down or polishes one up, depends entirely upon the material one's made of!"

73. The Voice in the Hills. ■

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.

32 Dorset Street,
Busselton 6280, WA
27th August 1978

The Editor,
Dear Sir,

My thanks to Geoff Wilson VK3AMK for his letter in August AR, which exactly expresses my own sentiments, with the possible exception of the words "particularly in Western Victoria". Here in VK6 we have our problems, too, with a Channel 5A transmitter brought into service this month.

Where Channel 5A and Channel 0 are concerned, complacency can spell nothing but disaster. We've lost 27 MHz, but 2 metres is a horse of a very different colour. Here we MUST take off the kid gloves and show the authorities that this is where we make our stand: that we WILL NOT be forced off the 2 metre band by TV transmitters operating contrary to international frequency allocations.

On another subject, congratulations to most participants (including the many Novices) for the high standard of operating in the recent RD Contest. As usual, however, there were still too many examples of the annoying practice of "frequency jumping". You know how it goes: You call CQ and are fortunate enough to find a queue waiting for QSOs. You've worked a couple and then someone jumps in and calls the station you've just worked. You are forced to QSY and start CQing all over again, with the rest of the stations waiting to contact you, just left for dead.

Oh, yes, we know about skip, and on the DX bands you don't hear all the locals, but you don't have to listen on a frequency for long to know what's going on there. We ere all human, and perhaps all a bit thoughtless at times, but it's so easy, and so much more friendly, to jump in with a quick call and "see you down 2". And what could be more refreshing in the turmoil of a contest, than to hear the question "Is this frequency in use?".

Finally, in reply to Eric Trebilcock and various other letters for and against continuing CW in Amateur exams.

The real joy of CW QSOs will never be known to the Amateur who regards morse as an obstacle to be overcome to obtain a licence, and who does not then persevere to become really proficient.

If all new licence holders and potential licence holders could only realise what a satisfying and exciting form of communication CW operating really is, I feel sure they would be determined to master the art. For an art is what it is, and, sadly, a dying art.

Conservation is a household word today. With Morse Code almost a thing of the past in all commercial spheres, who will conserve this art if it is abandoned by Amateurs? Is not the Amateur Service the logical place to preserve this traditional communication medium for the pleasure of future generations?

Yours faithfully,
E. F. Davies VK6ED. ■

10 David Street East,
Springwood 2777
25th August, 1976

The Editor,
Dear Sir,

In August issue the Federal President expressed the opinion "It was felt that the examination standard is becoming more consistently at a level considered as suitable for entry into amateur ranks". I regret that I must express quite a contrary opinion, as the last Novice theory examination paper was passed by Novice candidates who had completed only a small portion of the course provided by the Club with which I was associated. In short, it was possible for candidates to obtain Novice qualifications with only the bare elementals topics covered and with no training in the important items such as transmitters, aerials and — MOST IMPORTANT — problems of interference.

Furthermore, the use of the word "consistently" implies that there has been a series of Novice papers of approximately equal standards — which is far from being true. It appears that the principle behind the Novice examining still remains at "It doesn't matter much what we test them on as long as we make up 50 questions". **THIS IS NOT GOOD ENOUGH!**

There should be some valid basis for determining the content of Novice theory papers. I suggest that we should expect Departmental testing to determine:—

(i) that successful Novice candidates can "get on the air" without undue problems to themselves;

(ii) that they should be able to set up their stations and operate without problems to other licensed Amateurs on or near the Novice segments;

(iii) that they should be able to operate without causing problems to other users of the radio spectrum — which will include testing on TVI, BCI, harmonics, parasitics, etc.

Accordingly, there will be some questions and topics which may be classed as "examworthy" insofar as they will help the examiners to assess in terms of the principles stated. However, we ask far too many questions of the "unexamworthy" category, which bear no relation whatever to th obvious aims of the testing process. I must, therefore, maintain that there is a long way to go before satisfactory Departmental examinations may be regarded as "suitable" in terms of the President's statement.

Yours faithfully,
R. C. Black VK2YA. ■

4 Van Diemens Crescent,
Burnie, Tasmania 7320
15-8-76

The Editor,
Dear Sir,

I wish to thank those concerned with requesting and granting the extra space on 80 metres for Novice use.

73s,
Fred Reid VK7NFR. ■

The Editor,
Dear Sir,

I have just found out that some amateurs have been working 6 metre DX on 50 MHz, which is outside the Australian allocation of 52-54 MHz.

This I find very disturbing to me, knowing these amateurs are deliberately working out of band, and which is very irresponsible on their part. It will not improve our relationship with the P. and T. Department and the Government, especially during the Channel 5A crisis. I am a ksen 6 metre operator and believe we should try to get 50-52 MHz back. Amateurs outside the Channel 0 service

area should be allowed to operate on 50 MHz any time, and those who live in places where there is Channel 0 to operate outside the Channel 0 transmitting hours.

I myself would love to work JAs, etc., on 50 MHz — but legally. To those amateurs who now operate on 50 MHz, wake up to yourselves and slide back up to 52 MHz, otherwise you will do more harm to the amateur radio service than good.

Lionel K. Curling VK3NM. ■

8 Carinya Road,
Mt. Colah, NSW 2079.
29th July, 1978.

The Editor,
Dear Sir,

I am concerned about the news and correspondence in AR and other places that there is the possibility of Television Channels 0 and 5A being used more widely in Australia. Like most of your correspondents I am concerned about the fact that deficiencies in the design of many television receivers could lead to an increase in TVI from amateur operation in the 6 and 2 metre bands.

However I am also concerned at the negative attitude expressed in the comments that we will actually lose the two bands. Surely, if the use of Channels 0 and 5A is extended, that should present a challenge to amateurs to solve the technical problems that may arise. Have the commercial operators abandoned the 70-88 MHz segment because it is adjacent to Channel 2, or the 148-174 MHz segment because it is adjacent to Channel 6? I think not.

If we amateurs go on behaving like "appliance" operators and don't use our technical abilities to tackle the problems that come along, we can be sure that there are many commercial interests who would be quite happy to take over our bands and solve them for — not us — but themselves. And if we continue to go crying to the Government in despair I am likewise sure that they would be quite content to hand over the bands to people who could profitably use them.

By all means let us point out the real problems to the authorities but let us also be positive in our approach and be prepared to solve them ourselves.

Yours sincerely,
Robert V. Barringer VK2ZIB. ■

The Editor,
Dear Sir,

WHY DO WE NEED PUBLICITY?

The days of just sitting back in silence holding our principles in one hand and our virtues in the other and expecting miracles to happen have gone. The days of justification in terms of social, economic and political areas have risen above the less but still important technical considerations. However, linked to all these interacting considerations are their relationship to public relations. When we talk of publicising amateur radio we usually refer to the few keen people who, like all the rest of us, have a daily job, a family to look after and lots of other activities to get involved in apart from amateur radio.

In the United States a full-time paid staff is supported by the ARRL which makes possible a wide range of avenues from contacts into the radio, TV, film and press industries through do-it-yourself PR kits such as how to be a success when you're being interviewed over your local TV or radio station; how to write an appealing article for your local paper which the editor won't be able to refuse, etc.

In Australia the greatest handicap is that such an important area as publicity, our show-piece to the general public, is totally lacking, because the only activists in this area are the few keen un-co-ordinated volunteers.

Hardly anyone works in the mining industry, yet we know "they are the backbone of our country", and when the general public must make the final decision one way or another — it will be PR — the showcase of the mining industry which will have had an important effect.

How much public support can we expect from the general public as a result of the Channel 5A and Channel 0 dilemmas? If the public don't even know wo exist then one would expect not very much as opposed to the appealing proposition of immediate community service programmes over existing VHF TV equipment.

A nationwide call for a response one way or the other could be seen in this way:—

People can vote for the Amateur Service (a group they have never heard of) which advises that UHF is bast and that VHF would disrupt some of their activities versus the TV Service which want the most economical currently existing VHF system.

The results tend towards the VHF system.

Take another case where the general public knows that a thing called Amateur Radio exists, that it's a hobby made up of individual people like you and I who get into a whole variety of radio activities.

If this much is not known then there is nothing to say that the new TV system must be on UHF.

However, if the public can identify with hobbyists who are being threatened, then although VHF is possible, people could favour the not too long term variable UHF proposition in favour of both services emerging unscathed.

This theoretical view of publicity outlines the concept of "What's in a name". Basically it's this — if people don't know you by your name they are more likely to support a concept they do understand.

The TV Service may have no more significance to a person than does Amateur Radio. For example, the non-migrant may not be interested in the proposed migrant TV service and he may not be interested in becoming an amateur hobbyist. Which way would such a person vote? There is nothing intrinsically correct about either VHF or UHF. Any technical ideal is only achievable when economic and political considerations are met first — this is surely the case of the introduction on a short range system being introduced on to 11 metres, although a balance was struck in the adoption of a transition period to UHF for CB.

Why, we could ask, are so many well known former CB advocates, having won the battle, now taking out amateur licences? Were not the elements which attracted them to amateur radio now, present before CB was legalised?

The answer is publicity. Publicity is letting people know what amateur radio is all about, people are listening, they like what they are hearing and that is why the great interest in the hobby.

During the campaign to legalize CB there was very little amateur publicity but lots of CB publicity. CBers regarded themselves as hobbyists, and amateurs were seen as more of the professional class of person.

What's happening today? The CBer who finds out about amateur radio is identifying it as a hobby which he or she can become involved in.

What about the publicity scene. Basically we are still at the level of attracting the existing hobbyist. Amateur Radio Action now being available on the newstand seeks out WIA and non-WIA members as well as newcomers, especially from the CB area. While both AR and ARA are doing excellent work in their areas, the general public is still largely untouched.

The question now arises **Is the goal of publicity to turn every person into an amateur?** Of course it's not, its simple task is to reach the whole community in presenting a basic showcase which reflects what amateur radio is — to let the world know of its existence so that when community support is required we don't need to wish we had 14 million amateurs, but we are pleased that 14 million people know who we are.

Yours faithfully,
Sam Voron VK2BVS
2 Griffith Ave., East Roseville, NSW 2069. ■

11 Shire Street,
West Wyalong, NSW
August 9th, 1978

The Editor,
Dear Sir,

The "Sugar Coated Oscar" in AR for July was interesting and I have a printout for my OTH, but I am still having trouble with "time". Living in amateur isolation it is hard to get information. Are your Oscar 7 predictions in GMT and how do I convert to local time at this OTH for this day? Can you recommend a book or source of information on this subject that is all time systems around the world (exact).

Many thanks.

Yours faithfully,
Ron Goodwin VK2BKN.

Editor's Note: The charts are in GMT and to convert to EAST add 10 hours (9 hours when daylight saving is introduced). The book "Oscar from the Ground Up" should provide you with most of the information you require (available from Dick Smith stores and most technical book shops).

Bob Arnold VK3ZBB is also forwarding you some further items under separate cover. ■

AROUND THE TRADE

MICROWAVE MODULES

Amateur Electronic Imports, PO Box 160, Kogarah 2217, NSW, distributors of the well known Microwave Modules, have available the MML432/100, 100 watt, 432 MHz linear power amplifier.

This solid state 432 MHz linear power amplifier is intended for use with any existing 432 MHz equipment having an output power of 10 watts. When used in conjunction with such a drive source this linear amplifier will provide a power output of 100 watts minimum.

The inclusion of the latest state of the art power transistors (each of the final transistors being rated at 145W dissipation), guarantees a highly reliable and ultra-linear unit which is suitable for all modes of operation (SSB, FM, AM, CW, RTTY and TV).

The amplifier utilises recently developed matching techniques which allow safe operation even when improperly subjected simultaneously to 50 per cent overdrive and a supply voltage of 15V.

Also available is the microwave module's dual range 432-434 MHz and 434-436 MHz converter. The extra range being for amateur satellite reception. The converter is intended for use with either a 28-30 MHz or 144-146 MHz receiver to produce a high receive capability for satellite terrestrial communication. ■

AEL HORN ANTENNA, 18 to 40 GHz

Scalar have announced that American Electronic Laboratories have introduced horn antennas, which provide moderate-gain, circularly polarized performance in the 18 to 26.5 GHz and 26.5 to 40 GHz bands, respectively.

A data sheet on AEL models H-1629 and H-1630 horn antennas is available from Scalar Distributors Pty. Ltd., PO Box 48, Kilsyth 3137, Victoria. ■

Dick Smith Electronics, an Australian distributor for Yaesu amateur radio equipment, is pleased to announce stocks of the new range of Yaesu amateur band vertical whips, specifically designed for mobile use.

They can be bought as a complete set, or purchased individually, and include a very rugged gutter mount base and individual whips for all HF bands. A short 2 metre ¼ wave stub and a combination ¼ wave 6 metre/5/8 wave 2 metre antenna complete the set.

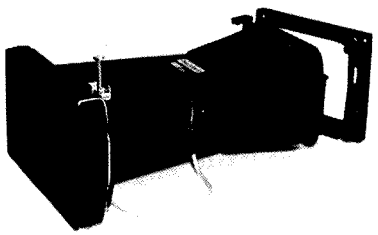
(Cat. Nos. D-4160-D-4118 refer.) ■

LATEST BWD CATALOGUE

BWD Electronics Pty. Ltd. have releassd their latest Shortform Catalogue, which includes a general range of oscilloscopes, oscillators, power supplies and the BWD MINI LAB and describes one of their latest new products, the BWD 540/701 DC-100 MHz Oscilloscope/Video Line Selector Dual Instrument Package.

BWD have also released a new oscilloscope camera, Model 7000. All the BWD products are

illustrated extensively, but more detailed technical information is available on individual instrument data sheets if required. Also available is information on their wide range of power supplies. A comprehensive six page data sheet covers all specifications which are fully detailed for ease of selection.



BWD Mod. 7000 Osc. Camera

Catalogues are available from BWD Electronics Pty. Ltd., Miles Street, Mulgrave 3170, or PO Box 325, Springvale, Victoria, Australia 3171, Phone (03) 561 2888, or from their authorised national or international representatives. ■

AMATEUR BAND ANTENNA COILS

The reliable REYCO range of multiband antenna coils are now available in Australia through sole distributor, Scalar Industries Pty. Ltd.

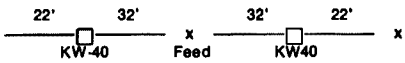
Specifications:

Power, 2 kW PEP (minimum); Weight, 6 ounces (max.) per coil; Size, 1.8 in. dia. (max.) x 5.5 in. long (max.); Absorption, Waterproof Coating; Strength, 300 (min.) Tensile Strength; Corrosion, All Metals, aluminium, including screws, nuts, washers, to resist interface corrosion; HI-Q, Optimum Form Factor on poly.

REYCO coils are actually parallel coil-condensor combinations designed to resonate in the various amateur bands.

Coils are wound with aluminium wire on threaded polystyrene forms. Rates of length to diameter plus low loss material results in a high Q assembly. Because of the high Q and impedance at resonance the coils act as effective insulators in the band in which they are resonant.

Using the kW-40 coils as a 5-band antenna approximate antenna dimensions.



On 40 metres the two 32 foot lengths provide a conventional dipole with the resonant coils acting as insulators.

On 75 metres the coils act as a loading inductance and with the extra 22 feet lengths form a dipole on 75 metres.

On the higher frequencies, with the values chosen the antenna is 3/2 waves on 20, 5/2 waves on 15 and 7/2 waves on 10.

Price Class $30 to $35.

Full details are available from Scalar Industries Pty. Ltd., 18 Shelley Avenue, Kilsyth, Vic. 3137. ■

SCALAR APPOINT WA AGENT

The SCALAR Group is pleased to announce the appointment of EVERETT INTERNATIONAL PTY. LTD., 17 Northwood Street, Leederville, W.A. 6007, Phone (092) 81 5500, Telex AA 92811, as their exclusive agents in Western Australia.

This includes the complete range of SCALAR communication antennas, screened enclosures and other products associated with radio frequency interference suppression.

A comprehensive range of the Company's mobile and field tuneable base station antennas are held in stock in Perth.

Telex communication between the two companies assures an efficient and instant information and ordering facility for frequency conscious, for special antenna systems, and for RFI suppression information. ■

CAPTIVE WIDEBAND SIGNALS

AEL's recorder computer interface series RCI accepts wideband analogue data, digitizes, stores, then delivers it to your data processor at compatible rate upon command. The RCI digitizes the input video signal using an internal, high speed analogue-to-digital converter and stores this sampled data in a memory with a standard capacity of 1.44 million words. This data can then be transferred to the minicomputer (or micro, or maxi) or data processor at a slower data rate, compatible with disk memory or other storage devices.

The RCI digitizing data is normally fixed at one value, the standard rate being 20 MHz. This rate can be decreased in discrete steps to allow increased storage time for narrower bandwidth input signals.

Further information from Scalar Distributors Pty. Ltd., PO Box 48, Kilsyth, Victoria 3137, Australia. ■

CONTESTS

Wally Watkins VK2ZNW/NCU
Box 1065, Orange 2800

CONTEST CALENDAR

October:

7/8	VK/ZL/Oceania DX (Phone and RTTY).
14/15	VK/ZL/Oceania DX (CW).
13/15	VK/ZL/Oceania DX (CW).
14/16	Manitoba QSO Party.
21/22	RSGB 2 MHz (SSB).
21/22	Jamboree on the Air.
28/29	CQ World-wide OX (Phone).

November:

4/5	RSGB 7 MHz (CW).
4/5	ARRL CW Sweepstakes.
18/19	ARRL Phone Sweepstakes.
25/26	CQ World-wide DX (CW).

CONTEST CHAMPION TROPHY

This trophy has been donated by Peter Brown VK4PJ, primarily to acknowledge the important part played by high scoring entrants in Amateur Radio contests, and also to provide added incentive to entrants.

RULE 1

The Radio Amateur, who is a member of the Wireless Institute of Australia, and holds a VK prefix and who, under the scoring arrangements of Rule 2, obtains the highest aggregate of points in the contests nominated by the Federal Contest Manager, shall be declared Contest Champion for each calendar year.

RULE 2

The Amateur obtaining the highest score in a nominated contest shall receive 10 points towards the trophy, the next highest scorer 9 points, and so on with the person in tenth place receiving one point. Where a contest has several sections, viz., CW, Open and Phone, then points will be allocated in each section, however points can only be claimed for one section of each contest.

RULE 3

An Amateur holding a Limited and Novice licence can aggregate points under both call signs, but only once in each contest.

RULE 4

The Contest Champion shall hold the trophy for a period of twelve months.

RULE 5

The Federal Contest Manager shall each year, at the time of announcement of the name of the new Contest Champion, nominate the succeeding contests applicable to the trophy, and together with such rules as he considers necessary, publish this information in Amateur Radio together with the list of all previous holders of the trophy.

NOMINATED CONTESTS FOR 1979

1. 1978-79: Ross Hull VHF/UHF Memorial.
2. 1979: John Moyle Memorial Field Day.
3. 1979: Remembrance Day.
4. 1979: VK/ZL.

To be eligible for the trophy a minimum of three contests must be entered. No formal application need be made as scoring will be done automatically by the Federal Contest Manager. ■

WESTLAKES NOVICE CONTEST

WESTLAKES NOVICE CONTEST

Westlakes Amateur Radio Club again this year announces a Contest for all Novice and Full Licence radio amateurs. The Contest will take place from 0800 GMT 9th to 0759 GMT 10th Oecember, 1978.

OBJECTS OF THE CONTEST

To encourage contest working between amateur stations in Australia, New Zealand and New Guinea during a 24 hour period with special emphasis on contacts with Novice and Radio Club stations.

RULES: STATIONS ELIGIBLE

Only stations in VK, P29 and ZL call areas may enter. No station outside these areas is permitted to ba worked or enter a log. Except for Radio Clubs, no multi-operator working is allowed. VK2s may work VK2s, VK3s may work VK3s, as well as stations in other areas of VK, ZL and P29.

CONTEST BANDS

All the 80, 15 and 10 metre Novice allocations may be used but Novice operators must observe the frequencies and band limitations outlined in their licence. No cross band operation is allowed but cross mods operation is allowed. Contacts may be Phone or CW.

SCORING: LICENSED OPERATORS

For contacts with Full Call stations: 2 points per contact.

For contacts with Novice Call stations: 5 points per contact.

For contacts with Radio Club stations: 10 points per contact.

SCORING: LISTENERS

Novice to Novice contact: 5 points.

Full Call to Novice or Novice to Full Call: 2 points.

Full Call to Full Call: 2 points.

Contacts in which a Radio Club is involved: 10 points.

CALLING PROCEDURE

Stations should call "CQ Novice Contest" on Phone or "CQN" on CW. Stations may be worked only once per mode.

EXCHANGES

Telephony stations should exchange (5) five digit numbers in order commencing with --001. The two numbers indicate signal strength and readability, e.g. 5 by 9 equals 59001. CW stations should exchange (6) six digit numbers in order commencing with ---001, e.g. 599001. Listener stations should log both the call sign and numbers in an exchange. Radio Club will add "C", e.g. 59023 C.

CONTEST CLASSES

Class A: Novice/Full Call Phone.
Class B: Novice/Full Call CW.
Class C: Novice/Full Call Open.
Class D: Listeners.

SUBMISSION OF CONTEST LOGS

Logs should contain details of: Station, time, band, mode, No. sent, No. read, points tally for section, together with this declaration: "I have operated my station in accordance with the licence requirements and the rules and spirit of the contest." This declaration should be signed and dated. A front cover for the contest log should contain: Name of operator and call sign, address, class for which entry is made, stations worked (a) Phone, (b) CW, points claimed (actual) and total points claimed.

Logs should be sent Certified Mail to: Contest Manager, Westlakes Amateur Radio Club, PO Box 1, Teralba 2284, by closing date of 15th January, 1978. Late entries may not be accepted.

The decision of the Contest Committee is final and no correspondence will be entered into regarding the Contest.

CONTEST AWARDS

Certificates for the highest score in each State will be awarded for the following:

Novice Phone, Novice CW, Novice Open.

Full Call Phone, Full Call CW, Full Call Open.

Radio Club Phone, Radio Cub CW, Radio Cub Open.

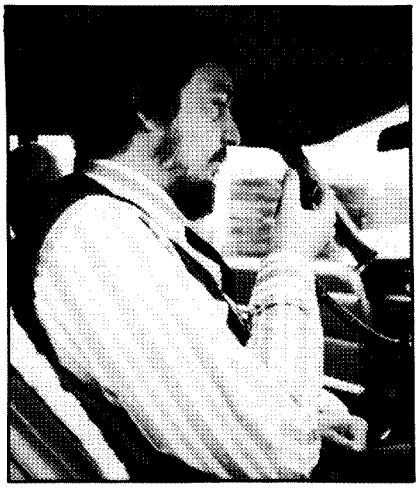
Listener Phone, Listener CW, Listener Open.

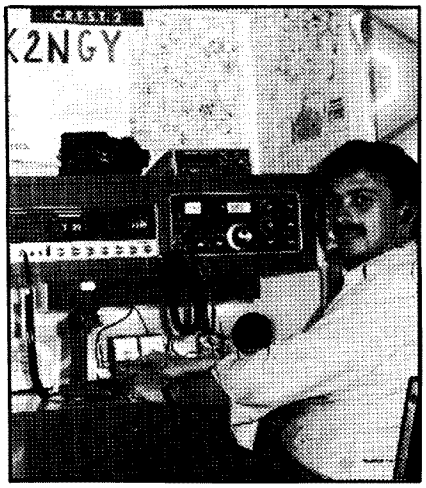
CERTIFICATES

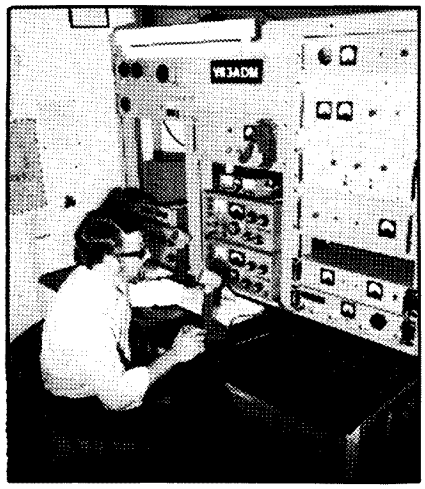
A miniature replica Certificate will also be issued to all stations and listeners who take part in the Contest indicating their participation. ■

AMATEUR RADIO ACTION

IS THE NEW GENERATION AMATEUR MAGAZINE







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CPU-2500R — 2 meter FM transceiver

Yaesu brings a Central Processing unit to VHF communications

Computer technology is brought to bear in the revolutionary CPU-2500R 2 meter FM transceiver from YAESU. Sophisticated circuit design and renowned YAESU quality workmanship are yours today with this exciting new transceiver from YAESU — where performance comes first!

Features

■ Heart of the CPU-2500R, a central processing unit (CPU), performs complex control operations while you just flick a switch.

■ 800 PLL synthesized channels are available in 5 kHz steps over the entire 2 meter band. A photo-interrupter frequency selection technique is used, and full 6 digit frequency display is provided.

■ The CPU scanner moves you instantly up or down the band, and will search for a busy or clear channel, as desired.

■ Four memory channels available for simplex or repeater operation, and additional memory channel may be used for split of up to 4 MHz. The CPU will scan just the four memory channels, if you wish.

■ Choice of standard microphone, with up/down scanner controls, or the keyboard microphone. The keyboard mike allows up/down scanner control, remote selection of dial or memory frequencies, and contains a two-tone encoder for autopatch or control purposes.

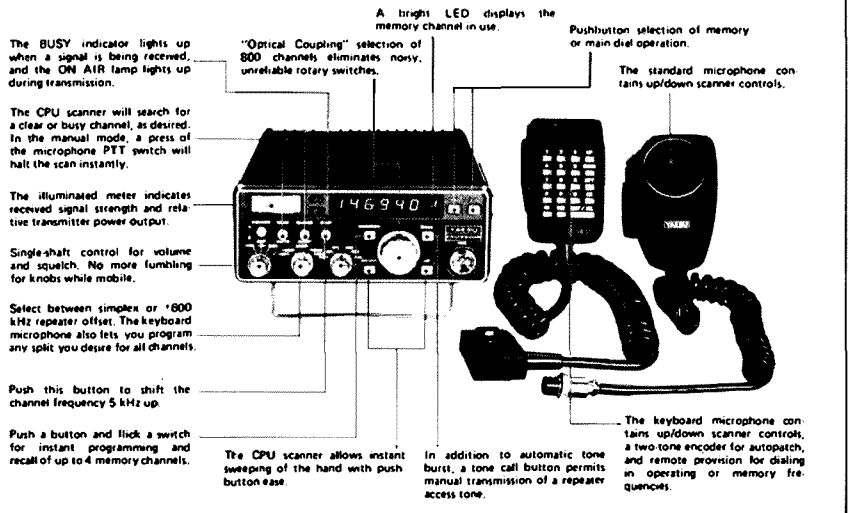
■ A subaudible tone guarded squelch encoder/decoder is an available option, for silent monitoring of busy channels.

■ A dual gate FET front end lets you pull in weak signals, while the transmitter puts out a solid 25 watts.

■ Convenience features include "busy channel" and "on the air" lamps, a memory backup feature, and manual or automatic tone burst selection. Your CPU-2500R is protected against high VSWR and reversed power supply polarity.

■ Ease of operation is ensured by careful selection of positions for controls and switches. Engineered for performance, using the latest technology, the CPU-2500R is truly a first-class set. YAESU promises you nothing less!

For a leaflet containing all specifications and full-color illustrations, contact Bail Electronic Services.



CPU-2500R

Our years of handling and specializing in this equipment have enabled us to build up a fund of knowledge and technical experience, backed by a comprehensive range of spare parts and service facilities. We don't just sell a set, our concern extends throughout the life of your equipment.

Contact us for details of other Yaesu equipment plus the accessories required to complete your station.

All equipment from Bail's carries a 90-day warranty and complete service back-up.

Prices and specifications subject to change without notice.

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JIM BAIL VK3ABA

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Ph. (03) 89 2213

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	WILLIS TRADING CO., 429 Murray St., Perth 6000	Ph. 21 7609
S.A.	FARMERS RADIO PTY. LTD., 20 Stanley St., Plympton 5038	Ph. 293 2155
TAS.	G. T. ELECTRONICS, 131 Westbury Rd., South Launceston 7200	Ph. 44 4773
	J. D. ELECTRONICS, 64 Wentworth St., Launceston 7250	Ph. 44 5000
	PRINS RADIO, 123 Argyle St., Hobart 7000	Ph. 34 6912
N.S.W.	Aviation Tooling, STEPHEN KUHL, 104 Robey St., Mascot 2020	Ph. 667 1650
	Amateur & Novice Comm. Supplies, W. E. BRODIE, 23 Dalray St., Seven Hills 2147	Ph. 624 2691
	DIGITRONICS, 186 Parry St., Newcastle West 2302	Ph. 69 2040
	RIVERCOM, Sid Ward, 9 Copland St., Wagga Wagga 2650	Ph. 21 2125
QLD.	H. C. BARLOW, 92 Charles St., Aitkonvale, Townsville 4814	Ph. 79 8179
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DOES YOUR ANTENNA TURN IN THE WIND?

DOES YOUR CONTROL UNIT 'CUT-OUT' AFTER ONLY A FEW REVOLUTIONS?

. . . then step-up to a RELIABLE EMOTO ROTOR.

Bail Electronics are pleased to announce . . . . . an exciting range of ANTENNA ROTATORS by EMOTO ANTENNA Co. of Japan

EMOTO FEATURES
- **ROBUST DESIGN**
- **HEAVY DUTY STAINLESS HARDWARE**
- **100v. SUPPLY TO MOTOR REDUCES VOLTAGE/POWER-LOSS**

COMPARISON OF ROTOR BRAKE TORQUE FIGURES (kg./cm.)

CDE model	Torque
CD44	1,152
HAM-2	4,025
Emoto model	
103 LBX	1,500
502 CXX	4,000
1102 MXX	10,000

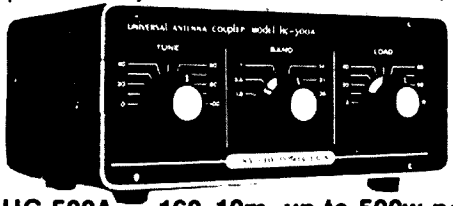
We have been in the business long enough to know your requirements for a first class antenna rotor, and we have gone "over-board" for the EMOTO range! There are many brands of antenna rotors, some of them completely unsuitable for the majority of amateur applications, and for this reason we do not stock them.

Most likely your present antenna rotor will turn your antenna and hold satisfactorily, but it just will not hold it stationary under strong wind conditions; i.e. YOUR ROTATOR LACKS SUFFICIENT BRAKE TORQUE, the ability to hold the antenna still whilst a gale is blowing. **HERE IS WHERE THE EMOTO SCORES.** Take a close look at the comparison figures above. Then compare the prices of all the rotors and you will have to agree that the EMOTO 103 LBX, EMOTO 502 CXX and EMOTO 1102 MXX are the best value.
Finally, EMOTO ANTENNA CO., is not a new company. They have been making rotors for many years. Have no fears about this being a new and untried product!

Universal® antenna couplers

Extremely important, especially with modern all-solid state transceivers, is the maintenance of a very low SWR to avoid destruction of costly high-power P.A. transistors. An antenna coupler enables precise adjustment with almost any antenna.

(S.W. or co-ax.)



HC 500A — 160-10m, up to 500w pep
(also available — not illustrated)
HC 2500 — 160-10m, up to 2.5kw pep
HC-75 — 80-10m, up to 75w pep
HC 250 — 80-10m, up to 200w pep
KW E-ZEE Match — 80-10m, up to 400w pep
FC 301 Yaesu — 160-10m, up to 500w pep

Now an addition to YAESU'S range of measuring instruments . . .

QTR-24

24 hour World Clock

QTR-24

Yaesu has now made an addition to their already well known range of measuring instruments, it is the QTR-24, a 24 hour World Clock. With a glance the time in any principal city or time zone can be simultaneously co-ordinated with local time on a 24 Hour basis. The QTR-24 is powered by a 1.5V dry cell, which has a normal life of approximately one year. No amateur or SWL station could be complete without one.

Our years of handling and specializing in this equipment have enabled us to build up a fund of knowledge and technical experience, backed by a comprehensive range of spare parts and service facilities. We don't just sell a set, our concern extends throughout the life of your equipment.

Contact us for details of other Yaesu equipment plus the accessories required to complete your station.

All equipment from Bail's carries a 90-day warranty and complete service back-up.

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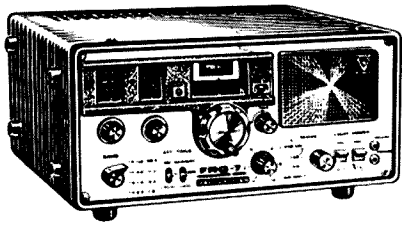
THE NEW DIGITAL H.F. TRANSCEIVER

DenTron DTR-1

NEW!

WRITE FOR FULL SPECS.

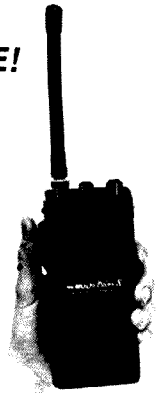


FRG-7 only $325

DR-48 only $466

FDK **MULTI Palm II** *NEW RELEASE!*

2m FM POCKET TRANSCEIVER



SPECIFICATIONS:

Transceive Frequency Range: 2 MHz in 144-148 MHz; Transceive Channels: 6 Channels; Mode of Operation: FM; Antenna Impedance: 50 Ohms unbalanced, BNC connector; Power Requirement: 12V DC (Negative Grounded); Power Consumption: Transmit 300 mA, Receive 100 mA, Stand-by 25 mA; Weight: 1.03 lbs. (470g); Repeater Offset: ± 600 kHz; Modulation: Variable Reactance phase modulation; Max. Deviation: ±5 kHz; Microphone: Condenser Microphone; Receiver: Double conversion superheterodyne (1st IF = 16.9 MHz, 2nd IF 455 kHz); Sensitivity: —4 dBu (NQ 20 dB); Audio Output: Maximum 0.3 Watts; Attachment: Rubber ducky antenna, Nicad battery pack, DC cable with cigarette lighter plug, Carrying strap.

$229

ALSO AVAILABLE: • **MULTI 800D** **$416**
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New FULLY LEGAL ANTENNA ROTATOR

MEDIUM-SIZED HAM ANTENNA ROTATOR — FU 400.

With approved power supply **$139**
Mast clamps **$11**
Stay bearings **$32**

Constructed for long trouble-free operation. 200 kg vertical weight capacity. Extra heavy duty disc brake that prevents wind-milling.

INQUIRE ABOUT OUR SPECIAL ANTENNA/ROTOR PACKAGE !!

ANTENNAS GALORE AT SPECIAL PRICES

AUSTRALIA'S LARGEST SELECTION OF BEAM ANTENNAS: 3, 4, 5 ELEMENT YAGIS, V-QUADS, Y-QUADS, etc.

Wilson — SY-1, 10-15-20m, 4 elem. Beam **$339**
Wilson — SY-2, 10-15-20m, 3 elem. Beam **$279**
Cushcraft — ATB-34, 10-15-20m, 3 elem. Beam **$289**
Hustler — 4 BTV w/80m Resonator, Vert. Antenna **$130**

SPECIAL COMMUNICATIONS SYSTEMS

RELAX AND ENJOY CW — Go RTTY Emona's Silent Way!

NEW INFO-TECH RTTY EQUIPMENT:

Model 75 RTTY to Video Converter **$448**
Model 150 RTTY Keyboard **$407**

NEW INFO-TECH MODEL 200! **$668**

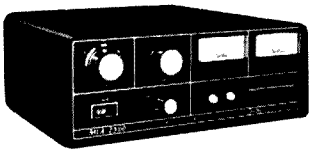
A complete system that converts Morse, RTTY and ASCII to Video, using Fairchild F-8 Microprocessor Technology! A good receiver and video monitor are all that is required!

NEW INFO-TECH MODEL 300! **$564**

A Microprocessor controlled, stand alone, keyboard that generates Morse, RTTY and ASCII codes.

ROBOT MODEL 400 SSTV CONVERTER **$898**

GREAT PRICE REDUCTION ! ! ! !



MLA-2500

DenTron Radio has packed all the features a linear amplifier should have into their new MLA-2500. Any Ham who works it can tell you the MLA-2500 really was built to make amateur radio more fun.

- ALC circuit to prevent overloading
- 160 thru 10 meters
- 1000 watts DC input on CW, RTTY or SSTV Continuous Duty
- Variable forced air cooling system
- Self-contained continuous duty power supply
- Two EIMAC 8875 external anode ceramic/metal triodes operating in grounded grid
- Covers MARS frequencies without modifications
- 50 ohm input and output impedance
- Built-in RF wattmeter
- 117V or 234V AC 50-60 hz
- Third order distortion down at least 30 db

~~$1300~~ NOW **$1190**

LUNAR

HF3-100L2 Linear Amplifier **$245**
Bi-Linear VHF Models **$259**
28-432 MHz Low Noise Pre-amplifier **$42**
In Line Switching 2m Pre-amplifier **$55**
Oscar Box "J" Dual Freq., Oscar 8 Down Converter **$99.90**

MIZUHO

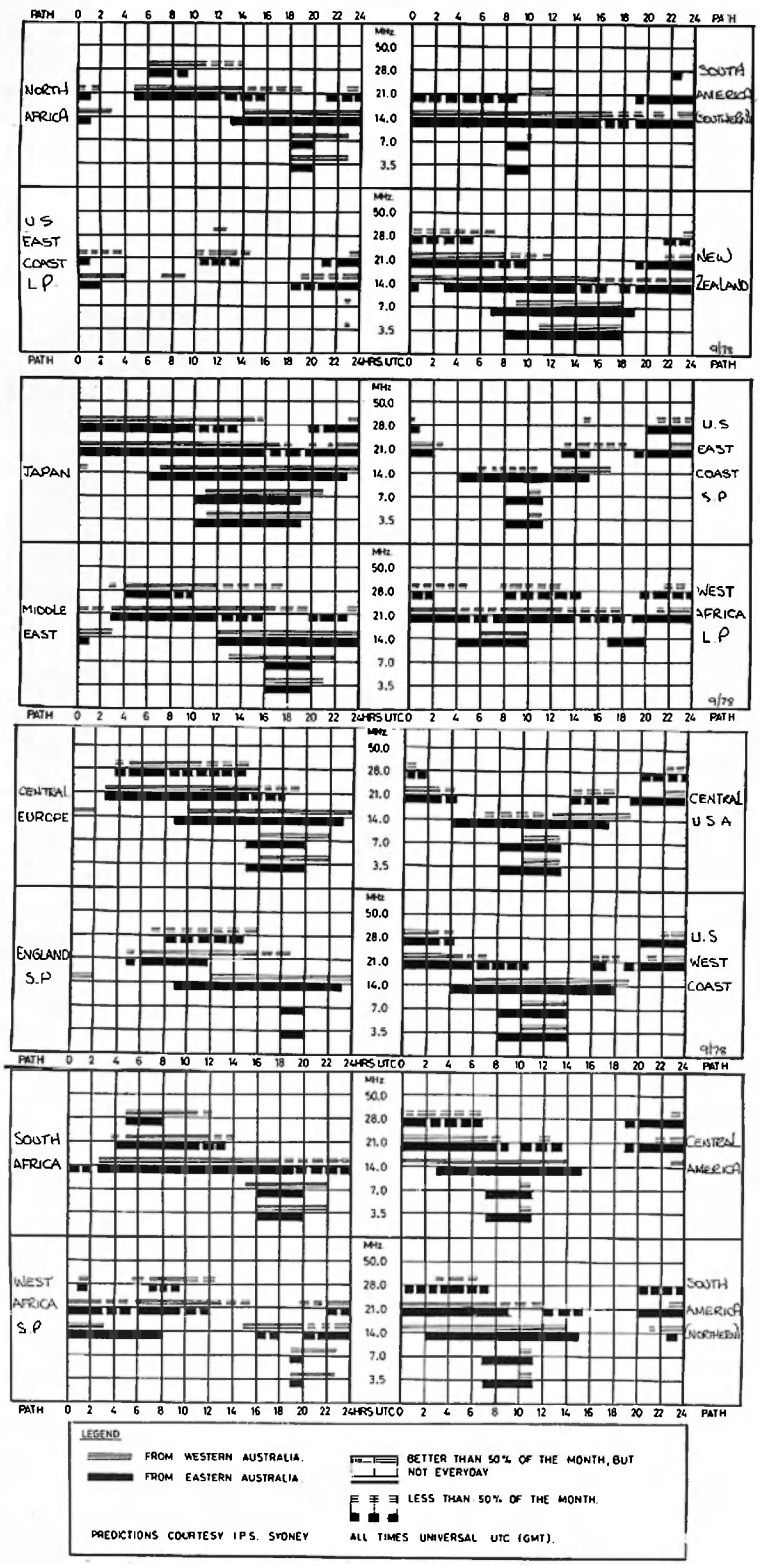
SX-59 RF Pre-amplifier **$84**
SX-1 Pre-selector **$83**
DX555P Counter Generator **$56**
KX-1 Coupler **$69**
MX-1D Marker **$39**
Pre-scaler for DX-555P

DENTRON ANTENNA TUNERS

MT-2000A **$269.50**
MT-3000A **$447**
160-10AT **$166**
Jr. MONITOR **$104**

IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



QSP

VHF ACTIVITY IN THE USSR

The magazine "Radio" for April 1978 carries reports of VHF and UHF activity in the USSR.

On 144 MHz activity is high with some SSB signals. •DX is being worked using meteor scatter, aurora, and by tropospheric ducting. The following is a list of stations with their best distances worked. Many contacts being to other European countries.

Station	Best DX
UA3MBJ	200 km
UP2BBC	1989 km
UK3MAV	2520 km
UA3LBO	1500 km
UW3GU	1400 km
UA3PBY	875 km

On 432 MHz the list is smaller but good activity is reported using the same sorts of propagation as on 144 MHz.

Station	Best DX
UA3LBO	1360 km
UR2EQ	1160 km
UA2FCH	1125 km
UR2HD	1038 km
UP2BBC	890 km

On 1215 MHz a contact of 765 km is reported by UP2BBC to DL7YCA. The power used was 60 watts. A 1.2 metre dish was used as the antenna.

The station UP2BBC appears in all the listings and must be a keen VHF/UHF worker.

The notes in "Radio" are always full of doings and the VHF/UHF scene must be very active. ■

AUGUST 1978 AOCP EXAMINATION

The August AOCP examination caused many candidates to scratch their heads. Indeed many of the less well prepared candidates had a worried look.

P. and T. have managed to produce some new questions and re-worded others. Half the questions were new. A manoeuvre calculated to upset the parrots.

The exam paper is coming on to the target with questions slanted towards current usage. Full marks for putting some thought into it.

Finally, for those candidates still arguing about the answer to question 9 the correct answers are as follows:

(a) (i) 12 amps.
(ii) 720 watts.

(b) 10 ohms.

You didn't even need a calculator to work it out.

VK3AUI.

POSTAL AND TELECOMMUNICATIONS DEPARTMENT

AMATEUR OPERATORS' CERTIFICATE OF PROFICIENCY

August 1978

SECTION M (THEORY)

(Time Allowed — 2½ hours.)

NOTE: **SEVEN questions only** to be attempted. Credit will not be given for more than **SEVEN answers. All questions carry equal marks.**

1. (a) Describe, with the aid of a circuit diagram, the operation of the final output stage of a single-sideband type transmitter employing a pi-coupled tuning unit.
   (b) Describe how you would tune a transmitter using pi coupling, to correctly load a coaxial-cable coupled antenna.
2. (a) What do you understand by the "Piezo-electric effect" ?
   (b) Explain, with the aid of a sketch, the construction and theory of operation of a crystal microphone.
3. (a) Aided by a sketch, show the RF voltage and current distribution on a transmission line when: (i) correctly terminated; (ii) terminated in a short circuit.
   (b) Explain the meaning of the terms: (i) standing-wave-ratio; (ii) current node.

4. Using circuit diagrams to illustrate your answer, explain the principles of simple and delayed automatic volume control in a superheterodyne receiver.

5. (a) With the aid of a sketch, describe the construction and theory of operation of a moving-coil permanent-magnet type of meter.
   (b) Describe where such a meter may be used and list any advantages and disadvantages associated with its use.

6. (a) With the aid of a diagram describe the operation of a circuit in which use is made of a Field-Effect-Transistor (FET).
   (b) What particular advantage has been attributed to the FET type?

7. (a) With the aid of a circuit diagram describe the theory of operation of a voltage regulated power supply in which a voltage regulating diode (zener) is used to obtain regulation.
   (b) Draw the forward and reverse current versus voltage curve for a typical zener diode and indicate the point on the curve where the "zener effect" commences.

6. (a) Explain the fundamental difference between frequency modulated and amplitude modulated signals.
   (b) With the aid of a circuit diagram, explain the theory of operation of the discriminator stage of a receiver capable of reception of frequency modulated signals.

9. (a) Three resistors R1, R2 and R3 of 20, 30 and 60 ohms respectively are connected in parallel across a 120 volt DC supply. Calculate:—
   (i) the total current drawn from the supply and
   (ii) the power dissipated by R1.
   (b) Show how an additional resistor R4 may be connected in the circuit described in (a) to reduce the voltage drop across R2 and R3 to 80 volts without affecting R1. Calculate the value of R4. ■

DIVISIONAL NOTES

Here are a few notes compiled from available sources.

Members might like to know that figures from the AR address labels control totals for September AR show how the WIA membership is expanding —

Division	Full members and pensioners/ life members	Total members
VK1	103	154
VK2	1280	1558
VK3	1233	1665
VK4	588	768
VK5	594	839
VK6	376	469
VK7	193	265
	4367	5718

Compare these with the statistics shown on page 34 of July AR, remembering that a number of the 137 students possess call signs, some Associates have call signs but have not yet notified the details, and a small number of financial members have no labels because their ARs had been returned to sender and no fresh addresses had been notified. Also the statistics in July AR included double call signs and family members, which are excluded from the control totals because no address labels are printed for those.

Altogether 1276 new members have joined the Institute so far this year.

VK1
Four new members for September AR, bringing the total for the year to 46. So far, only 14 previous members are still unfinancial.

VK2
At the July meeting 35 new members and 2 clubs were accepted into the Division. At the August meeting 45 new members were accepted. So far 51 previous members from last year have not renewed their membership. This highlights the effectiveness of the reminder system used by the Division.

REPEATERS
There are 12 repeaters operational in VK2 on 2m, one due to be operational late in 1976, two new ones under test, one more under construction and 4 projected. Applications are on hand for 2 ATV repeaters, one RTTY repeater, one 70 cm repeater and one 2m repeater. One repeater is planned for SSTV working. The VK2 September MB asks if anyone has had experience in modifying the Philips UHF CB unit for 70 cm use. Plans are in hand to establish a frequency and time standard 144 MHz beacon in the Upper North Shore area of Sydney. The State Repeater Committee are also looking into beacons for the 70 cm, 23 cm and 3 cm bands and suitable frequencies in the ranges 432.4 to 432.45 MHz, 1297.2 to 1297.29 MHz and "holes" available on 3 cm.

CONSTITUTION
The Division now has a new Constitution, which will become final after submission to the Corporate Affairs Commission.

VK3
69 new members began with September AR. However, a total of 173 failed to renew for the year.

As in the other States, Convention time is upon us. There are the Eastern Zone Convention at the Paynesville Country Club on 19th November and the Western Zone Convention at Ballarat on 4th-5th November (at Eureka Stockade on the 5th).

VK3
Coming event: November 4th and 5th, 1978 — Victorian Western Zone Convention. Details from Ballarat Amateur Group, K. Hughes, 14 Ophir Street, Sebastopol 3356. Ph. (053) 35 8135.

VK4
35 new members processed for September AR. However, 56 members from last year still remain unfinancial in spite of reminders having been despatched.

Conventions in Queensland include Queensland AR Convention in Brisbane, 16th-17th October, and the display at the Hobbies Exhibition from 13th-19th November.

VK5
An input of 67 new members for September AR. Only 41 failed to renew this year, thus justifying the expense and work done in sending out reminders to unfinancials.

VK6
A total of 17 new members inputted for September AR, but a total of 18 did not renew for 1978 despite reminders.

VK7
Seven new members this month but there were 11 dropouts for the year. Altogether 58 new members this year, which gives a good gain.

The Divisional Box Number remains as 1010, Launceston, but the Northern Branch now uses Box 275, Launceston.

The Tasmanian Divisional Bulletin has ceased publication. Divisional news will be incorporated in QRM.

The S. Branch 6m beacon frequency will be 52.457 MHz, hence the N. Branch beacon frequency will be shifted to 52.470 MHz.

The Tasmanian Convention will be in Hobart, 4th-5th November.

Short contributions by and from Divisions would be welcome.—Ed. ■

ALARA

AUSTRALIAN LADIES' AMATEUR RADIO ASSOCIATION

This month we proudly present Norma VK3AYL as the next star in our series of famous YLs. Norma will probably need very little introduction to VK3 operators and is well known in other States as well.

Norma was the guiding force behind the formation of the original LARA in 1975, and has put a great deal of time and energy into the organization ever since. As well as having been the Founding President, she continues the job of Secretary and Editor (author, typesetter, addresser, mailer and all-round producer) of the ALARA Newsletter. A thankless task, but I take the opportunity to put our thanks in writing at this stage.

ALARA's other arm of contact, the 80m Monday sked, also owes its existence largely to Norma's efforts, along with those of Myrna VK5YW (and, of course, the participants).

Norma hails from "Up North" (at least as far as the Murray) and takes off on periodic homeward excursions every now and then. She became interested in amateur radio at an early age and gained her licence without much trouble. She has since proceeded to gain a Science Degree at Melbourne University and a Dip.Ed.

Norma now lives in Melbourne where she is a teacher of maths and physics during the week and an enthusiastic amateur pilot in between times. (Such is her enthusiasm that Norma would probably say she is a pilot who teaches now and then.) Norma's teaching talents have been put to excellent use in amateur radio as she is the Novice Course Instructor at the Institute Tuesday night classes (with considerable success).

Norma VK3AYL in WICEN exercise.

All round, such a talented lady that this article has made it superfluous to include a planned article on ALARA activities — Norma has a hand in everything anyway. Altogether it would be true to recognize Norma as a very active YL who has made an outstanding contribution to amateur radio in general and to ALARA in particular.

33s,

Kate Duncan. ■

MAGAZINE INDEX

Syd Clark, VK3ASC

RADIO COMMUNICATION June 1978
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SHORTWAVE March 1978
Antennas — The Weak Link; Amateur Radio — Communication or Technology, or Both?; Communication and DX News.

RADIO ZS February 1978
Marine Communications — Past, Present and Future.

RADIO ZS March 1978
Pictures by Radio — The Instant QSL; Converting the Heath HW-17A 2 Metre Transceiver from AM to FM; CQ Bermuda Triangle.

RADIO ZS April 1978
Radiation Patterns of Long Wire Aerials; In Support of Unity.

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The Trailer Light Solution; Repeater Procedure; Tighten Up Your SB-102; QRP Hints; Brass Pounding Simplified; Custom Made Thermistors; UHF Propagation; Tune-Up Aids for the Blind; KIM-1 Can Do It; A Secret Weapon for Road Rallies; Looking for a Micro; Fiendish New QUBIC Program; Put an ELF in Your Keyer; Try HCAI; Raid; See Q, See Q; Measure Periods with Your Counter; Super Siren; CB to 10; Coming of Age; Put a Sony in Your Shack; How to Compete with an HT; SASE; A Ham's Life Cycle; The Extreme Basics of Antennas; The $5 Magnetic Mount; Versatile Transistor Tester; Autopatch Digit Suppressor; Surplus Adventures; TS-700A Calibrator; Keeping the Zap Out of the Shack; Painless Touchtone Adjustment; The Overkill Stall Warmer; Try 220 You'll Like It; How To Dissipate 200,000 Megawatts; Can a Miniature Antenna Work?; The Op Amp Encyclopedia.

73 March 1978

The New Improved "Best Keyer Yet"; The Powerful Grounded Antenna; How to Cut the Costs on Power Supplies; The Quicker Slicker Transistor Tester; You, Too, Can Go Digital; Old Receivers — A Hidden Gold Mine; Old Rigs Can Live Again; Novices, Paddle Your Way to Happiness; How Many pF is That Capacitor, Really; Exorcising Power supply Demons; Meet the Plastic Wonder; Don't miss the Excitement of QRP; Is Your Repeater Up-to-Date?; 1220 MHz — Use It or Lose It; New Protection for Your Car; The Great Cover Up; The World of Tone Control; Solve Those Parallel Problems; At Last! An FRI Free Computer; Another Approach to the ASCII/Baudot Headache; Programming Coil Design; Outstanding Computer Bargain Exposed; Do Biorhythms Really Work?; From CB to Amateur Radio; How Much Power Does It Draw?; Surprisingly Low Cost Lab. Supply; Wireless Monitoring for the Bionic Ham; I Need a Contact; Flash Project for Camera Fiends; Kerchunk Counter; The Solar Powered Ham Station; A Cheaper Chip; The Go Pro HT Mode; A 2m Antenna for the Perfectionist; Are You Afraid to Build?; A Brass Horn for X-Band; A Cheapskate's Circuit Board; Good Grief, not the 22S Again; Avoid an Overvoltage Catastrophe; The Amazing Zener Sweeper; How to Use a Varactor; Can a Diode Replace a Relay?; Shock the Car-Burglar.

CQ MAGAZINE April 1978

Exploring Cape Cod; A Message from the Publishers; Log-Periodic Antennas in VHF and UHF Amateur Service; Selection of Contest Operators Using Biorhythm Charts; The Federal Communications Commission; the Q Key; 1977 CO WW DX (Phone) Contest, High Claimed Scores; A "Hot" DX Transmitter 1938 Style; The RSK-253 Receiver; the Yaesu FT-301D Transceiver; Using Ribbon cable to Make Your Own Coils; QRP: The Ultimate Achievement — DXCC Milliwatt; The Quality Factor; Computers and SSTV.

CQ May 1978

DXpedition to Montserrat; An RTTY Primer; Forgotten Accessories to Improve Receiver Performance; The Wave Antenna; Wireless Telegraphy at the St. Louis Exposition — 1904; CHU: Service Canadian de L'Heure; 1977 CO WW DX (CW) Contest, High Claimed Scores; A Solid-State QRP VFO Transmitter for 7-14 MHz; Fashions in Microphones; AC2RN — A Tale of China; Amateur Radio on Yachts; Antennas: Delta Loops, Multiband Antennas; Antenna Height vs. Performance.

CQ June 1978

A Simple Phone Patch; A Scanner for the GLB Synthesizer; AMSAT-OSCAR 6 Successfully in Orbit; Base Loading a Simple Vertical Antenna for Two Band Use; Determining the Electrical Insulation Dielectric Stress; The TRS-80 Microcomputer; An Ohmmeter Pot-Pourri; How to Update Your Ham-M Rotor; A Plug-In Supply for the Curtis Kit Keyers; Synthesizer Tricks; Heathkit 5280 Series Test Instruments; Reflected Waves and Mismatched Loads; K4DUT Monster Quad; VK3XU Anti-Noise Bridge; W7TO Multibsnd Antenna; JG1UEA Mini-Loop Antenna; SSTV in VK and ZL Land; The Advantages of Starting as a Novice.

HAM RADIO March 1978

Synthesized High-Frequency Transceiver; Weak Signal Communications — A New Approach; Pi Network Design; Transmitter Metching Networks; Introduction to Operational Amplifiers; Operational Amplifier Update; Applications for High-Frequency Hybrids and Couplers; Antenna Gain Measurements; Impedance Matching by Graphical Solution; Transmission Line Calculations with the Smith Chart; Numerical Smith Chart.

HAM RADIO April 1978

Advanced Electronic Keyer; AMSAT-OSCAR-D; 432 MHz GaAs FET Pre-Amplifiers; Simple Paddle for Electronic Keyers; Spectrum Analyser Tracking Generator; Battery Charger for Portable Operation; Modifying Linear Amplifiers for Full Break-In Operation; Designing Matching Networks; Overtone Crystal Oscillators; Correcting Repeater Interference; Testing Power Tubes; Microprocessors: Micro Computer Interfacing; Improve Audio Quality for VHF-FM.

QST May 1978

A Modular Control Unit — Just for Repeaters; Transmitter Design; VHF Coverage for Collins S/Line Receivers; A DoppleScAnt; Sunspots and the HW-16; An Audio Continuity Tester; OSCAR in the Classroom; Marconi Station Reborn on Cape Cod; CPR — It's a Lifesaver; Results, 44th ARRL November Sweepstakes; Rules, 1978 IARU Radiosport Championship; Parts Out, Hertz In; June VHF QSO Party; Field Day Rules; Field Day Came Early to New Mexico; Results, Frequency Measuring Test; The Fox Control Committee Boo-Boos; FCC Bans 10 Metre Amplifiers — Commissioner White Dissents in Part; Call Me Anything, but Don't Call Me "Good Buddy".

QST June 1978

Low Noise GaAs FET UHF Pre-amplifier; A Low Cost Dot-Memory Keyer; Transmitter Design; Predicting Radio Horizons at VHF; The ABC Active Filter; Producing Weather Satellite Pictures at Lower Cost; A Low-Cost Burglar Alarm for Home or Car; Build This Novice Four Band Vertical; Basic Antenna Concepts; How Safe Is Your Ham Shack?; RF Heating in the Ham Bands; Up Your Code Speed; QRQ 20.

BREAK-IN April 1978

The Importance of Making Experimental Records; Raincliff 1977; Annual Reports and Remits; Getting the Best Out of Your SSB; A Regulated Charger for 12V Motor Cycle Batteries; A Modification to the Wellington Direct Conversion Receiver; Modification to the Tuning Drive of the FRG7 Receiver.

BREAK-IN May 1978

E & W School Re-union; A Bloodshot View of VHF Convention; IARU; "CB" The Contentious Bone — Food for Thought; Wide Band Balun Design Without Ferrites; Transformer Ratings — Rule of Thumb Method; The BC221 Frequency Meter — A Solid State Conversion; Long Period Timing Circuit Using Non-Electrolytic Capacitors; A Tape-Recorder Mixer. ■

AWARDS COLUMN

Brian Austin, VK5CA

P.O. Box 7A, Crafers SA, 5152

WAVE

The Worked All VE Award (WAVE) is a long established award. Confirm two-way Amateur radio contacts in each of the eight VE call areas on 2 different bands for a total of 16 contacts. The same station may not be worked more than once, regardless of band. All contacts must be made from an area within a radius of 150 miles of one point. All contacts after 1-1-1939 count.

WACAN

The Worked All Canada Award (WACAN) is basically a continuation of the WAVE award, except that all nine provinces must be worked in addition to Newfoundland, Labrador and Yukon or Northwest Territories, for a total of 24 different stations. Newfoundland and Labrador contacts must have been made since 31-3-1949.

QSL cards are required unless you can provide a certified list from your club president, or a notary.

The fee for WAVE is $1 or 10 IRCs.

For WACAN, the fee is $2 or 20 IRCs.

An exception is for those who already hold WAVE and are applying for WACAN. The fee is then only $1 plus the additional eight QSL cards. Send your application, fee and cards to —

Nortown Amateur Radio Club, VE3NAR,
PO Box 146,
Station A,
Willowdale, Ontario, M2N5S8,
Canada.

(WRN)

For those who are trying for the WAS (ARRL), the following may be of assistance:

FIRST CALL AREA includes the States of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.

SECOND CALL AREA includes the States of New Jersey and New York.

THIRD CALL AREA includes the States of Delaware, Maryland, Pennsylvania, and the District of Columbia.

FOURTH CALL AREA includes the States of Alabama, Florida, Georgia, Kentucky, North and South Carolina, Tennessee and Virginia.

FIFTH CALL AREA includes the States of Arkansas, Louisiana, Mississippi, New Mexico, Oklahoma and Texas.

SIXTH CALL AREA includes the State of California.

SEVENTH CALL AREA includes the States of Arizona, Idaho, Montana, Nevada, Oregon, Utah, Washington and Wyoming.

EIGHTH CALL AREA includes the States of Michigan, Ohio and West Virginia.

NINTH CALL AREA includes the States of Illinois, Indiana and Wisconsin.

TENTH CALL AREA includes the States of Colorado, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota and South Dakota.

Other calls, including Hawaii and Alaska.

If any of you have information about, or rules of, awards which may or may not have been published in AR, please send it to the writer at the above address. With the large increase in the number of amateurs these days, the chances are that they will be unknown to the newcomers, and I have to fill this column somehow! ■

IARU NEWS

The Republic of Djibouti has been recently admitted as the 154th member country of the ITU.

The Grenada ARC and the Assoc. des Radio-Amateurs du Senegal were elected to membership of the IARU. The total is now 101.

On 6th October the 4th triennial conference of the IARU Region 3 Association will open in Bangkok. IARU HQs will be represented by the IARU President, Noel Eaton VE3CJ and the IARU Secretary, Dick Baldwin W1RU. The WIA will be represented by the Federal President, David Wardlaw VK3AOW, and the Exec. Vice-Chairman, Peter Wolfenden VK3ZPA. The Secretary of the IARU R3 Assoc. is David Rankin VK3QV/9V1RH. Also attending will be Michael Owen VK3KI, one of the four Directors of the Association.

This will be the last occasion for Region 3 amateur societies to meet together prior to WARC 79.

The 8th SEANET Convention will be held in the Marco Polo Hotel in Singapore from 10th to 12th November. Details from the hosts, Singapore AR Tx Society, Box 2728, Singapore 1, or by joining in the SEANET held daily at 12.00Z on 14320 kHz.

During October/November David Wardlaw and Michael Owen will be attending the CCIR Special Preparatory Meeting in Geneva. This is a most important event designed to finalise, as far as possible, the technical material for WARC 79. The amateur service should be the subject of discussions if the recommendations by the CCIR international study groups are adopted that the service should come within the terms of reference of CCIR Study Group 8. At present the Amateur Satellite Service is considered by Study Group 2. ■

HAMADS

- Eight lines free to all WIA members. $9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

FOR SALE

Diawa RF550 AC/DC RF Processor, 6 dB gain, crystal filtered, new, $130; also Kraco 23 ch. CB Tcvr, suitable for 10m conversion (ref. August AR) or 80m transverter, completely aligned and tuned, complete with mike and mobile mount, etc., excellent condition, $75. Kevin Cocks VK3NPC. Ph. (051) 57 1492 A.H., (051) 52 4632 Bus.

Drake SSR-1 Comm. Rx, as new, in original package, $240; Lafayette HA 63A comm. Rx, 0.5 x 30 MHz, band-spread, needs alignment, all new tubes, $50. VK2ZFN. Ph. (02) 560 9415 Bus.

Yaesu FT101E, few months old, as new in box, $745. Ph. (03) 467 3223 A.H.

Trio JR80 Rx, factory fitted band-spread with 2m converter, and FM det., $100; 6m and 2m converters, $20 each; 23 and 40 ch. 11m rigs converted and operational on 10m, base and mobile. Ring or write for details. Gavan VK3ZNC/VK3NIC, QTHR. Ph. (051) 47-2368.

SSTV Fast/Slow Digital Converter, W6MXV 200 with ¼, ½, full frame selection, grey scale generator, video invert, 14 grey shade capability, $150. Stan VK3BHZ, QTHR. Ph. (060) 71 7244.

Pye CD-1 Stereo Cassette Deck, twin VU, bias shift, chrome/normal select, pause, DIN, etc., very little use, surplus, $120, negotiable; circuit and instructions. VK1GB, Box 789 Canberra City 2601. Ph. (062) 47 3296 or 54 1985.

FT75B, with AC and DC power supplies, external VFO, hand book, excellent order, $400. VK2BDT, QTHR. Ph. (048) 21 5036.

Icom 502 6m hand-held DC or AC operated transceiver, converted, $160; FT2 auto 2m AC-DC FM transceiver with xtals, Simplex 40-50-51 repeater, R2-R8 R44 and reverse repeater R44. with mike and cables, $175, ONO; 3 new QQE03/12 valves, 1 only QQE03/20 valve, new, never used, offers. VK4AGO, QTHR. Ph. (071) 72 4101.

Yaesu FT75B 100W HF Tcvr, with AC and DC power supplies, 9 xtl freqs, external VOX unit, speech processor and mobile bracket, complete station, $550; Ken KP202 2m FM R2, R8, 40, 50, with nicads and charger, with 2 antennae, $160. Jim Hendrickson. Ph. (059) 624 1666 Bus.

Icom IC-22 FM Trx (CTC B12-12 final), mobile mount and manual, Ch. RPT-2, 3, 4, 5, 6, 7, 8, Anti. 2, 4, Simp. 40, 50, $160; Pye 6750 50W FM base, Ch. 40, 52, pre-amp, $60, ONO; Pye FM Ranger mobile and bracket, ch. 40 and R3 and mains PSU, $25; AR-2 five-eighth wave 2m Ringo, $25; Swan 175 (conv. to 20, 40, 80) and PSU, $100; Command sets (3), BC-455B, 454B, 453B, RX and rack, $30; 7 ft. x 17 in. rack cabinet, $20; "NDB" cabinet, $20. Assorted chassis. VK2YBW, QTHR. Ph. (069) 21 2238.

Yaesu FRG7 Receiver, perfect condition, $280, ONO. Alan VK3NQD. Ph. (03) 314 0344 Bus., (03) 398 4853 A.H.

Collins 75S-1 Hamband Rx, excellent condition, 80-10m, with 110-240V transformer and some spare tubes for the Rx, $360. Phill Jury, L30530. Ph. (03) 560 9215.

New 23 Ch. AM/SSB Transceiver, converted to 10m, 4 ch. fitted (21, 22, 22A, 23) as per band plan, $89. VK7FT, QTHR. Ph. (002) 44 4321 A.H.

Astro 200 Txcr, mint cond., $650; Swan MB40A solid state 40m transceiver, 100W PEP, unused, $250; Kenwood TR2200A, rep. 1 to 8, 40 and 50, nicad batteries and charger, as new, $200; Dentron super tuner, 1 kW, built-in balun, $200. VK2BHF, QTHR. Ph. (02) 98 6249.

Yaesu FT-7 HF Mobile Transceiver, complete, unmarked and genuinely new, with manual, leads and unused accessory plugs, mike, $500. VK2PT, QTHR. Ph. (049) 43 1308.

Linear Amplifier Heathkit HA14 with HP24 AC power supply, 1000W PEP, 10/80m, $400. VK3BCY, QTHR. Ph. (03) 848 4775.

Drake T4XC Tx, SSB/CW, 160-11-10m with Drake AC-4 PSU, Drake R4C Rx with noise blanker and 14 accessory 500 kHz freqs. included, Drake base station, Dynamic mic., Drake W4 wattmeter, brand new in factory cartons, $1,795 complete. VK2JO, PO Box 505, Bondi Junction 2022, NSW. Ph. (02) 36 7756.

Hallicrafters FPM-300 250 watt PEP input, SSB/CW HF 80-11-10m solid state HF Txcvr, 240V and 12V DC PSU built in, complete with deluxe 12V DC mobile mount and Dynamic mic., similar to FT101EE, but made in USA, excellent condition, Hallicrafters owner's manual included, $495. VK2JO, UO Box 505, Bondi Junction 2022, NSW. Ph. (02) 36 7756.

Transceiver, Plessey PTR170, 220 to 400 MHz, 12 ch., 28V DC, hybrid, excellent cond., $75; Hidaka VS2GH 2m 5/8 ground plane in original packing, unused, $35; Volstat constant voltage transformer and heavy duty bridge rectifier, 16.5A at 38V DC (trans. sec. could be tapped), $60. VK3BFB, QTHR. Ph. (03) 93 1638.

Communications Rx, 150 kHz to 30 MHz, 5 bands Lafayette HA600A, as new cond., perfect working order, FM det added, $100; 4-500 52 MHz valve SSB linear 400W PEP out for about 10W drive, $120. VK4ZNC, QTHR. Ph. (07) 205 2121.

Yaesu FTDX 401 HF Transceiver with matching speaker, mic, low pass filter, Katsumi mic, compressor model MC-22S, all with English manuals, package deal, $450. VK3PH, QTHR. Ph. (053) 30 1466.

48 ft. Self-supporting Tower, 12 in. x 18 in. tri. sections, built-in ladder, plus 20 ft. length high tensile pipe, suit hvy beam or Christmas tree array, commercial mfg., exc. cond., $300; Collins calibrated stainless steel portable multi-dipole 637T, all freq., mint cond., $130. VK2AAK, Box 954, Parramatta. Ph. (02) 635 1320.

GDO UHF Megacycle Meter, 420-940 MHz; by Measurements Ltd., with power supply, $100; Collins 312B5 external VFO, wattmeter, phone patch, speaker, control unit, $450. VK2AAK, Box 954, Parramatta. Ph. (02) 635 1320.

CQ Magazines 1960-69, almost complete, several years "73", 25 cents each; assorted text books on elect. engineering, agriculture, flying, etc., from $1 each; bound set G.E. Reviews, 28 vol., 1922-1950, exc. cond., collector's item, $1.50 each. VK2AAK, Box 954, Parramatta. Ph. (02) 635 1320.

Kenwood TS520 with DC power supply and CW filter, complete with handbook and original packing, $575. VK3KK, QTHR. Ph. (03) 469 4200, after 6 p.m.

Trio TR2E 2m AM Transceiver, good cond., with manual, triple conversion, dual VFO, 240V AC, 12V DC, $100, ONO. VK2AHE, QHTR. Ph. (049) 2 4213.

Swan 350 and 230XC power supply, in perfect working order, recently overhauled and line-up done, $295, plus freight. VK4ABS, QTHR. Ph. (07) 351 3298.

FRG7, six months old, $275; Realistic SX190, VGC, $125. Will deliver to Melb. Dave. Ph. (03) 743 6992.

WANTED

Hammarlund Super Pro Rx Primary Aerial Coil, 200-400 kHz (result of lightning strike) and matching AC PSU, will consider wrecked chassis for spares; CQ magazines from about 1950 onward; Hallicrafters Rx S and SX series (WW2 models), HF and VHF. VK3AQB, QTHR. Ph. (03) 337 4902.

Photographs Required NOW for AR

SILENT KEYS

It is with deep regret that we record the passing of —

Mr. J. A. RESL	VK4JL
Mr. W. M. PETERSON	VK6LW
Mr. R. H. HILDER	VK2AFT

Viewfinder Camera, Sanyo VCM 2000A or similar. Stan VK3BHZ, QTHR. Ph. (060) 71 7244.

Capacitors from AT5 or TU Tuning Units, Command Tx, etc.; also carrying case for Ken KP 202. VK3AHG, QTHR. Ph. (03) 288 2024.

VFO in good condition, and also extra crystals required for FT-75B. Details to H. V. Lonsdale, 2 Balfour Street, Newborough, Vic. 3825.

Tower and 3 Band Quad or Yagi. Price, etc., to VK3YBR, QTHR. Ph. (03) 795 2792.

Johnson Matchbox or KW EZY match antenna tuning unit with facility for balanced twin feed and coax. feeders. VK4ABS, QTHR. Ph. (07) 351 3298.

EVENTS

Capricornia Amateur Radio Festival. Conducted by the WIA Central Queensland Branch. Interests for everyone. Date: 16th-17th September. Place: Rockhampton. Details: Write Sec., Box 496, Rockhampton 4700.

STOLEN

Stolen from TAA Flight Section Newcastle NSW, my Yaesu FT101B, serial No. 10033934, on Sunday, 24th May, mint condition, no alterations, packed in original carton, with mic. and accessories. VK4UR, QTHR.

TRADE HAMADS

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(Antenna Coupler)

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Input impedance	50 Ohms
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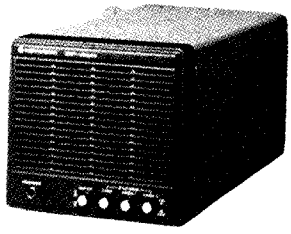

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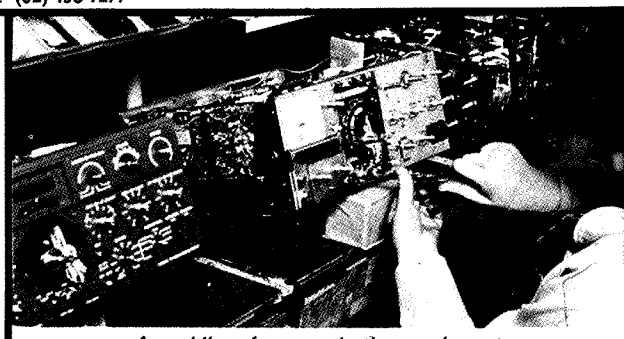

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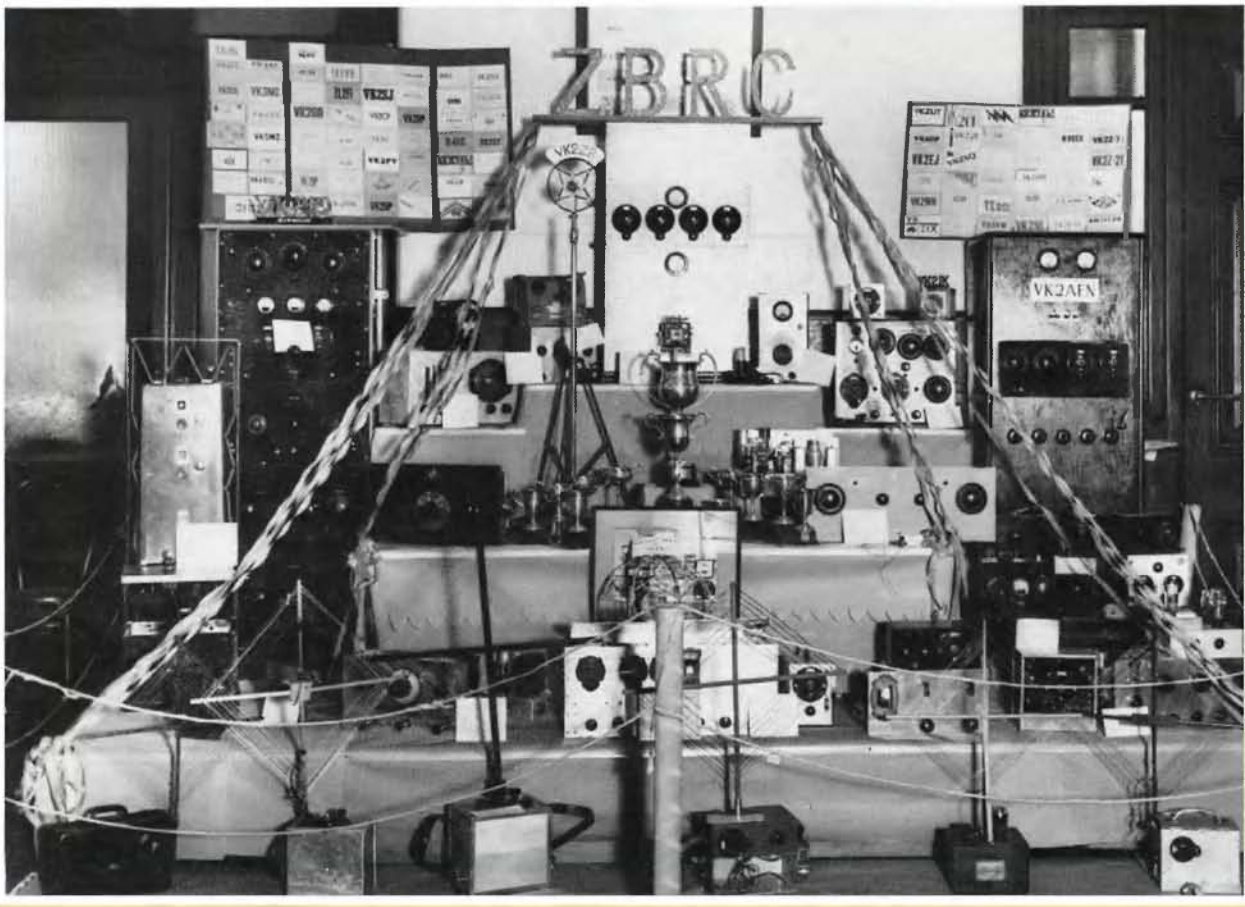

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COVER PHOTO

During the mid-1930s, radio exhibitions were held in Sydney Town Hall. The display shown in this photo was exhibited by the Zero Beat Radio Club of Sydney, VK2ZB, in 1937 — 41 years ago.

Photo Courtesy Arthur Brown VK2IK

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SPECIFICATIONS:

Transistors, 13; channel number, 3, on 28 MHz Citizens Band; transmitter frequency tolerance, ±0.005 per cent; RF input power, 1 Watt; tone call frequency, 2000 Hz; receiver type, super-heterodyne; receiver sensitivity, 0.7 uV at 10 dB S/N; selectivity, 45 dB at ±10 kHz; IF frequency, 455 kHz; audio output, 500 mW to external speaker jack; power supply, 8 UM-3 (penlite battery); current drain, transmitter — 120-220 mA, receiver — 20-130 mA; accessory, shoulder strap, battery UM-3, 8pcs, instruction manual.

$105 Pair — $58 each

Postage $2.80

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PL-259 Plug W/O Reducer	$1.80 (Adaptors 65c)
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"T" Connection	$3.50
PL-259 to R.C.A. Adaptor	$2.75
Coax Joiner, female to female, male to male	$2.75
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Belling Lee Plugs	75c
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240 POWER SUPPLY KIT

13.8V DC out. at 3 amps.

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KR65

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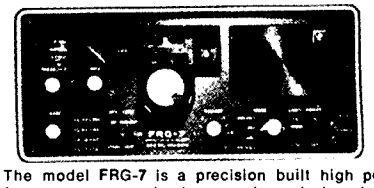

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$385.00

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amateur radio

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QSP — "STATE OF THE ART — HERE AND THERE"

"STATE OF THE ART — HERE AND THERE"

By this time next year, hopefully Project ASERT will be gaining the interest of many people — not only radio amateurs.

For those of you who don't already know, Project ASERT, "Amateur Service Experiment in Radio Transmission", is a WIA backed VHF/UHF propagation experiment which will tell us more about the vagaries of our bands. See AR September, page 48, for more detail.

A small working group has been established under Bob Arnold VK3ZBB as chairman. Initially the group sees a low scale pilot system in operation making use of existing amateur 2m beacons, and to some extent available equipment. The pilot study will enable the system requirement and performance specifications to be refined so that the project can be initiated hopefully Australia-wide during 1979 — the year of predicted sunspot maxima.

As results come to hand, it is anticipated that they will be published in Amateur Radio. I am sure that the outcome of this experiment will be of great interest to many.

However, while we in Australia think about sophisticated propagation experiments and operate with accepted high quality equipment, have we ever stopped to think as to what the state of the art is with some of our neighbours in Region 3.

A paper from New Zealand to be presented at the IARU Region 3 Conference in Bangkok during October raises some very valid points, amongst them is whether amateur radio can survive and expand as we know it in the major part of the Region.

The point is made that many countries within Region 3 have such poor economies that it would be impossible for many would-be amateurs to purchase even the cheapest of commercial equipment. For many even the cost of components would be a major problem.

To support this point of view, the per capita Gross National Product is quoted (1976 US dollars) for many Region 3 countries, e.g. Australia 5,330, Indonesia 170, Malaysia 680, Thailand 310, Cambodia 70, Tonga 300, India 140; and for comparison France 5,440, UK 3,590, USA 6,670.

These figures should not be construed to be average incomes, they do, however, provide a relative indication of the wealth of each country and therefore some idea of the ability of individuals to participate in a hobby such as amateur radio.

As pointed out in the paper, perhaps the only way in which amateur radio is likely to develop in such countries is on a modest scale with clubs, low power and the use of some of the more fundamental modes of signalling.

What do you think?

PETER WOLFENDEN VK3ZPA, Executive Vice-President. ■

QSP

STOP PRESS

6 MX DX

ON MONDAY 16-10-78, BERT KH6EQI IN HAWAII WAS WORKED ON 6 METRES BY PHIL VK2YDY AND KERRY VK2BXT ON SSB, AND BY DAVID VK5KK AND ERIC VK5LP ON CW. SIGS. PEAKING 599 IN STH. AUST. — TIME 1000Z. IT IS THE FIRST TIME IN 20 YEARS AN EVENT SUCH AS THIS HAS OCCURRED. — VK5LP

CO-TV AWARD

CO-TV for July 1979 announced the first CQ-TV award was made to VK7EM of Penguin. This was achieved with 30 contacts, the shortest distance QSO being over a path of 384 km and the longest 550 km.

THE A. G. PITHER AWARD

Announced by the IREE in Monitor for August 1978 is the A. G. Pither Award, open to anyone who has made outstanding technical and administrative contributions to the field of communications or electronics in Australia. The improved overall welfare of individuals resulting from this work would be an important factor in selecting the recipient. This annual award honours the late George Pither VK3VX, a member of the WIA Federal Executive from 1967 to 1971.

ACRC ANNIVERSARY

On the 26th August 1978 the Amateur and Citizens Radio Club (NSW) celebrated the completion of their first twelve months of operation with a noon to midnight party. The club now has 80 members and conducts a monthly net on 80m at 7.30 p.m. EAST on the first Saturday in the month. Fifteen members passed the last Novice examination — 30 members now hold licences.

THE RON WILKINSON ACHIEVEMENT AWARD

A reminder is given that nominations for the Ron Wilkinson Achievement Award for the year 1978 will soon be due. Please refer to AR for March 1978, page 17. ■

WIANEWS

HANDBOOK REVISION

The revision of the Handbook, suggested by the Institute several times recently, should await the outcome of WARC 79 and the new legislation (long promised, but still not yet in sight) to replace the old Wireless Telegraphy Act.

However, the P. and T. Department has the requirement to begin the revision as soon as the staff situation in central office permits. The revision will therefore be based on the existing legislation.

The Executive have twice previously carried out or commissioned this revision, once by Jack Martin VK5EJ, when he was a member of the Executive some 4 to 5 years ago and a year or two later by Geoff Taylor VK5TY. A considerable number of changes have occurred since then. Not the last of the changes being Novice Licensing. A number of further changes are still in the pipeline as readers of this column will be aware.

The Executive is faced with a massive effort directed towards WARC 79 and consequently the number of amateurs is extremely limited with experience in this kind ot work coupled with a continuing knowledge of all the changes which have taken place in recent years (including Institute policy). The Institute has fortunately persuaded George Brzotowski VK1GB, who has special knowledge in this field, to undertake this task with assistance from experienced amateurs of VK1 Division.

SPECIAL FUND

At the last Executive meeting it was decided to establish a Satellites and Special Projects Fund. The Fund will incorporate monies already earmarked for "Project Australis" and will have additional sums added to it from time to time. From this Fund will derive initial financial assistance for Project ASERT, as well as such other projects, including satellites, as may qualify in the future.

CHANNEL 5A

Material for the preparation of a technical submission to the Minister has not yet been sent in to Executive by such Divisions as have something to offer. Meanwhile the Minister for Post and Telecommunications issued a media release 78/18 in mid-September which, for the record, is reproduced below.

Minister for Post and Telecommunications — **Parliament House, Canberra, A.C.T. 2600**

78/18

GO AHEAD FOR ETHNIC TELEVISION

Special television services for ethnic communities will begin operating in Australia on a national basis early next year.

"This was announced today in a joint statement by the Minister for Immigration and Ethnic Affairs, Mr. Michael MacKellar, and the Minister for Post and Telecommunications, Mr. Tony Staley.

DECEMBER AR

This year the December issue of AR will be larger than usual as has been the practice for the last two years. It will contain several specially selected Novice oriented articles.

Although we are calling December's Amateur Radio our "Novice Issue", there will be the normal departments and technical and general articles to cater for all tastes.

The Publications Committee hopes that our "Novice Issue" will be one to be remembered tor some time, and is therefore arranging for a limited number of extra copies to be printed.

These extra copies will be available from various electronics commercial outlets, or from the WIA Federal Office, PO Box 150, Toorak, Vic. 3142.

The price for our "Novice Issue" is $1.20 (plus 50c if posted), the increased price being due to the greater number of pages and to help offset the printing costs.

WIA members and subscribers will of course receive their copy free as usual.

Our current circulation has now reached 7,000 (guaranteed circulation), and next year also looks promising.

If you wish to secure and extra copy of the December "Novice Issue" of Amateur Radio (it would also make an ideal Christmas gift to a CBer) please remit $1.70 (includes posting) to the WIA, PO Box 150, Toorak, Vic. 3142, as soon as possible.

VK3UV. ■

WIRELESS INSTITUTE OF AUSTRALIA

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Part-time: Col. C. W. Perry, Mrs. J. M. Seddon and Mr. P. Simmons (AR advertising).

Executive Office: P.O. Box 150, Toorak, Vic., 3142. 2/517 Toorak Rd., Toorak, Ph. (03) 24 8652.

Divisional information (all broadcasts are on Sundays unless otherwise stated):

ACT:
President — Mr. E. W. Howell VK1TH
Secretary — Mr. Ted Radclyffe VK1TR
Broadcasts— 3570 kHz & 146.5 MHz: 10.00Z.

NSW:
President — Mr. D. S. Thompson VK2BDT
Secretary — Mr. T. I. Mills VK2ZTM
Broadcasts— 1825, 3595, 7146 kHz, 28.47, 52.1, 52.525, 144.1, Ch. 8 and other relay stations: 01.00Z. (Also Sunday evenings 09.30Z and Hunter Branch, Mondays 09.30Z on 3570 kHz and ch. 3 and 6).

VIC.:
President — Mr. E. J. Buggee VK3ZZN
Secretary — Mr. J. A. Adcock VK3ACA
Broadcasts— 1825, 3600, 7135 kHz — also on 6m, 2m SSB and 2m Ch. 2 repeater: 00.30Z.

QLD.:
President — Mr. A. J. Aarsse VK4QA
Secretary — Mr. W. L. Gielis VK4ABG
Broadcasts— 1825, 3580, 7146, 14342, 21175, 28400, kHz; 2m (Ch. 42, 48): 09.00 EST.

SA:
President — Mr. C. J. Hurst VK5HI
Secretary — Mr. C. M. Pearson VK5PE
Broadcasts— 1820, 3550, 7095, 14175 kHz; 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.

WA:
President — Mr. L. A. Ball VK6AN
Secretary — Mr. P. Savage VK6NCP
Broadcasts— 3600, 7080, 14100, 14175 kHz, 52.656 and 2m (Ch. 2): 01.30Z.

TAS.:
President — Mr. I. Nicholls VK7ZZ
Secretary — Mr. M. Hennessy VK7MC
Broadcasts— 3570, 7130 kHz: 09.30 EST.

NT:
President — Dick Klose VK8ZDK
Vice-Pres. — Barry Burns VK8DI
Secretary — Graeme Challinor VK8GG
Broadcasts— Relay of VK5WI on 3.55 MHz and on 146.5 MHz at 2330Z. Slow morse transmission by VK8HA on 3.555 MHz at 1000Z almost every day.

Postal information:
VK1 — P.O. Box 46, Canberra, 2600.
VK2 — 14 Atchison St., Crows Nest, 2065 (Ph. (02) 43 5795 Tues & Thurs (10.00-14.00h).
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 3535 Sat 10.00-12.00h).
VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton (Ph. (08) 254 7442).
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (incl. with VK5), Darwin AR Club, P.O. BOX 37317, Winnellie, N.T., 5789.

Slow morse transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

VK QSL BUREAUX

The following is the official list of VK QSL Bureaux, all are inwards and outwards unless otherwise stated.

VK1 — QSL Officer, G.P.O. Box 1173, Canberra, A.C.T. 2601.
VK2 — QSL Bureau, C/- Hunter Branch, P.O. Teralba, N.S.W. 2284.
VK3 — Inwards QSL Bureau, Mr. E. Trebilcock, 340 Gillies Street, Thornbury, Vic. 3071.
VK3 — Outwards QSL Bureau, Mr. R. R. Prowse, 83 Brewer Road, Bentleigh, Vic. 3204.
VK4 — QSL Officer, G.P.O. Box 638, Brisbane, Qld., 4001.
VK5 — QSL Bureau, Mr. Geo. Luxon VK5RX, 203 Belair Road, Torrens Park, S.A. 5062.
VK6 — QSL Bureau, Mr. J. Rumble VK6RU, G.P.O. Box F319, Perth, W.A. 6001.
VK7 — QSL Bureau, G.P.O. Box 371D, Hobart, Tas. 7001.
VK8 — QSL Bureau, C/- VK8HA, P.O. Box 37317, Winnellie, N.T., 5789.
VK9, 0 — Federal QSL Bureau, 23 Landale Street, Box Hill, Vic. 3128.

They said that the Government had made arrangements to provide for multi-cultural television services in line with its commitment to ethnic communities.

The permanent service would be administered by the Special Broadcasting Service in consultation with the Ethnic Broadcasting Advisory Committees. It would use channels within the Ultra High Frequency (UHF) band. Installation costs of the UHF transmitters would be borne by the Government, the Ministers said.

The joint statement advised that the Government had agreed to the establishment of a temporary service from early next year because it would take some time to set up the permanent service. It said that the temporary service would use facilities of the Australian Broadcasting Commission.

The Ministers said that the responsibility for administration of the temporary service, like the permanent service, would be vested in the SBS. The SBS had negotiated an agreement with the ABC whereby ABC facilities could be used to transmit programs as an interim measure.

This would provide practical experience of multi-cultural programs which would be invaluable in the final decision-making on the form the permanent service would take. It would also assist as a basis for consultation on the types of programming suitable in the long-term development of a multi-cultural, multi-lingual television service.

The SBS, in conjunction with NEBAC, would co-ordinate the preparation of a public discussion paper on needs, programs and structural and administrative options for the permanent "special purpose" television service.

The Ministers said that the SBS would be the responsible authority for financing the new service. The SBS would be able to purchase or commission programs from independent production houses and other programs makers in both Australia and overseas.

It is expected that the permanent service, to be administered by the SBS, would be transmitting in 1980.
Canberra, 20 September 1978."

WICEN

The Executive noted that in some States the Department refused to permit WICEN operators to set up training exercises in conjunction with suitable local events. This had already been discussed at the last Joint Committee meeting but will now be taken up more strongly.

NEW RB FORM

Rumblings have been heard from time to time about Institute SWL members facing problems with the possession of receivers. From Queensland comes news of a new form RB381 entitled "Application to hold transceiver while undertaking AOCP studies". The applicant is required to nominate a licensed full or limited amateur operator or amateur club to act as guarantor and to have custody of all transmitting valves removed from the transceiver. In the case of solid state finals these must be effectively immobilised.

Readers will remember the printed inserts into AR for December last year and January 1978 relating to policing the frequency spectrum and controls over transmitting equipment.

As far as is known these new forms RB381 are in use only in Queensland.

WARC 79 FUND

A circular was due for mailing out early in October to all known non-members soliciting donations towards the expenses of WIA representatives for WARC 79. Since the address labels for these non-members derive from the WIA computer file it is hoped this will also assist with updating the file in preparation for the 1979 Call Book.

EMC

Early in October the Minister for Post and Telecommunications will be holding a meeting in Sydney to discuss informally measures which might be adopted to improve the immunity of consumer electronic equipment to interference from radio transmitting sources. The WIA received an invitation to attend and is to be represented by Mr Tim Mills, VK2 Federal Councillor. ■

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Distributors of COMMUNICATIONS TRANSCEIVERS

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Our shop is in a very suitable location and elegant environment. It is In reach of most Sydney customers. We have a large showroom and instant service available.

We do carry all TRIO KENWOOD SPARES. Parking is available at two large Council parking areas also, a rear loading dock also provided so please come up and visit us. Of course the LOFTUS WAREHOUSE and service is continuing as usual. Mail orders may now be placed at either shop.

The new CROWS NEST address is SHOP 9 ROSE & McLEOD PLAZA 477-479 PACIFIC HIGHWAY, CROWS NEST 2065 opposite the old CROWS NEST PICTURE THEATRE, easy walking distance from the W.I.A.

I hope to see you soon to see the latest from TRIO KENWOOD the world's largest manufacturer of Amateur equipment.

KENWOOD AMATEUR RADIO

Yours sincerely,
P. M. SCULZ.
PROPRIETOR.

TS-820	H.F. Transceiver
TS-820S	H.F. Transceiver with DG-1
OG-1	Digital Display
VFO-820	VFO for TS-820
SP-820	Speaker for 820
BS-8	Pan Display for TS820/820S
DS-1A	DC Converter for TS820/820S TS520S
YG-88C	Crystal Filter
R-820	Communications Receiver
YG-88A	AM Crystal Filter for R800
YG-445C	C.W. Crystal Filter for R820 (500 HZ)
YG-445CN	Narrow C.W. Crystal Filter for R820 (250 HZ)
TS-520S	H.F. Transceiver
VFO-520S	VFO for TS-520S
-520	Speaker for 520
YG-3395C	Crystal Filter
BS-5	Pan Display for TS520/TS520S
DG-5	Digital Display and Frequency Counter
DK-520	Digital Adaptor Kit (connects old TS-520 to DG5)
TV-502S	2 m Transverter for 520 & 820
TV-506	6 m Transverter for 520 & 820
TS-600	6 Metre all Mode Transceiver
TS-700	2 Metre all Mode Transceiver
TS-700S	2 Metre all Mode Transceiver
TS-700SP	2 Metre all Mode Transceiver
VOX-3	VOX Unit for TS-700
SP-70	Speaker for TX-700
VFO-700S	Remote VFO for TS-700SP
AT-200	Antenna Tuner
TR-2200A	2 Metre FM Portable
VB-2200A	Power Booster for TR2200A
MB1A	Mtg. Bracket for 2200
TR-7200	2 Metre FM Mobile
TR-7200G	2 Metre FM Mobile
VFO-30G	VFO for TR-7200 Crystals for TR-2200 and 7200 (Pair)
TR-7010	2 Metre SSB Mobile
TR-3200	70 cm FM Portable
TR-7400A	2 Metre Digital Mobile (800 Ch 25W)
TR-7500	2 Metre Transceiver (100 Ch 10W)
RS-6	AC Power Supply for TR-7500
PS-8	AC Power Supply for TR-7400A
R-300	Communications Receiver
MC-50 *	Desk Microphone 500
MC-10 *	Hand Microphone 50K
MC-35S *	Hand Microphone 50K
HC-2 *	Ham Clock
MC-30S *	Hand Microphone 500
HS-5 *	Headphones
HS-4 *	Headphones
LF-30A	Low pass Filter
SM-220	Station Monitor
TL-922	Linear Amplifier (2KW PEP)

KENWOOD

AUDIO FREQUENCY SHIFT KEYING GENERATOR FOR RTTY

Ian Hunt VK5QX

Following is a simple but extremely effective circuit of an AFSK generator for radioteletype use. The circuit was designed by Ron VK5FY, and has been used in various shacks around Adelaide with most satisfactory results. It is based on the XR 205 IC produced by "Exar" which is readily available through most components services.

In the configuration shown in Fig. 1, the circuit is used in conjunction with a UART system and requires a logic signal at normal TTL levels applied to the base of the transitor via the 1 k resistor to provide the mark/space coding. The 2295 Hz frequency was chosen for the Mark signal in this instance, as being convenient in the overall set-up used.

Operation of the circuit can be very briefly explained by regarding the transistor as a simple switch, which merely switches the configuration of the voltage divider across the IC control pin, pin 13, thus varying the output frequency from the device.

The actual voltage applied to the IC are set by the potentiometers as shown. The 5 k pot, between pins 7 and 8, is adjusted to provide a triangular waveform at the output in one direction, and a square wave in the other. Whilst this may appear to be a compromise adjustment in practice it works in fine fashion. The adjustment should be made with the equipment connected up in normal fashion with the waveform being observed on an oscilloscope. The output side of the 10 uF capacitor from pin 11 makes a good monitoring point.

In fact I work with an oscilloscope constantly monitoring this point whilst in operation which also allows me to see that the AFSK signal going to the transmitter is functioning correctly.

Resistors used are ¼W, but the 0.18 capacitor across pins 14 and 15 should be of good quality. I have built this circuit up several times now, and each time it has worked without any problems. I can thus recommend its use. It is also possible to easily adapt the circuit for other frequency shifts apart from 170 Hz, should you so desire.

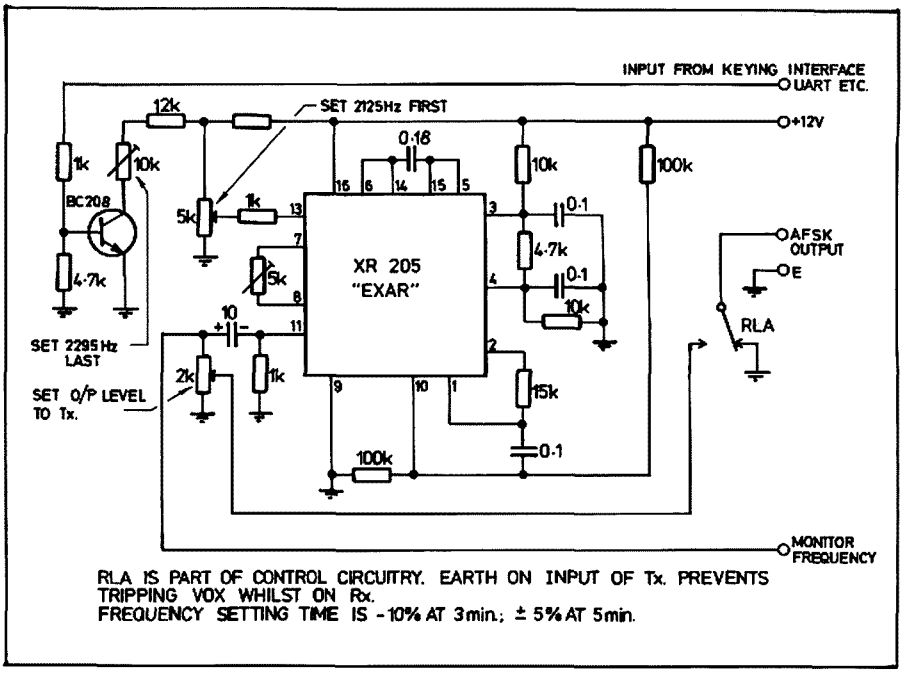


FIG. 1: AFSK Generator.

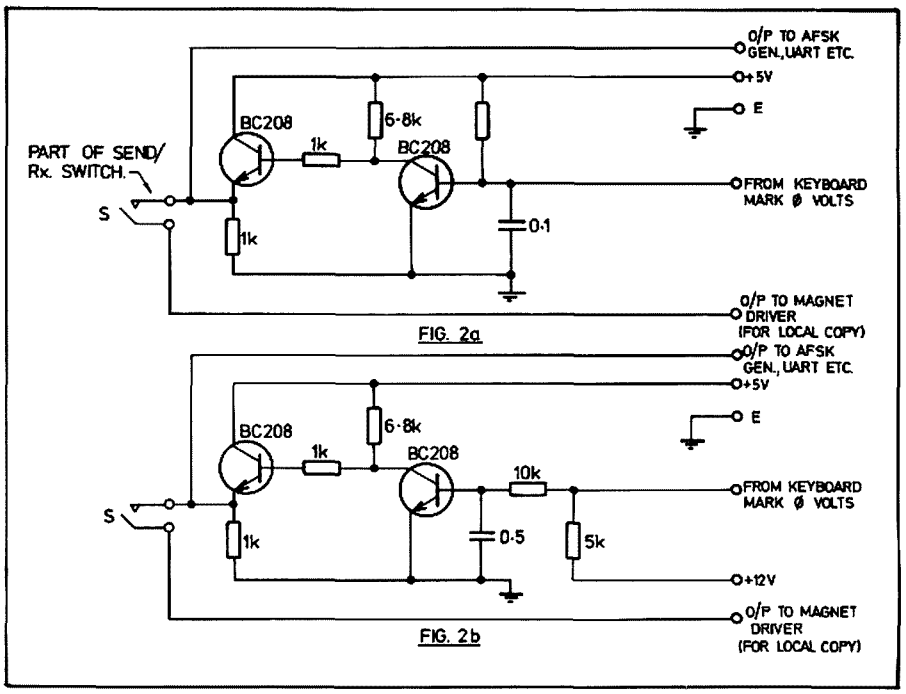


FIG. 2(a.).
FIG. 2(b): Keyboard Translators.

KEYBOARD TRANSLATOR FOR RTTY

For use in conjunction with the AFSK generator previously described here is a simple circuit of a keyboard translator which can be used with most teleprinter keyboards.

The circuit Is so simple it needs virtually no technical description (see Figs. 2a and 2b).

It is possible, if necessary, to modify the input circuitry to provide a higher switching voltage across the contacts of the keying device. This has been found advantageous when using a model 14 TD tape transmitter due to the contact system used. The transistors used can be BC 108, 2N3565 or similar. Resistors in all cases are ¼W.

SELECTOR MAGNET DRIVER

The circuit in Fig. 3 is that of a solid state magnet driver which has proved the most

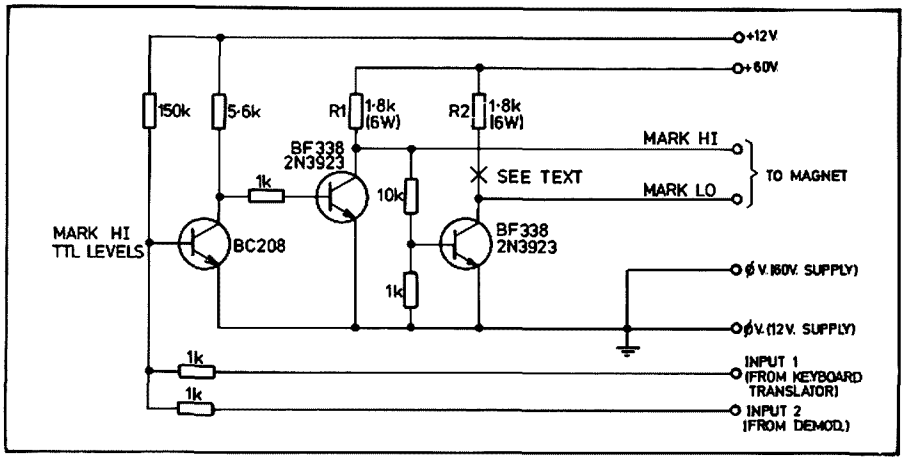


FIG. 3: Magnet Driver — (Reversing Magnet Circuit).

satisfactory. This circuit has been used with both Creed Model 7 machines in a reversing current mode and with slight modification for a Teletype Model 15/19 machine.

Operation of the circuit is virtually self-explanatory so no detailed description of how it works is provided.

The 2 inputs provided allow local copy for monitoring purposes to be fed to one input, e.g. keyboard translator through transmit/receive switching, and the other input fed from the terminal unit receive side. It is normal to also provide a reasonably large wattage variable resistor in the lines fed to the selector magnet to allow setting of the total current passed through the magnet. A mA meter is usually also placed in series with the line and left in circuit.

The 6W resistors are vitreous enamel, and should be mounted in such a manner as to allow suitable cooling to take place as they can become fairly warm with prolonged operation. All other resistors are ¼W. The driver transistors are a high voltage type but should be readily available from your usual supplier.

For single current working (model 15/19, etc.) the selector magnet is inserted at point X in the circuit (Fig. 3), together with adjusting pot and meter; it may be desirable to vary the values of R1/R2 as necessary. For model 15, etc., the supply voltage should be approximately 110V in lieu of 60V. ■

SIMPLE THREE-SHIFT ST-5 OR ST-6 DEMODULATOR

Dr. Ken Kelly VK2MJ
9 Hill Street, Merimbula, NSW 2548

Modern ham HF operating on RTTY uses 170 Hz shift almost universally, and as a result there is little need to provide capability for receiving other shifts. However, it is useful to be able to receive on other shifts when tuning to commercial stations.

The original ST-6 described a separate filter for this purpose, with a separate space tone filter, and also a separate bandpass filter at the front end. However, unless one is interested in obtaining optimum copy on very weak signals from the commercials, this is unnecessary. I have installed one switch which allows optimum conditions for 170 Hz shift, and allows copy of other shifts commonly used — 425 Hz and 850 Hz. The bandpass filter of the ST-6 used for the 170 Hz operation is bypassed for the higher shifts; of course the ST-5 does not have the bandpass filter.

Fig. 1 shows the basic discriminator circuit normally used in both of these demodulators. It will be noted that C2, which tunes the space tone, is normally about a value of .056 uF. Referring now to Fig. 2, it will be seen that C2 has been replaced by C2a, which tunes the coil to 2975 Hz, giving a shift of 850 Hz. Value for C2a is about .033 uF.

An extra switch has been added to select the required shift. This switch is one of the miniature type, which is a double throw type, but has a central position also where the pole is not connected to either side. For the ST-5, any single pole type will suffice, but for the ST-6 a second pole is needed for the relay which bypasses the bandpass filter.

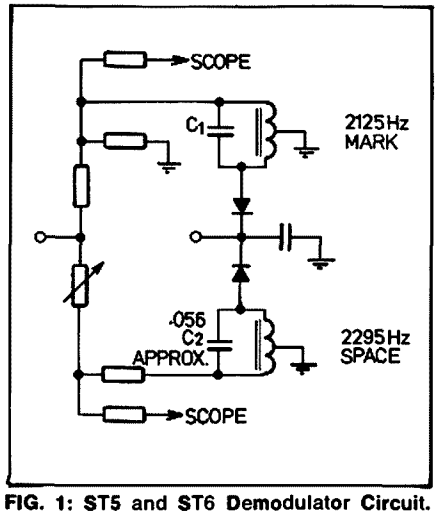


FIG. 1: ST5 and ST6 Demodulator Circuit.

After C2a has been installed, and the filter tuned to 2975 Hz, C2b, which should be approximately .022 uF, is installed, and with the switch turned to the 170 Hz position, C2b is adjusted to tune the coil to 2295 Hz. Finally, the switch is turned to the 425 Hz position, and C2c is installed and adjusted to give a frequency of 2550 Hz. The value of C2c will be about 0.22 uF. (Calculation shows a value of 0.012 uF.—Tech. Ed.) In my case I mounted it directly in the switch.

When receiving shifts of other than 170 Hz on the ST-6 it will be necessary to bypass the bandpass filter. This is done with a relay, which is a miniature double pole double throw type, and is controlled by the other pole of the shift selection switch. Fig. 3 shows how this is done.

This has made a simple and useful addition to my demodulator. ■

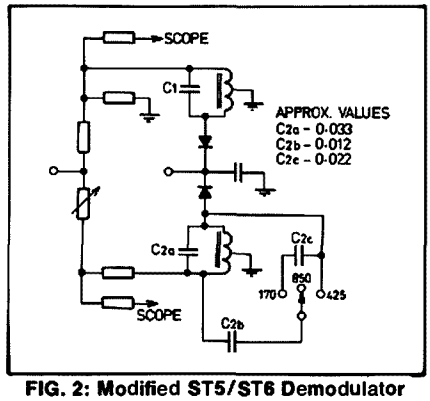


FIG. 2: Modified ST5/ST6 Demodulator Circuit.

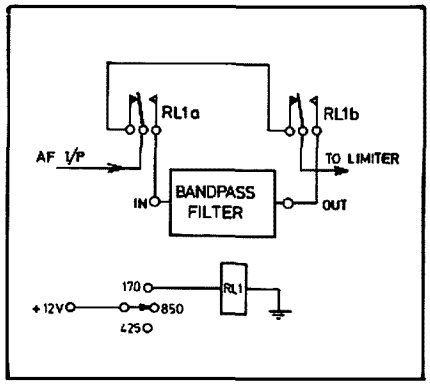
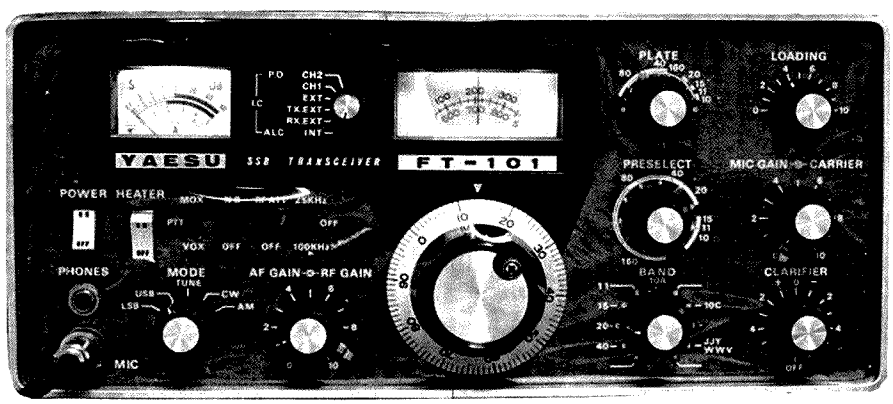


FIG. 3: Bandpass Filter Bypass Circuit.

MODIFICATIONS TO THE FT101 TO CURE STRONG SIGNAL OVERLOAD

C. J. Donoghue ZL2BAF

There must be thousands of the Yaesu FT101 series transceivers in Australia. Some of these suffer from overlaoding and cross-modulation. ZL2BAF has analysed the problem and devised an effective cure. Even if you do not own an FT101 there is food for thought in this article.



About three years ago I purchased a brand new FT101B, and shortly afterwards became aware that the receiver, while excellent in most other respects, exhibited bad overloading on any signal stronger than S9. Local signals were so distorted as to be unreadable without switching in the RF attenuator and backing off the RF gain, desensitizing the receiver to the extent that weaker signals would not be heard. Discussions on 80 metres with other 101 owners revealed that this was a common complaint, and one or two other amateurs said that they had been put off buying a 101 because of this problem.

Considering the evidence gathered over a period from these contacts, I came to the conclusion that what I had thought was a fault in my set was in fact a design fault which showed up in varying degrees of severity in a large percentage of sets, including the 101 Mk. 11, 101B and 101E.

There was one other problem which showed up at times, and proved to be due to the same cause of the overloading, that of cross-modulation, and apparent splatter from local stations on the same band.

I decided to investigate the overload problem in my 101, and started by feeding in an AM signal from the signal generator, modulated about 80 per cent with 400 Hz, at 37,000 kHz. A dual-trace scope was connected to show the IF envelope on one trace, and the audio wave-form from the detector on the other, and a VTVM was connected to the AGC rail. As the RF input was increasing, a point was reached about 10 dB over S9 (200 micro-volts in) where the modulation percentage on the IF envelope increased rapidly, and further increasing the input caused the modulation percentage to increase to more than 100 per cent, accompanied by the onset of audio distortion.

The VTVM read about 5 volts on the AGC rail at this stage. An RF probe connected to a signal tracer was then used to find the stage causing the distortion, which proved to be Q2, 2SC784R on circuit board PE1183B IF Unit.

At this point it would probably help if a description of the operation of the 101 RF, IF, and AGC circuits was given. The RF stage is a dual gate FET, with the incoming signal applied to gate 1, and AGC via a resistive divider (100k and 68k) applied to gate 2. The signal passes to the 1st mixer, another FET, where it is heterodyned to the 1st IF, which is broadbanded to cover 5.5 to 6.0 MHz. The output from the 1st IF is passed to the second mixer, another FET, where it is heterodyned to 3,180 kHz, by the VFO, which tunes 8.7 to 9.2 MHz. The next stage is the input to the noise-blanker, this time a bi-polar transistor, then via the noise gate to another FET, the noise-blanker output, and on to yet another FET connected as a source follower to provide a low-impedance drive for the crystal filter. The output from the crystal filter passes to another bi-polar transistor (Q2 mentioned earlier), and then finally to an integrated circuit, CA3053, which drives the demodulators.

The IF voltage appearing across the last IF transformer is rectified to produce a positive voltage which is used to drive two transistors connected as a Darlington pair (Q4 and Q5 on the IF board). The AGC rail is supplied through a 3k3 resistor from a 10 volt zener diode, and the

transistors Q4 and Q5 are also connected to the AGC rail, thus causing the AGC voltage to vary from about 8 volts with no signal to about 4.5 to 5 volts with an S9 signal. The increasing current through Q4 and Q5 with signal is used to drive the S-meter.

Of the eight stages of amplification, three are controlled by the AGC; the RF stage, the last IF IC, CA3053, and the transistor Q2 2SC784R immediately before the CA3053.

A perusal of the published data for both the RF FET and the CA3053 indicated that AGC voltage excursions as provided by the 101 AGC rail were well within the specifications, except that the control on the RF stage could be somewhat greater to reduce the gain more on strong signals. Q2, however, was the stage with the problem, and a study of its AGC biassing showed the reason. Since Q2 is a bi-polar transistor, its base requires forward bias, and this is obtained from the AGC rail through the usual divider resistors, in this case a 27k and a 3k9. In the 101E the upper resistor is a 22k. As the AGC voltage drops with increasing signal, the bias applied to the transistor decreases, lowering the gain of the stage. However, the transistor is a silicon device, and requires at least 0.65 volts on the base with respect to the emitter to overcome the base-emitter potential drop, which means that the minimum voltage at the top of the divider must be about 5 volts. If the AGC voltage drops below this value, the transistor becomes cut off, and hence there is no output. When the incoming signal is strong enough to produce this condition, severe distortion is the result.

The first solution to present itself was to provide a small fixed bias current to the base so that it could not cut off under any conditions. This was done by fitting a resistor from the zener diode supplying the AGC rail to the base of the transistor Q2, of a value chosen to supply just enough current to prevent the transistor cutting off, the value working out at 82k. The resistor was simply fitted to the back of the board. The current thus supplied reduced the AGC action on the stage, and hence a greater AGC voltage was developed, which improved the control on the RF stage, with a vast improvement In the cross-modulation and splatter troubles. Because of the increased AGC action, the S-meter read much too high, and was reduced to read S9 on the calibrator at 14,200 kHz.

The overload troubles disappeared as well, no stations ever causing distortion even with the attenuator out and the RF gain full on. A number of 101s were modified, and all showed the same improvement.

While the modified sets worked well, it seemed that something was just not exactly right, and some further thought was given to the problem over a period of time. Some more measuring was undertaken, namely a graph of AGC volts against RF input voltage, which showed a knee in the curve at the point where the AGC voltage dropped below the point where it had control of the IF stage Q2. Any signal stronger than that was being controlled by only two stages, the RF stage, and the CA3053. While the signal required to reach that point was much stronger than that which caused the original overload in the unmodified form, it could still be reached by a local signal, and the receiver would sound rather fussed, though not actually distorting, apparently caused by a rise in the audio output since the AGC could not hold the output level.

This state of affairs led to the final modification, as follows. It was decided to remove the voltage-divider biassing completely from the IF stage Q2, and to fit current bias from the AGC rail through a 1M8 resistor, chosen to give the right collector current under no-signal conditions. This provided a linear decrease in the bias current right down to an AGC voltage of about 1 volt, in contrast to the first modification, but did not give enough gain reduction, resulting In too much AGC voltage for a given signal level, and adversely affecting the signal-to-noise performance at moderate signal levels. The decision was made to control an additional stage, previously uncontrolled, and a study of the circuit suggested Q2 in the noise-blanker circuit, another bi-polar transistor. The bias for this stage is also via a divider, 22k and 4k7, and these were removed, and, like the other, current bias was fitted, but this time using a 1M2 resistor. The S-meter was readjusted, and the performance checked out, with most gratifying results. The receiver refused to show any signs of overload right up to the full output of the signal generator, about 50 millivolts.

The most brutal test was devised, which was to modify another 101 to the same circuitry, and then both sets were fitted into their respective cars (both being mobile) and with the cars parked alongside each other, a QSO was held at full power. Although the aerials were only about eight feet apart, and the overload protection lamps on the rear of the sets were flashing brightly with the RF, the audio was clean and easy to resolve, with the RF attenuator switched out, and the RF gain full on, and the S-meter reading about 40 dB over S9.

Cross-modulation has disappeared, and the set will work happily with other local sets on the same band, unless they are very close together.

Step-by-step details of the modification are as follows: Remove the AF unit, PB1189, the second board from the left when viewed from the front of the set, by undoing the two screws and carefully rocking the board endwise while lifting it up, and lay aside. This board is removed to gain access to the IF board, PB1183B, on the extreme left of the set.

Remove the two screws holding the vertical metal shield supporting the IF board, and ease the IF board up and out of the set complete with shield.

Remove the shield.

Locate the transistor Q2 on the top edge of the board, and its base bias resistors, R10 and R11 in the 101B and 101E; and R16 and R17 in the 101 Mk. II.

Remove these resistors CAREFULLY. The board is a double-sided printed circuit with plated-through holes, so use a solder-sucker or solder wick and not too much heat. R10 and 11 are 22k and 3k9 in the 101E, 27k and 3k9 in the 101B; and R16 and 17 are 27k and 3k9 in the 101 Mk. II.

Replace R10 (R16) with a 1M8 resistor, leaving no resistor in R11 (R17), making sure that there are no specks of solder stuck on the board.

Re-assemble the IF board to the shield, and fit to the set, and fit the AF unit.

Remove the screw securing the noise-blanker board PB1182, and remove board from the set (PB1292 in the 101E and 101B). Locate the transistor Q2 in the 101 Mk II and its bias resistors R5 4k7, and and R2 22k; and remove the resistors with the same care as before. Replace R6 or R2 respectively with a 1M2 resistor, leaving no resistor in the other place. Connect the base end only for now. On the 101B and E, locate pin 3 on the edge connector, and isolate it from pin 2 by cutting the copper between them. Solder the other end of the 1M2 resistor to the pin 3, and fit the board to the set.

On the 101 Mk II, the NB board is mounted on top of the VFO unit, and connections are made by means of wires to the set. Find a suitable anchor point (fit a solder lug) and connect the AGC end of the 1M2 resistor to it, with a wire to the AGC rail under the chassis. Refit the board to the set.

Remove the bottom cover and the internal speaker panel, and locate pin 13 on the IF unit edge connector socket. This is the AGC rail. Solder a wire to pin 13, and route to the NB board edge connector socket. Isolate pin 3 from ground, and connect the AGC wire to pin 3.

Re-assemble the set.

Switch the set on and tune to 14,200 kHz, turn on the calibrator, and peak the preselector for maximum S-meter reading. Locate the S-meter adjust control on the IF board, and set the S-meter to read S9. If you care to measure the AGC voltage it should be 4.0 volts $\pm$0.25 volt.

That completes the modification, and you should now have a receiver equal to the best.

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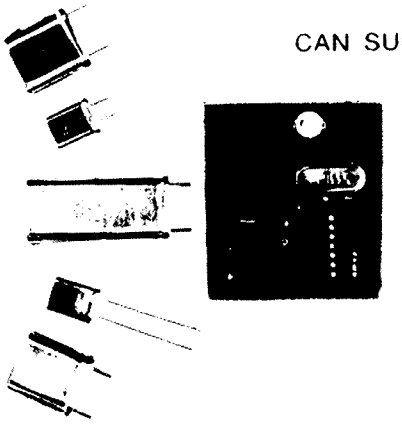

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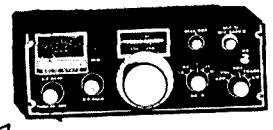

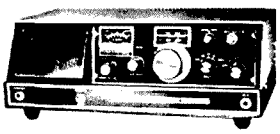

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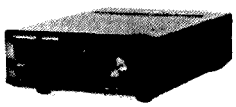

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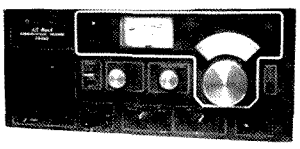

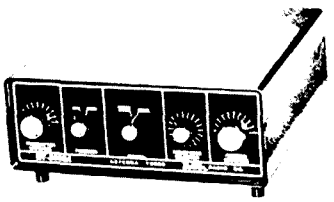

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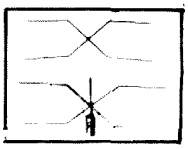

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ADDITIONAL MODIFICATIONS TO THE FT-100B

G. Wilson VK3AMK
7 Norma Street, Frankston 3199

In AR March 1978, pages 10 and 11, a number of modifications to the FT-100B were described. It should be noted that in Fig. 2 the value of two capacitors shown as 0.002 uF should read 0.022 uF. Since making the earlier modifications several others have been made which have further improved the performance of the transceiver.

1. RECEIVER PRE-AMPLIFIER:
As with many transceivers the FT-100B worked very well on 80-20m, but lacked some sensitivity on 15m and was quite deaf on 10m. A broadband pre-amp. was added between the antenna relay and the receiver front-end and the improvement in sensitivity was dramatic. The circuit used has been tried in many situations where extra gain was needed ahead of a transceiver and numerous versions have all performed well. The gain is low below 20m and then increases with frequency. No band switching is required and it can be built either on PC board or tag strips. To improve stability keep the input components as far from the output as possible. Despite the apparent simplicity of the circuit there have been no serious problems even with quite solid local signals. The only minor problem was Channel O TV signals getting through the pre-amp. and mixing with internal signals in later stages of the receiver. This was cured by using a low-pass filter on the antenna coax which effectively removed the TV signal before it reached the receiver.

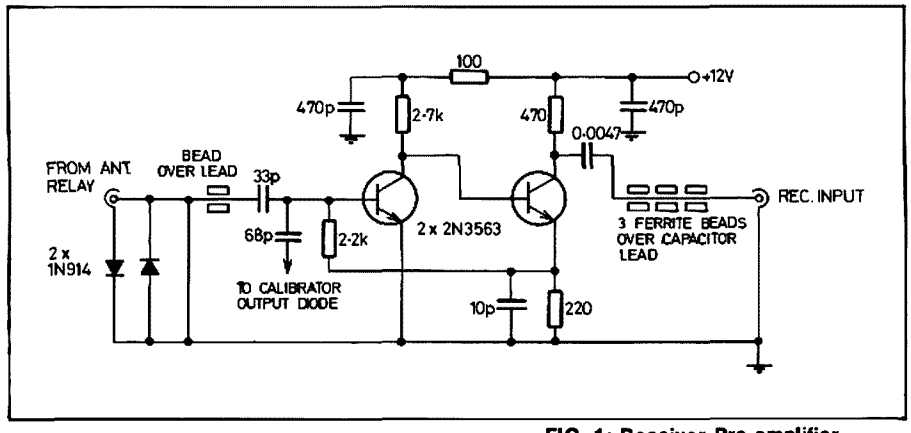

FIG. 1: Receiver Pre-amplifier.

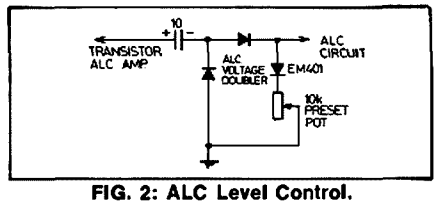

FIG. 2: ALC Level Control.

2. INCREASED CALIBRATOR SIGNAL
In the FT-100B when the calibrator is turned on the antenna is cut off, which means the 100 kHz osc. signal doesn't have to compete with band noises to be heard. Despite this the signal was weak on 15m and all but non-existent on 10m. This was probably a combination of falling receiver sensitivity and harmonic output as the frequency went higher. As supplied, the calibrator signal is taken to the base of TR101 (RF amp.) via a diode and capacitor (C111). After fitting the pre-amp. described above the lead to C111 was removed and connected via a 68 pF capacitor to the base of the first 2N3563 in the pre-amp. This produced a much stronger 100 kHz signal on all bands on 10m, instead of no "S" meter reading at all, read almost half scale with a good strong signal making calibration on 10m much easier.

3. ALC LEVEL CONTROL
The ALC circuit in the FT-100B uses a transistor amplifier which in my opinion produces too much control voltage and prevents the 6JM6 finals from operating at full output. The relatively low power level available makes it important that the transceiver operates as well as possible, especially in difficult conditions. A diode and preset pot were added to the ALC circuit, as shown in Fig. 2, and this allowed the ALC level to be set to a more realistic position, without reaching distortion of course. The correct setting can be reached by trial and error, but a scope will give a far better indication of the linearity and how much increase can be tolerated. ■

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A quarter wave vertical antenna gives a very good low angle performance when coupled with an effective ground system, however it is a one band device only. Multi-band verticals are available: these use tuned traps to isolate sections of the antenna so as to present an equivalent quarter wave on several bands. It is not broad band; out of the amateur bands the performance is degraded.

Here is an antenna that is truly broadband, has excellent low and medium angle performance, is omni-directional, provides a signal-to-noise ratio at least equal to a resonant vertical and Is compact. What is the catch? Simply that it is a receive only antenna.

An antenna that is shorter than a quarter wavelength may be considered as essentially capacitive. The equivalent circuit is shown in Figure 1.

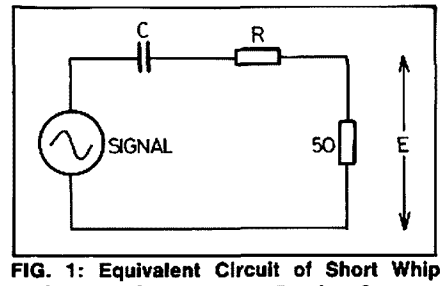


FIG. 1: Equivalent Circuit of Short Whip Antenna Connected to 50 ohm Coax.

If the antenna is fed with low loss coax and the receiver is properly matched then the antenna sees a 50 ohm load. The resistance R will be small and may be ignored. C will represent a sizable re-

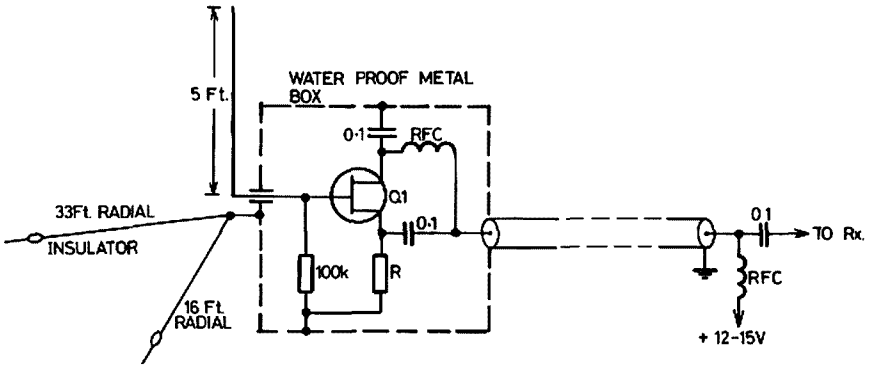


FIG. 2: Simple Active Antenna

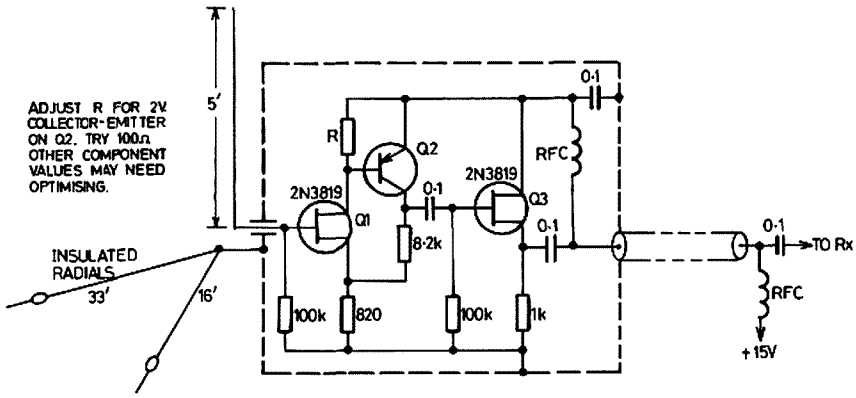


FIG. 3: Active Antenna with Gain.
Adjust R for 2V Collector-Emitter on Q2. Try 100 ohm. Other component valves may need optimising.

actance which increases as frequency decreases. It will attenuate the received signal E. For example, a 1.25 metre whip will provide only about 10-15 per cent of the available signal when connected to a 50 ohm line and operated on 10 metres. On 160 metres the signal has all but vanished.

To obtain a reasonable signal-to-noise ratio a full quarter wave antenna is not necessary. As frequency is lowered so the ambient noise level increases, thus a fixed length vertical will deliver a substantially constant signal-to-noise ratio into an open circuit.

So if a FET source follower is placed at the antenna base the maximum available signal will be passed to the receiver. A possible configuration is shown in Figure 2. The FET provides matching of the high impedance antenna to the coax over a very wide frequency range.

Q1 may be any FET designed for RF amplification (2N3819, T1588, etc). R will need to be selected to suit the particular FET's characteristics. 1 k ohm would be an average starting value. The DC to operate the FET is supplied via the coax.

The vertical needs to work against a ground plane which may be a collection of radials or a nearby gutter or even a length of waterpipe on which the whip could be mounted. A car radio antenna is a convenient form of whip which may be readily mounted on a bracket on the outside wall of the shack. This antenna should work well Indoors as well.

The received signal will not push the S meter up as far as a resonant antenna would but then neither will the background noise. It is the readability of the signal that counts. This antenna will outperform random wires when used over a range of frequencies. This system is used in military and commercial installations, particularly for mobile LF reception, where resonant antennas are impractical.

For those operators who want to see the S meter read higher then the circuit shown in Figure 3 will be of interest. On 28 MHz the received signals will be stronger than from a 3 element beam and almost equal to a full size vertical on 3.5 MHz!

Interested? Build one and write in about the rare DX you hear. ■

CAPRICORNIA AMATEUR RADIO FESTIVAL

The "Capricornia Amateur Radio Festival" was held in Rockhampton on the 16-17th of September, 1978, by the Central Queensland Branch of the WIA. It was very successful and well attended by amateurs and others interested In radio and electronics. A smorgasbord dinner was held on the Saturday night and the guest speaker was the Queensland Division President, John Aarsse VK4QA. Presentations were made to Les Bell VK4LZ, of North Queensland, for the first worked all Queensland Shore Award and also worked Queensland Cities Award; to Hal Hobler VK4DO and Harold Bremerman VK4HB the Certificate and Badge for Meritorious Service from the WIA.

Harold Hobler VK4DO (left) receives the WIA Certificate and Badge from Old. President John Aarsse VK4QA for meritorious service.

The large range of amateur radio equipment displayed by Vicom included the latest new transceivers from Kenwood and Icom, together with literature giving the technical details. Relics of the 1920 to 1940 era of radio development also gave people a chance to compare the advances made in radio over the decades. The exhibits included a World War 2 vintage transceiver and aircraft communications equipment, various radio and transmitter parts dating from the 1920s and a home made loudspeaker along with a hand-cranked turntable. There was also an Oscar display with posters and literature explaining Oscar's origins and functions along with transceivers tuned to Oscar's frequency. A novice display demonstrated and explained the courses currently being

used by the C.Q. Branch, to enable beginners to gain their novice licence. Equipment used by novices was on show and posters explained the courses, the function of the WIA and the meeting places and times. Home brew equipment made wholly by amateurs was also on the display table at the Festival, and at approximately 1300 hrs. on Sunday saw the Festival draw to a close with an all in barbecue held in the area surrounding the National Fitness site. ■

Kevin Adams VK4ZKA (r.) gets a helping hand from Ross Dobbs to solder an antenna connector. Photos courtesy "Morning Bulletin" — Rockhampton.

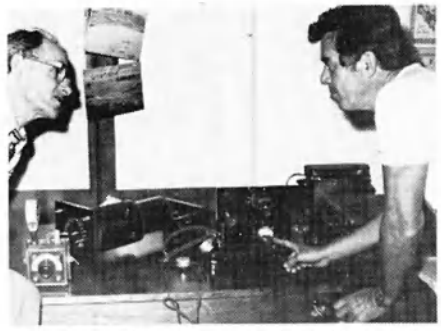
AMATEUR DISPLAY IN THE BRISBANE MUSEUM

Each year the Brisbane members of the VK4 Division offer a week-long display to the public on a site allocation in the Queensland Museum building during the busy time of the school vacation. Organised this year by Rud VK4QY, sterling support was given by many members in the varied duties and by manning the official station

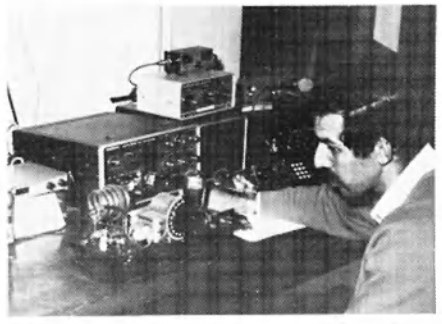
Mervyn Eunson VK4SO
Box 1513, Brisbane, Qld. 4001

VK4WIA/P under the direction of Jack VK4AGY.

HF and VHF antenna were mounted in the museum grounds, incongruously behind the full-sized models of the tyrannosaurus and triceratops. The rigs and other equipment were installed in a select area of the main hall, with Bert Hinkler's original tiny Avro Avian biplane supended almost overhead. The station was operated continually, and caused innumerable enquiries from interested onlookers, who received quantities of informative literature, including details of the decentralized study classes and course available.



Jack VK4AGY and Bud VK4QY discuss the complexities of Spark.



VK4NAD ponders the progression from TPTG to SSB.

Not that the working of an amateur station was the only attraction: diversified exhibits included the morse keyboard and memory devised by Norm VK4NP, complete with VDU fashioned from a discarded TV set. This versatile machine was demonstrated to be capable of many functions, including the ability to defeat all-comers at "tic-tac-toe" and other contests.

Fascinating to the radio buff and layman alike was a large collection of old telegraph keys (carefully preserved and restored by Alan VK4SS) dating right back to the days of Samuel Morse. Complementing this were fine examples of damped spark transmitters and loose-coupler receivers from the shack of a local OOT. The display progressed through other vintage nostalgia to items of WW II military radio which had been pressed into amateur service.

Offering something for all, there was continuous screening of colour video tapes (originating from the ARRL) which illustrated facets of amateur radio. Available space was filled with appropriate photographs and award certificates.

The response received caused the exercise to be counted a definite success. ■

MARCONI 75th ANNIVERSARY OF THE FIRST TRANSATLANTIC TWO-WAY RADIO COMMUNICATIONS

Arthur Brown VK2IK
26 Winifred Ave., Epping 2121

It is timely that we in Australia should note the passing of this historical occasion. The RSGB journal, Radio Comumnication, of March 1978 reports fully the celebrations held at Poldhu in Cornwall and Cape Cod in Massachusetts. These were the sites at which the original two-way communications took place on January 18th, 1903.

Amateur stations were set up at Poldhu (GB3MSA) and at Cape Cod (KM1CC) for the week of 14-21 January 1978. Messages were exchanged from members of Marconi's family, President Carter of USA and President Giovanni Leone of Italy. Marchesa Marconi, the widow of Guglielmo, officially opened the station at Poldhu which had been set up in the Poldhu Hotel. Both she and her daughter, Princess Elettra, as guests of honour, took part in the various activities.

It should be noted that prior to the event being celebrated (1933), that Marconi had an earlier installation at Alum Bay on the Isle of Wight. Four bronze plaques on a stone marking the site may be seen by visitors today. This site is about 15 air miles to the West of the powerful Shanklin radar station which tracks and identifies all aircraft movements for London's airport controllers. This station itself is on the war-time site of one of Britain's early warning ray direction finding stations (later called radar).

The plaques at Alum Bay read thus:—

"This stone marks the site of the Needles wireless telegraph station where Guglielmo Marconi and his British collaborators carried out from 6th December, 1897, to 26th May, 1900, a series of experiments which constituted some of the more important phases of their earlier pioneer work in the development of wireless communication of all kinds.

Marconi described the Needles station as the world's first permanent wireless station. It was erected under his personal supervision by his assistant George Kemp for Marconi's Wireless Telegraph Co. Ltd., and was completed on 9th December, 1897. Other radio technicists of this company who pioneered here were P. W. Paget, A. Gray, C. E. Rickard, W. Densham, F. S. Stacey, P. I. Woodward, C. H. Taylor. The station was dismantled in June 1900.

On 15th November, 1899, information for the first newspaper ever produced at sea, the "Transatlantic Times", was transmitted from this station by wireless telegraphy and printed on the US liner "St. Paul" when 36 miles distant. On 3rd June, 1898, Lord Kelvin sent from the Needles wireless telegraph station the first radio telegram for which payment was made.

The Needles wireless telegraph station exchanged radio messages first with a tug in Alum Bay then with Bournmouth, 14 miles distant, next with Poole, 18 miles away, later with ships 40 miles seawards. These wonders attracted world-wide attention and famous scientists from many countries came (1898-1900) to see the new wireless telegraphy in experimental operation."

The accompanying photo shows the memorial column at the later Poldhu site. The Hotel Poldhu is about 200 metres away from this spot.

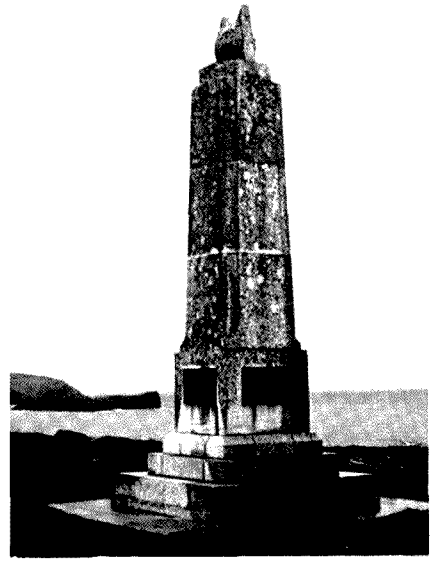
Inscriptions on the four bronze plaques at the base of the granite column on the cliff top at Poldhu Cove, near Mullion Village, not far from the Goonhilly Downs satellite tracking station, on the southern tip of Cornwall, an historic site of epoch-making experiments read thus:—

"One hundred yards north of this column stood from 1900 to 1933 the famous Poldhu Wireless Station, designed by John Ambrose Fleming and erected by the Marconi Company of London, from which were transmitted the first signals ever conveyed across the Atlantic by wireless telegraphy. The signals consisted of a repetition of the morse letter "S" and were received at St. John's, Newfoundland, by Guglielmo Marconi and his British assistants on 12th December, 1901.

From the Marconi Poldhu Station in 1923 and 1924, Charles Samuel Franklin, inventor of the Franklin Beam Aerial, directed his short wave wireless beam transmission to Guglielmo Marconi on his yatch 'Elettra' cruising in the South Atlantic. The epoch-making results of these experiments laid the foundation of modern high speed radio telegraphy communication to and from all quarters of the globe.

To commemorate the pioneer work done by Guglielmo Marconi and his research experts and radio engineers at the Poldhu Wireless Station between 1900 and 1933, the Marconi Company presented this historic land to the National Trust. Some six acres of cliff land were given in 1937 and 44 acres behind the cliffs on which stood the station were given in 1960.

The Poldhu Wireless Station was used by the Marconi Company for the first trans-oceanic service of wireless telegraphy which was opened with a second Marconi Station at Glace Bay in Canada in 1902. When the Poldhu Station was erected in 1900, wireless was in its infancy. When it was demolished in 1933 wireless was established for communication on land, at sea and in the air, for direction finding, broadcasting and television."



Marconi Monument at Poldhu, Cornwall, U.K.

TRIBUTE TO MARCONI

An interesting tribute to Marconi appeared 40 years ago following his death in 1938. This appeared in the BBC Handbook for that year. For those of us interested in our hobby and for those that have made electronics their career the following extract is well worth considering.

"On July 21, following the death of Marconi on July 20, a two minutes' silence was observed on all British wavelengths. In the course of a broadcast tribute, Professor E. V. Appleton said: 'For over forty years Marconi has worked as a radio experimenter, with unflagging energy and enthusiasm. He has never been content to rest. For him we were always at the beginning of things . . . If difficulties seemed to be ahead he tackled them with the zeal of a young experimenter beginning his first research. He was like this to the end . . . Great as his scientific and technical achievements have been, the man has been as great as his work.' " ■

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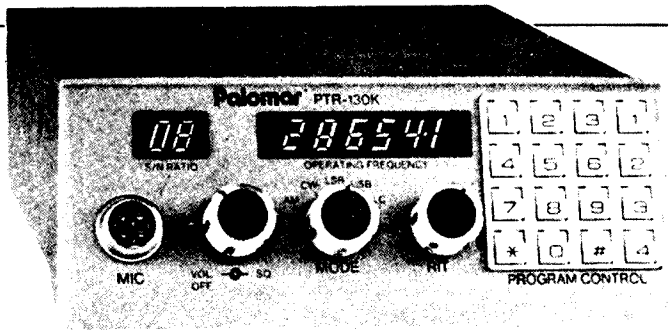

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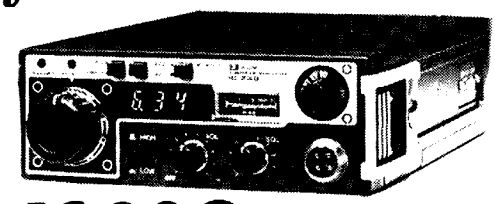

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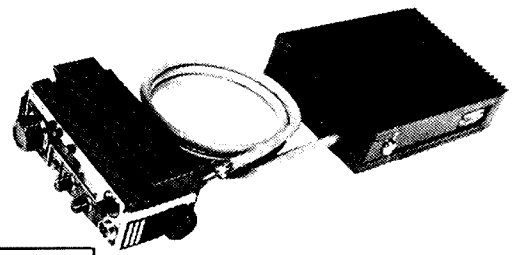

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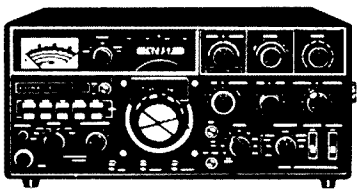

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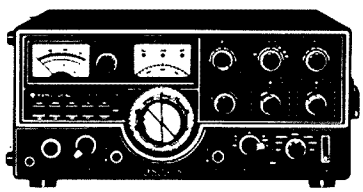

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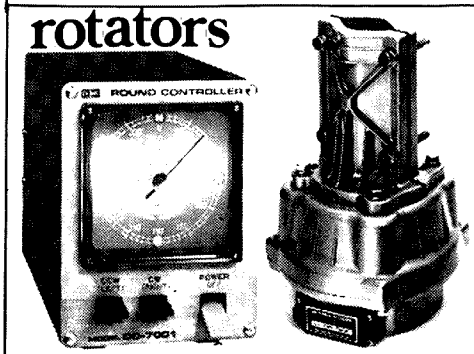

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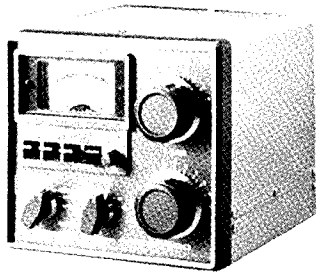
TS-520S SERIES

TS-520S / VFO-520S / SP-520

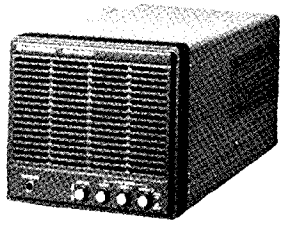


(Antenna Coupler)

Frequency range	6 amateur bands from 1.8 to 29.7 MHz
Input impedance	50 Ohms
Output impedance	50 to 500 Ohms, unbalanced
Through power	200 Watts max.

(Wattmeter)

Type	Through-line wattmeter
Frequency range	1.8 to 29.7 MHz
Measurable RF power	Up to 20/200 Watts, switched
Kinds of RF power	Forward and reflected power, switched
Impedance	50 Ohms
Accuracy	Better than ±10% of full scale



The SP-820 has built-in selectable tone filters to attenuate high and/or low frequencies. You can switch between two different receiver sources. Headphones may also be used in conjunction with the filter network.

"TRIO-KENWOOD (AUSTRALIA) PTY. LTD."

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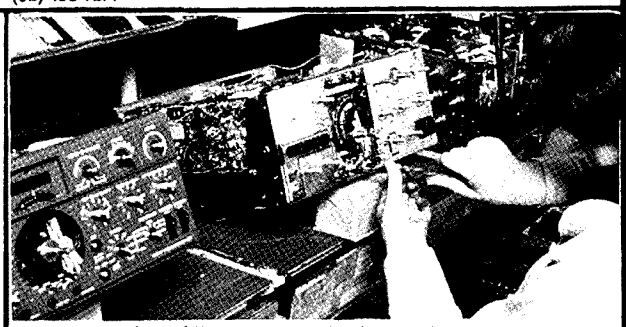


Assembling of communications equipment

"PS" Did you know Kenwood are to release a new solid state 30W PEP HF Mobile Transceiver with full 10m coverage, digital display and noise blanker in OCTOBER? WATCH for further details.

USB-LSB MODIFICATION FOR THE IC202

Robin Miller VK3ZVV
60 Winmalee Dve., Glen Waverlay 3155

This modification was done in order to receive the Oscar 7 Mode B down-link on 145.950 MHz. It consists basically of changing the value of one capacitor and adding the necessary switching.

The CWT facility is sacrificed in this modification and the switch is used for USB-LSB.

The set can easily be returned to "as bought" condition. No boards are removed from the set and virtually no adjustments are necessary. The work requires some careful soldering and a fine tip soldering iron is recommended as PVC covered wires can easily be damaged.

To generate CW the IC202 shifts the frequency of the 10.6985 MHz xtal to 10.7 MHz by switching off transistor Q8. This leaves a 68 pF capacitor in series with the oscillator frequency trimmer. This capacitor is changed to a 15 pF causing the oscillator to shift to approximately 10.715 MHz i.e. on the other side of the xtal filter. This will give us LSB.

To change this capacitor without removing the main board first use a fine screwdriver to remove the clips from the side of the aluminium can containing the oscillator. These clips must be prized off but they will come off quite readily. Bend them away from the can and then carefully twist the can and pull it free — no forcing is necessary.

Locate C62, then cut it in half with a pair of fine side-cutters, and then carefully remove excess "capacitor" so as to leave two wires protruding up where the 68 pF capacitor used to be.

Solder a small 15 pF NPO capacitor onto these two leads.

Next, carefully solder an 8 inch length of hook-up wire onto base lead of Q8, taking care not to overheat base lead or any surrounding wires.

You may now check that the conversion works by earthing this lead. When earthed Q8 is switched off and LSB signals will be copied. If the conversion is done with care there will not even be any need to readjust trimmer C61.

Replace can with the hook-up wire protruding from underneath, but first loop a small piece of wire through the two clip holes on each side of the can so that when it is placed back in position clips may be soldered to the side of the aluminium can.

It is now necessary to modify the CWT switch so that it grounds the hook-up wire when in the "up" position (see Fig. 1).

The filter on the IC202 is not particularly good on the high side so rejection of the unwanted sideband when in the LSB position is only about 40 dB. (This should be adequate for reception of Oscar . . . Ed.).

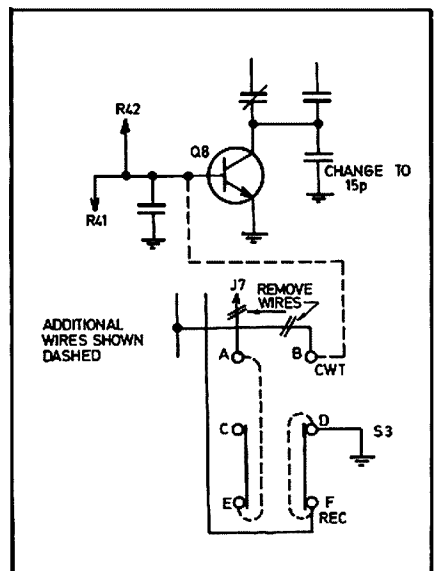


Fig. 1: Modifications to IC202 for LSB reception

NOTE:
Wire going to B on switch is actually two grey wires. They should be lifted off the switch and joined together with a covering to prevent shorts. ■

MEETING BRIEFS

PUBLICATIONS COMMITTEE

The meeting of the Publications Committee on 5th September discussed a number of advertising problems which had arisen and again emphasised the need for photographs for AR. A decision was made regarding standard Oscar orbital tables as an insert into October AR resulting from initiatives and efforts by an advertiser. Some discusions were held about the difficulties of obtaining sufficient volunteers to carry on the work of publishing the magazine and what alternatives required examination.

PROJECT ASERT

The first meeting of Project ASERT Pilot Committee (a sub-committee of the VHFAC) held on 6th September under chairman Bob Arnold VK3ZBB was attended by Ken McCracken VK2CAX, Peter Wolfenden (Exec. Vice-Chairman and Chairman VHFAC) VK3ZPA, and Les James VK3BKF.

Several administrative arrangements were agreed and a division of specifict activities was set up. Since the response to the Project could not be estimated at that stage a practical approach on a small scale was set in motion under Les, for hardware, and a design engineer for which various names were suggested.

EXECUTIVE MEETING

At the Executive meeting on 21st September, some time was devoted to a discussion on financial matters, the budget and the difficulties in finding a Treasurer to serve on Executive in place of Keith Roget VK3YQ prior to his departure overseas.

As usual, developments on the IARU and WARC 79 fronts were explained prior to the departure of the Federal President, David Wardlaw VK3ADW, and Peter Woifenden to the IARU Region 3 conference in Bangkok and the former to the CCIR, SPM in Geneva later in October at which Michael Owen VK3KI will be shering the time taken by the meeting.

Bruce Bathols reported on Publications Committee activities and the proposals for a special issue of AR for December.

WICEN training practices were examined and a position determined. The meeting lasted almost five hours crammed full with details on a wide range of subjects. ■

QSP

OOPS! — CLANGER DEPT.!!

In our Editor's Note on page 45 "Letters to the Editor" last month, we stated that converting to EAST from GMT after daylight saving is introduced, was that we add 9 hours to the GMT figure.

Everybody knows that we add 11 hours, except for your Editor, who sometimes becomes most confused in simple matters like this.

Thanks to all who rang and let me know.

VK3UV ■

JIM'S SHACK

Ron Cook VK3AFW
7 Dallas Ave., South Oakleigh, Vic.

I leaned my bicycle against the garage wall and headed for Uncle Jim's shack at the rear. A burst of car ignition drifted to my ears as I tapped on the door. "It's Bill here, Jim," I called.

"Come in, sit down and tell me your news," was the reply.

"No news, really, although I did hear an interesting conversation on the repeater this morning."

"Go on, is that so?"

"Yes, these two fellows operating portable near the coast were discussing the use of a passive repeater system to enable simplex and repeater operation from their camp site back to the city. Seemed a bit far-fetched to me."

"Oh it could be done, Bill," said Jim, reaching for his electronic calculator. "Pass me that copy of 'Introduction to Radar Systems' by Skolnik. Now how far were these blokes?"

About 100 miles," I replied.

"I see, 160 kilometres or so. Well, I can demonstrate the feasibility of such a system but first we must make some assumptions. Let's assume the repeater site is 610 metres above sea level. For line of sight or free space conditions a hill at least 210 metres above sea level is required at the coast for the 160 km path. I used an old approximate formula that says the radio line of sight in miles is the square root of twice the height of the hill in feet. For metric distances we use d(km) = 4.12 by square root of height in metres."

"Now," continued Jim, "most likely this convenient hill is on the repeater side of the camp site. This means that two antennae need to be put on top. Both should be at least 25 ft. or 8m high, one should point to the repeater and the other down to the camp site. It may be necessary to use two poles. Both aerials should be interconnected by a piece of low loss coax."

"Ah," I said, "one aerial receives a strong signal from the repeater and the second re-radiates the signal to the camp site which is in the shadow of the hill."

"Correct. Now if we can use this equation from the radar text," continued Jim, scribbling on a pad.

Power density = ERP/($4\pi R^2$)
where ERP = transmitter effective radiated power
= Pt Gt
and Pt = tx output in watts
Gt = antenna gain factor
= antilog (dB gain — dB feedline loss)/10
R = range in metres
π = 3.142

"For a repeater ERP of 100 watts that gives 0.311 nanowatts per square metre on the hill. Let's see how many watts is captured by the antenna. I'll assume it has 13 dB gain at 146 MHz. This computes to a capture area of 6.81 square metres so the power available to be re-radiated is 2.09 nanowatts."

"That's real QRP," I said.

"Sure," replied Jim, "but let's allow 1 dB loss in the coax to the second antenna. That leaves 1.66 nanowatts to be re-radiated. Or 0.00166 microwatts if you prefer it expressed that way. Next assumption is that the camp site is 3 km from the hilltop. That gives 294 attowatts per square metre at the camp."

"What watts?" I cried.

"It's not much," muttered Jim, continuing to punch his HP 25. "If I assume a 13 dB gain antenna at the camp and a 3 dB coax loss the receiver sees 0.22 uV. How about that?"

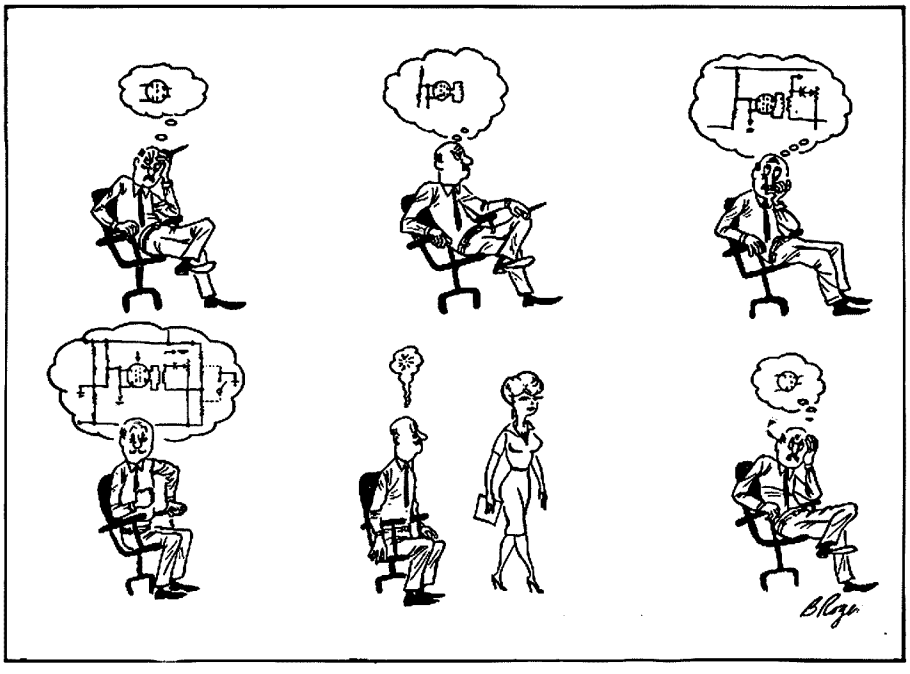
"Wow. But 0.22 uV isn't much of a signal on FM is it?"

"No," agreed Jim, "but quite useful on CW or SSB. Also remember that without the passive repeater on the hill the signals would be perhaps 40 dB below 0.22 uV. An extra 13 dB in the system would give saturation signals on any FM receiver. That means replacing each 13 dB antenna with 17 dB ones and improving the camp coax. The re-radiating antenna must be line of sight to the one in the camp of course and all antennae would have to be aligned to better than 5 degrees. Of course a 10 watt transmitter in camp would put a 1 uV signal into the repeater."

"The signals aren't exactly paralytic," I said, "wouldn't it be better to drive to the top of the hill?" I assume that it has a nicely graded and sealed road to the top."

"Yes, certainly signals would be better even with only a quarter wave from the hilltop. Perhaps the system's best application is as a TV relay. If a 20 to 40 dB gain linear IC amplifier were inserted in the hilltop coax it would help enormously," continued Jim. From the distant look creeping into his eyes I could see that one of his IDEAS was forming.

"Maybe 10 metres is open?" I said. "Come on, let's take a look." ■



QSP

WHAT IS YOUR TOWER DOING TO THE ENVIRONMENT?

CB — A new blockbusting phenomenon is reported in certain Texas towns, where "FOR SALE" signs proliferate wherever the hated 11 metre ground plane dominates a local rooftop. Vigilante counter measures reportedly used by an aroused citizenry range from tape recording the offending transmission and giving it back to the CB neighbour via 150 watts of stereo audio through an open 3 AM window, to putting a straight pin through the offender's coax, and waiting for him to turn on his linear. Thanks WA6NCX, W6NIR, and PAARA Graphs, bulletin of the Palo Alta CAARA.

The Environmental Protection Agency in Washington, DC, is considering a regulation to limit the height of all self-supporting towers less than 2.5 square feet (base cross section) to 34 feet.

It seems that free-standing towers experience wind shear effects which shake the towers. It also seems that, especially in the late spring and summer, this shaking is transmitted to the surrounding earth. The vibrations disturb earthworms, causing them to come to the surface (often during the hottest part of the day). Exposure of the earthworm to the sun's direct rays causes them to die from sunstroke. Earthworms are very important facets of the ecology — hence the EPA's concern. Thanks to the Cascades Amateur Radio Society Action Mini-Mag, Jackson M1.

— From "The Lyrebird", Winter 1978.

(Pull the other leg, mate.—Ed.) ■

QUEENSLAND RADIO CLUBS WORKSHOP

QUEENSLAND RADIO CLUB WORKSHOP

The Queensland Division held its third annual Radio Club Workshop on 15-16 April, 1978, with 11 clubs represented. The Division sponsors a delegate from each affiliated radio club in the State to come to Brisbane to discuss club and Divisional problems, decide Divisional policies and to review and plan Divisional growth and and activities.

The workshop in particular examined the motions to be discussed at the 1978 Federal Convention, set up a State-wide Education Sub-Committee and instituted a weekly Radio Club Liaison Net.

The WIAQ Council see the Radio Club Workshops and Club net as an essential part of its efforts to serve its members throughout the State. In addition the Division is currently investigating the commencement of a "Queensland Net" aimed at encouraging informal contact between Council officers and all members throughout the State.

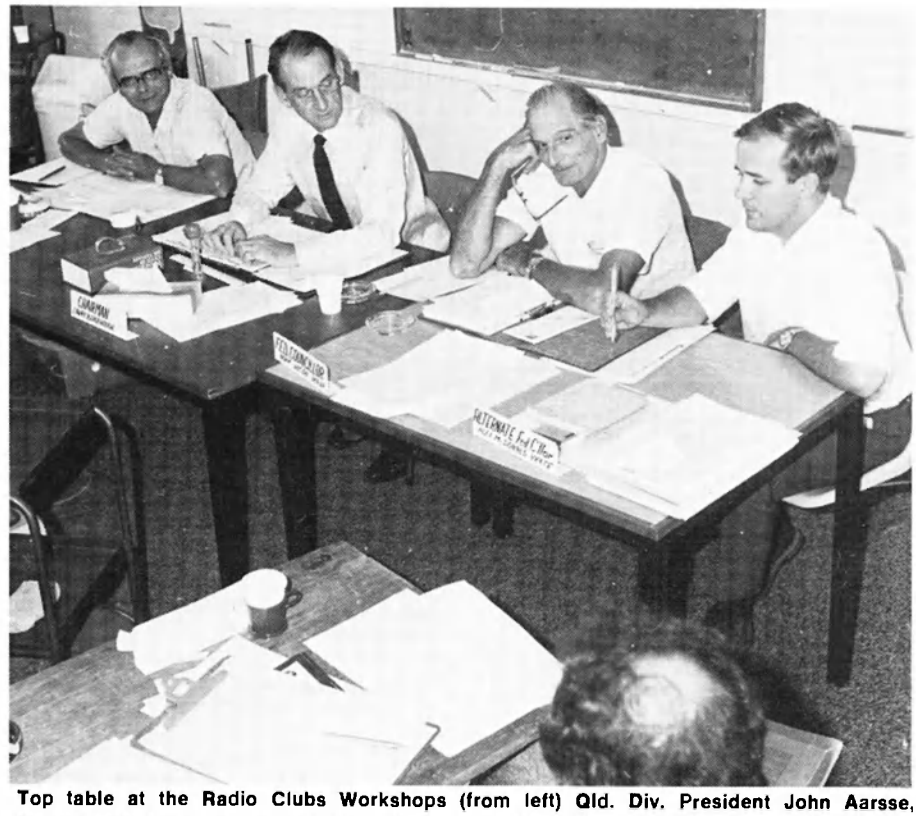
Queensland Radio Club Net

Time: 1930 EAST each TUESDAY.

Frequency: 3605 kHz ± QRM.

Net Control: VK4AWI. Radio Club Liaison Officer (VK4DT).

Participants: One station per club. ■



Top table at the Radio Clubs Workshops (from left) Qld. Div. President John Aarsse, Meeting Chairman Laurie Blagbrough, Federal Councillor Norm Wilson and Alternate Fed. Councillor Alex McDonald.

Only a cold cup of coffee and few biscuits left on the afternoon tea trolley . . . and it was back to hard work by representatives attending the Qld. Radio Clubs Workshop.

QSP

A NASTY SUBJECT

"Of course, periodically we all have a problem situation arise! One may occasionally be in an area where some unfortunate misunderstanding has occurred — where the air is a bit blue — where someone is 'Kerchunking' a repeater — where a net is being interfered with — where music (?) comes in on the access frequency — or where someone just forgot the kind of manners amateurs are supposed to exhibit. If or when this occurs, let me urge you to be cool. A quick flick to another channel can keep you from getting in the middle. In addition, most malcontents soon run out of ugly things to say or do if the audience disappears or at least does not respond. It is sad when someone is on such an ego trip that they must disrupt nets, upset normal repeater operations or otherwise make our hobby less pleasurable than it should be. But, in my opinion, it makes more sense to change channels than to respond and seemingly encourage the offender. It has seemed that in areas of greatest problems that if users can totally disregard the interference by not even keying up the machine, the problem will ultimately disappear. Users are gradually learning that offenders thrive on arguments, angry words, hot tempers and even threats. Generally the purpose of such interference is to stimulate antagonism and without this kind of response, the antagonizer receives no food for his sick ego and finally turns off the rig and wonders why, totally oblivious that he is being laughed at by cool operators.

"So keep cool and do whatever has to be done to meet the needs. If an alternate frequency and even Net Control is needed — QSY; if in a local ragchew — switch to simplex or go QRT; whatever the case, cool it. It is a lot better for the ulcers and your reputation among peers."

Mac VK2AYA, from "The Lyrebird". ■

THE SCIENCE MUSEUM STATION — VK3AOM

Ken Gillespie VK3GK

Ken Gillespie VK3GK, one of the week-day volunteers, using the FT501 at VK3AOM. The FRG7 and FT2 Auto can be seen to the right, while partly hidden to the left is the Heathkit Monitorscope.

(It is with regret to report that shortly after writing this article, Ken passed away — see Obituary, page 50—Ed.)

The cover photo of AR for May 1975 illustrates the equipment of VK3BWI housed in the Science Museum in Melbourne, while P9 tells a little about the station and includes a picture of the VK3BWI console which controls the transmitters.

This station is owned, maintained and operated by the Victorian Division of the WIA for the weekly broadcast to Amateurs and short-wave listeners.

In the same room, alongside this, is a completely separate station — VK3AOM. Here the equipment belongs to the science museum and is kept in going order by the museum Curator of Electronics. Manning is by volunteers of the WIA as often as it is possible. At the moment this is 4 out of 5 week days, and 5 week days during school holidays. Week-ends are a different matter, however. Because there is no full call operator on the premises, AOCP volunteers are necessary. They attend one day a month and the required number of people is difficult to achieve because family commitments of working people come first. Currently two Saturdays and two Sundays are covered but the remaining ones are unmanned. The counter staff at the museum get asked about the station and when will it be open, etc., but there is nothing they can do about it.

The station is such good publicity for Amateur Radio that it is a pity to miss out on it by lack of volunteers. Since July 1st, the Director of the Museum has been making a reimbursement of $4.00 a day towards fares and meals of those manning the station. Hopefully this might persuade some who otherwise may not consider coming forward. Anyone interested, please contact VK3AAQ, QTHR.

The only things common to the two stations are the HF dipoles, which when switched to VK3BWI, put the VK3AOM transmitter on dummy load. In this condition, transmitter wave form of both SSB and CW can be demonstrated to the public on the monitorscope (a Heathkit instrument) and the difference between *all* the power being used on CW (at the same time showing that it is purely an on/off mode) and only the voice peaks of SSB making use of maximum power, is easily seen by lay people.

The VHF transmitter of each station has its own aerial.

An FT501 is operated on 80, 40, 20 and 15 metres (the latter using the 40 metre dipole). 10 metres will load reasonably into the 80/20 metre dipoles which have a common feedline, while a 2 metre FT2Auto on four repeaters and three simplex modes illustrate line of sight operations.

An FRG7 general coverage receiver tunes the MF/HF spectrum and is most useful on the Marine HF bands to show MUF propagation. As coast stations worldwide transmit CW continuously on up to six frequencies simultaneously, it is easy to start on 22 meg and come down through 16, 12, 8, 6, etc., to locate the frequencies that are open to various distances and directions. This is simplified by the fact that these stations, when not transmitting traffic, are sending their call signs continuously so are easily identified. (This also points home the system of International call sign blocks.) The observation that CW is used here also fascinates the visitors. Using the CW monitor on the FT501, morse code is demonstrated and the kids in particular get a great kick out of making their own initials. As the children, once shown, can do this easily, the parents and other visitors see that it is not such a difficult thing after all. This is especially so if a series of Vs is made on the monitor and then the gain of the FRG7 turned up and people recognise the same sound sent by a coast station.

The most often asked question is "How much is all this?" and then the statement "Amateur Radio must be terribly expensive", this after they eye the gear at the station. Then explanations that it can be as cheap or expensive as people care to make it are brought forward, i.e., if an old radio is rebuilt into a two tube low power CW transmitter on 40 and/or 20 metres and a simple transistorised converter placed ahead of a broadcast receiver (a cheap one bought especially for the job, if nothing else), then world-wide communication is possible without spending much. A future step can be DSB suppressed carrier transmitter, and so on.

During the week, school groups come in and get a lecture graded to suit the class concerned. Contacts with stations, both overseas (when conditions are suitable) and locally, are undertaken and the children or other visitors encouraged to say a few words. The contacts must be short to hold the interest of lookers-on.

A big problem is to determine just how much to tell people who call in. If someone has a technical background, he does not want to be talked down to and, on the other hand, a completely lay person must not have things go over his head.

On the whole the exercise is very rewarding for the operator and is good PR for amateur radio generally. VK3AOM, which is designed to show radio, and amateur radio particularly, to the public, can be said to be a success. ■

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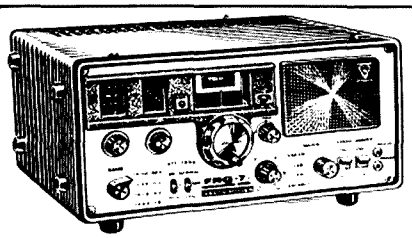

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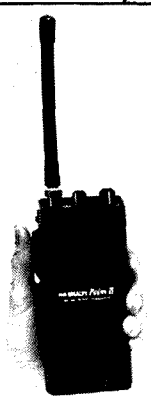

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	TS820	P.O.A.
	TS820S	P.O.A.

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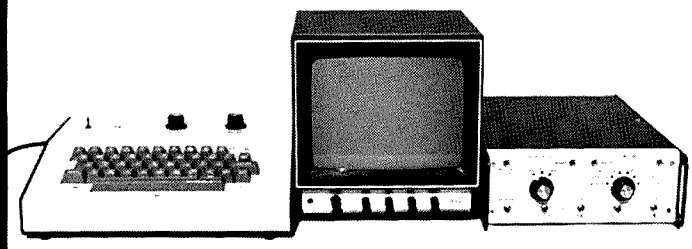
- Transmitting output: 25W/1W, two-step selector switch

WRITE OR CALL FOR FURTHER SPECS!



RELAX AND ENJOY CW — Go RTTY Emona's Silent Way!

NEW INFO-TECH MODEL 200! **$668**
A complete system that converts Morse, RTTY and ASCII to Video, using Fairchild F-8 Microprocessor Technology! A good receiver and video monitor are all that is required!

NEW INFO-TECH MODEL 300! **$564**
A Microprocessor controlled, stand alone, keyboard that generates Morse, RTTY and ASCII codes.

NEW INFO-TECH RTTY EQUIPMENT:
Model 75 RTTY to Video Converter **$448**
Model 150 RTTY Keyboard **$407**

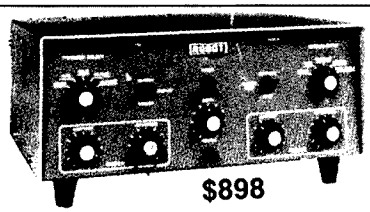
RF PREAMPLIFIERS FOR 3-30 MHz BAND:

Model SX-59 for use with transceivers.

SPECIFICATIONS:
Frequency range 3.30 MHz in 3 bands; 3-7, 7-14, 14-30 MHz
Gain 20 dB nom. (at 7 MHz), front panel variable control
Attenuator — 20 dB attenuation selectable from front panel control.
Imped. 50 or 75 ohm systems, UHF connectors on rear panel

$86

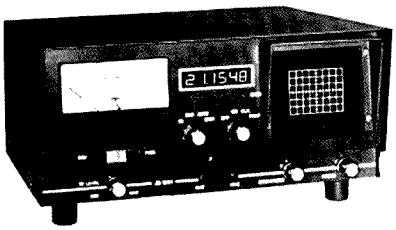
Order Your ROBOT Model 400 SSTV CONVERTER NOW!!



$898

With the Robot 400 you just plug it into your transceiver, connect a TV monitor or your home set with the optional Robot RF adapter kit, tune to 14.230, and you're operating SSTV.

NEW!!



SCOPE/COUNTER/WATTMETER SWR BRIDGE

'The most deluxe Black Cat^{R} accessory. MONITOR SCOPE permits measuring RF output to antenna and viewing modulation patterns. **Frequency Counter** has six big LED digits, 1-50 MHz range (typical), 100 cycle readability, 50mV sensitivity. Peak-reading **Wattmeter** has 3 scales — 0-20, 0-200, 0-2000 watts. **SWR Bridge** reads standing wave ratios of 1.5, 2, and 3. Perfect for Ham base stations.

JB1001SFCM **$379.00**

ALL AMATEUR RADIO EQUIPMENT AVAILABLE ON 10% DEP. TO APPROVED BUYERS!

B&W

Model 333 dummy load wattmeter — Favorite Lightweight Portable — 250W RATING — Air Cooled. Ideal field service unit for mobile 2-way radio — CB, marine, business band. Best for QRP amateur use, CB, with zero to 5W full scale low power range.

Frequency Range:	DC to 300 MHz
VSWR:	Less than 1.3:1 to 230MHz
Power Range:	250 watts intermittent
Wattmeter Ranges:	0-5, 0-50, 0-125, 0-250
Connector:	SO-239
Size:	4 in. x 7 in. x 8 in.
Shipping Weight:	2 lbs.

$122

B&W DUMMY LOADS-POWER METERS
Model 374 - 1500W - Oil Cooled **$199**
Model 334 - 1000W - Oil Cooled **$167**

REVIEW OF THE YAESU FT225-RD

Ron Fisher VK3OM

Yaesu's latest two metre all mode transceiver, the FT-225RD, follows the styling of the FT-901 HF transceiver. It also includes some of the excellent Innovations of the 901. In essential features the FT-225 is a restyled and updated version of the earlier FT-221 and FT-221R. It provides USB, LSB, AM, CW and FM modes with full tuneable coverage of the entire two metre band from 144 to 148 MHz. In addition to the tuneable coverage, eleven crystal controlled frequencies can be switch selected from the front panel. As the transceiver covers four one megahertz bands, this gives forty-four fixed channels. The crystals are optional extras. All the features of the earlier FT-221 series are included with the addition of some new and interesting operating aids. These include a full seven digit display frequency readout, Yaesu's new frequency memory system and fully variable power output control on the FM and CW modes. Power output has been increased from the 14 watts of the 221 up to 25 watts on FM and CW, with a rated output of 24 watts PEP on SSB and 8 watts of carrier on AM. All of these features have been packaged into an enclosure 280 mm wide, 125 mm high and 315 mm deep. This is the same frontal size as the FT-221, and an additional 20 mm depth over the 221 being used up with a deeper front panel moulding and a slightly increased heat sink size on the rear to cope with the higher power. Total weight has only gone up by .5 kg to 9 kg.

In our review of the FT-221 in the June 1976 issue of Amateur Radio, the styling of that transceiver came in for some criticism, in particular the very poor "S" meter. Let me say right away that the appearance of the FT-225 is excellent and the "S" meter has increased in size and readability to one of the best in the business. The scale is now translucent with two globes providing rear illumination. The intensity of illumination for the "S" meter and the digital readout can be dimmed with a front panel push button. Other new features are a push button receiver RF attenuator and a "TUNE" control to peak the transmitter and receiver outputs. No calibrator is provided on the digital readout version, although it appears that a non-digital model might be available in the future and this will have a calibrator fitted. The operating switch for this would appear to replace the AGC fast/slow selector on the digital model.

Other normal features carried forward from the FT-221 are 600 kHz repeater offset for both normal and reverse operation, full VOX operation for all modes, side tone for CW, clarifier for receive and also transmit/receive, meter switchable for "S" readings or centre discriminator current and relative power output on transmit. A tone burst generator for repeater access is included but of course not required tor Australian repeaters.

Numerous circuit changes have been made to the 225 circuit as compared with the 221, the most obvious being the VFO coverage of one megahertz per range as against the five hundred kilohertz of the 221. The receiver front end has been improved with the substitution of a 3SK51 dual gate FET for the single gate FET in the 221. This gives the receiver noticeably better performance with strong signals. Spurious signals produced in the 221 at our test location by the extremely strong Melbourne channel two repeater are not noticeable on the 225. A new IC type balanced demodulator replaces the four diodes as used in the 221 and this gives cleaner audio output In the SSB mode. The front panel microphone gain control now only controls the SSB and AM mic. level. The FM microphone level is now an internal preset control.

Unfortunately some of the shortcomings of the 221 have been perpetuated in the 225. The 3.5 mm headphone socket is still there on the front panel, making it non-compatible with normal headphones. You can of course plug in your transistor earpiece. With the meter in the discriminator position, the zero point still drifts. In fact it seems somewhat worse than the FT-221. Perhaps this is made more obvious by the larger and clearer meter but on our review model It took nearly an hour for the zero point to stabilise. Also the range of this function is still very limited with a meter movement of about 3 mm to Indicate a 5 kHz offset. This makes It rather hard to accurately set the transceiver to frequency In the FM mode. Also when operating FM there is no guarantee that the transceiver is actually transcelving. This is dependent on the setting of the 10.7 MHz FM carrier generator and in fact the transmit and receive frequencies can be several kilohertz apart. Our sample transceiver had been carefully set up though and the actual offset was less than 500 Hz, which is quite acceptable. Strangely the otherwise excellent instruction manual does not give any mention to the setting of the 10.7 MHz FM carrier oscillator.

The new Yaesu memory system is an excellent and useful feature. It enables any required frequency to be entered into the system and then recalled for either transmit or receive or both. Two examples of Its use would be to have your favourite FM simplex channel set up in the memory and your usual repeater set up on the dial. A flip of the SELECT switch enables either be selected. As the memory operates with the VFO only, the memorised frequency will change up and down in one megahertz steps with changes of the band switch. Again the instruction book gives little mention to the theory of operation of the memory. It does not even include a circuit of It.

THE FT-225RD ON THE AIR

With its built in AC power supply there is no problem in getting on right away. Only an antenna is required.

The 225 can of course be operated from a 12 volt DC supply as well, but my guess is that most of them will sit on the desk at home as a base station. No mobile mounting bracket is mentioned in the Instruction manual and in any case it is a fairly hefty package to be hung under the dash. All of our tests were carried out using the AC power supply only. The digital readout is bright, fairly large and in all easy to read. The readout is to the nearest 100 Hz and is very accurate. As is usual with Yaesu gear, the frequency changes when the opposite sideband is selected, but the readout instantly shows this and it is simple to re-tune to the required frequency. First thing noted on receive was the excellent audio quality. The built In speaker has been positioned facing upwards in the transceiver top cover in contrast to the downward facing speaker under the FT-221. Received audio

is noticeably better in all modes compared with the 221.

The dual speed tuning has now been provided with a finger hole which is both an advantage and a disadvantage. Using the rear or fast tune knob was awkward as the finger hole on the front slow tuning knob extends to a slightly greater diameter than the knob itself and on every rotation knocks against the fingers when extended for the rear knob. With the one megahertz coverage quite a bit of knob turning is needed to cover the range. The push button controls for the noise blanker, receive attenuator, display and meter dimming, memory and tone burst were smooth and easy to operate. Each is accompanied by a small red LED to indicate its status. Transmitted audio was smooth and clean in all modes but reports suggested a slight lack of high frequency response. We arranged for a transmission to be taped along with several other transceivers and it appears that these reports were right. In order to check the microphone, we plugged in the FT-221 mic. and discovered yet another way to wire a standard Japanese four pin connector. They are just not compatible. To date I think I have found four ways used by various manufacturers to wire up these connectors.

Power output was checked with our Horwood power meter and found to be spot on the specified figure of 25 watts in all modes except AM, where it was almost exact at 7.5 watts. When transmitting SSB it was found that the effective output could be increased somewhat by pushing the audio gain up above the normal setting. This appears to produce some RF clipping in the final stage and give more talk power. However, before trying this, check it out with your nearest two metre neighbour in case it produces excessive splatter.

Assuming that some amateurs might purchase the FT-225 without the digital dial, a check was made of the analog dial calibration. The one kilohertz indications have been moved on to the tuning knob skirt and so are not illuminated. The 100 kHz increments are to the rear of this and lit in a soft blue colour. The whole thing looks very pretty but perhaps not as practical as the old FT-221. Over the one megahertz range accuracy was within one kHz. This is excellent but it should be remembered that recalibration is required when changing modes. The kilohertz dial is set to the right frequency held in place while the tuning knob is turned to give the right actual frequency.

INSTRUCTION BOOK

Two mentions have already been made to this in the preceding text, however in most respects it is well up to what we have come to expect from Yaesu. The book is very well illustrated with most adjusting points clearly shown. A full circuit diagram is provided with everything except the memory unit. This is shown as a secret box with external connections only. One point not often covered in manuals these days, and certainly not mentioned in this one, is the replacement of dial lamps. The positioning and replacement of these is not always obvious and often they are the first things to fail in equipment. As I have found out, suppliers don't always know how to replace them either.

The Yaesu FT-225RD used in our review was loaned by Mr. Fred Bail of Bail Electronics Services, Box Hill North, Victoria. Bails have full servicing facilities for the FT-225RD and, incidentally, know how to replace the dial lamps. ■

DEVELOPING COUNTRIES "DEPLORE" WESTERN RETENTION OF FREQUENCIES

The needs and allocation of spectrum space "are at variance between the developing and the more developed countries", says a recent editorial in the journal of the Asian Broadcasting Union. "In countries with poor or meagre communications, the need for extensive broadcasting coverage is essential for social and economical growth." The education and unification of a community can be efficiently achieved by radio and TV, but other telecommunications services are yet to be developed "and progress can be frustratingly slow. Although there are over 358 million telephones in the world, only 65 million of them are in Asia, Africa, Central and South America. Radio and television are vital to these areas and (results) can often be obtained faster through these services than by other means. Consequently their demand for spectrum has become acute."

The editorial, in the January 1978 issue, is written in the context of the prospects for the 1979 World Administrative Radio Conference, and it will add weight to the arguments of those who believe that there will be great pressure from the developing countries for a more favourable distribution of the spectrum in those countries.

The journal notes that broadcasting coverage in the developed countries has reached saturation. Of the world's 25,500 radio broadcast transmitters, 75% are in the developed countries, and America has 1,790 receivers per 1,000 inhabitants, while the developing countries have only 76 per 1,000. Radio use in the developed countries has become so extensive that technology is aimed at developing methods to remove certain services from radio altogether and put them on cables and wires, "making room for the expansion of new and existing services which can only exist by means of radio propagation". Yet some users "tenaciously maintain their hold over (their previous allocations) for variously described 'back-up' or 'stand-by' purposes . . . In today's overcrowded spectrum where space is at a premium this selfish dog-in-the-manger policy can only be deplored."

The editorial presses for the WARC to dispense with the "artificial ITU geographical zones" and the adoption of new zones based on development, economics and need. It goes on to add that, on these grounds, the developing countries are more deserving of the LF, MF and HF bands, since these "provide the only economical and direct means of reaching a large audience . . . The HF bands provide the only presently available method for world-wide broadcasting, without any apparent alternative, as well as providing the most economical means for internal coverage of the larger developing nations."

Single-sideband modulation would mean the re-equipment of a large audience with new receivers, and satellite broadcasting will take many years to develop and will be limited to national coverage.

Short waves are the only alternative for world-wide broadcasting. To alleviate overcrowding in this band elbow room in the allotted spectrum will have to be found, and this will be had at the expense of the fixed services. This would involve only expenditure on the part of the sender and the recipient of the point-to-point fixed services, as opposed to prohibitive expenditure in equipping the world's population with new receivers.

An article elsewhere in the journal points up the greater emphasis in the developing countries on frequencies below 30 MHz. In the lobbying for WARC it has been mentioned that the broadcasters have 60 per cent of the usable space above 30 MHz, while Mr. Irfanullah of the Pakistan Broadcasting Corporation notes that broadcasting claims 9.5 per cent of the spectrum in his region, while fixed and mobile services together have 85 per cent of the allocations. Totals like that convey the reasons for the editorial's impatience to cut the fixed portion (49 per cent) down to size. But there is little indication of the way the proportions allocated to each use within the HF band have been worked out.

The emphasis on short wave for world-wide broadcasting arises from the desire to convey cultural and political ideals to the rest of the world. This sensitivity to the way the West sees the developing world was also reflected in the suggestion last year that there should be alternatives to the news reporting of the international news agencies, such as Reuters, UPI and AP. In addition, a conference of the non-aligned nations' broadcasting organisations was held in Sarajevo last October "to consider the ways and means by which broadcasting organisations could co-ordinate to project the image of member countries to each other and to the world at large." There is no doubt that all eyes were fixed on WARC 79.

From Wireless World, April 1978. ■

PORTABLE ARMY WIRELESS SETS OF WORLD WAR II

Compiled by R. Champness VK3UG

3. The Type 3 Mk II is commonly known as a spy or suitcase radio; these sets are often seen in WW II films. The sets work from a variety of power sources, 6 volts DC, 110 or 24 volts AC. The transmitter is a CW only unit, although the receiver can receive AM and CW. The transmitter has a 6L6 PA valve and has an output which varies between 15 and 20 watts over a frequency range of 3 to 15.5 MHz. The transmitter is crystal controlled and the receiver is a tuneable superhet with an IF of 470 kHz.

Soon after the close of WW II these sets were eagerly sought after by amateur radio operators as they were compact, versatile and able to be used as is without any modification. However, many of these sets were extensively modified and performed well on the amateur bands, particularly In portable situations. The set when packed in its waterproof boxes weighed 25.3 kilograms. A variety of methods were used to charge the 6 volt batteries commonly used with these sets such as a wind generator, hand generator, pedal and cycle adaptor generators, petrol driven generators and last but not least a steam powered generator. The steam generator consists of a boiler which is suspended in a brazier, coupled to a twin cylinder steam engine which is connected directly to the generator. At a steam pressure of 30 to 35 pounds a 6 volt battery is charged at 4 amps. The consumption of water was 2 litres per hour and burnt 7 to 9 kilograms of wood. Not particularly economic. I saw one of these steam generators a few years ago at a steam rally in Wantirna, 25 kilometres east of Melbourne.

4. The Type A Mk III is commonly known as a spy or suitcase radio, and is commonly seen in WW II films. The set works from a variety of power sources, 6 volts DC and 110 or 240 volts AC. The transmitter is a CW only unit, although the receiver can receive AM and CW. The transmitter has a 6C5 in the final and puts out 4 to 5 watts in the frequency range 3.2 to 8.55 MHz. The set has 5 valves all told crammed iInto a cabinet 8 cm deep, the actual size of the set can be gauged by comparison with a matchbox. The transmitter is crystal controlled and the receiver is a superhet with a regenerative IF on 1215 kHz and is continuously tuneable over virtually the same frequency range as the transmitter.

The set and all the spares, but less the waterproof case, weighs in at 7.7 kilograms. These sets did not seem to be as popular as the Type 3 Mk. II wtih amateurs, but a number of them were modified and performed quite satisfactorily. An intriguing little set, simple to operate and worked well. ■

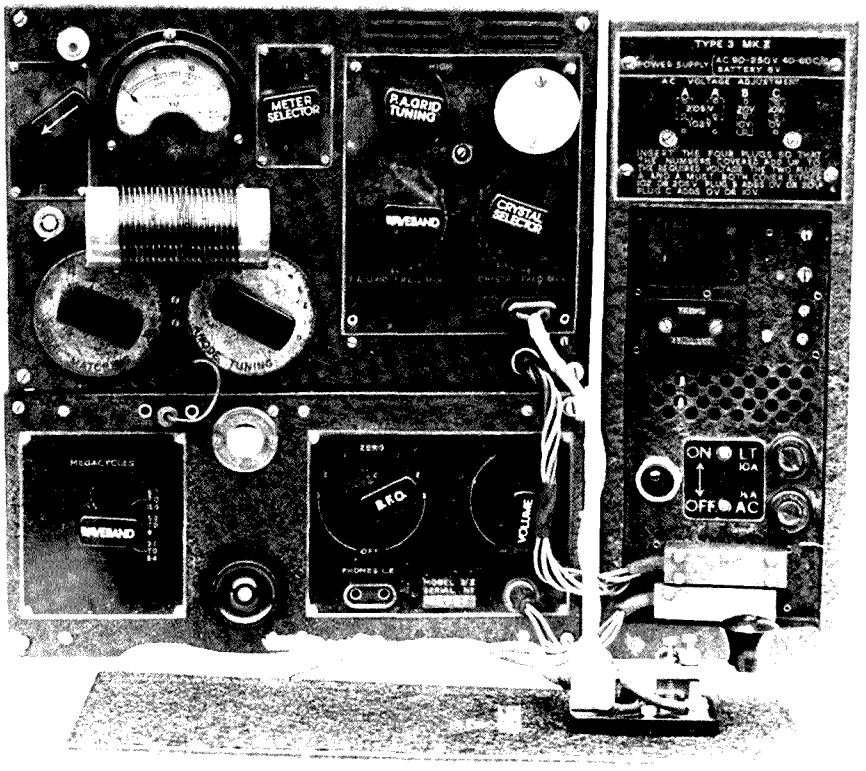


Photo No. 3 — Type 3 Mark II.

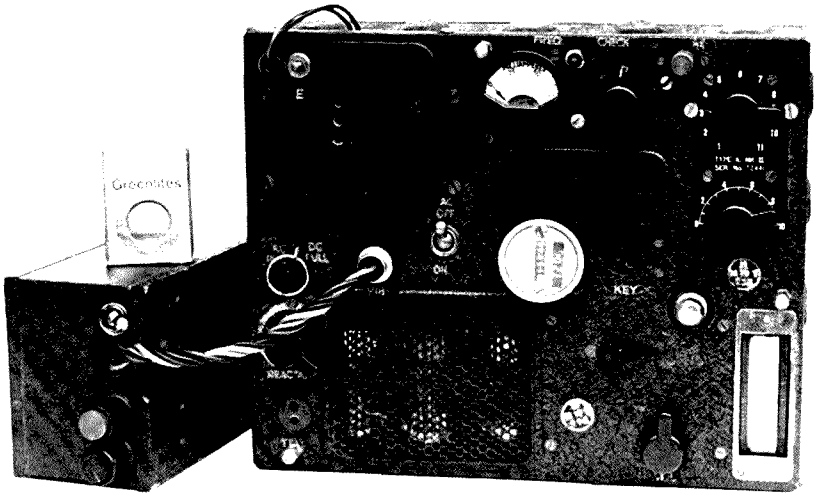


Photo No. 4 — Type A Mark III.

REMEMBRANCE DAY CONTEST — 1978

OPENING ADDRESS
BY HIS EXCELLENCY THE GOVERNOR
OF WESTERN AUSTRALIA
AIR VICE MARSHAL SIR WALLACE KYLE

"CQ RD, CO RD". This will be a familiar sound in morse code and radio telephony to thousands of amateur radio operators and short-wave listeners throughout Australia and New Zealand during the next 24 hours of the Remembrance Day Contest.

As patron of the Western Australian Division of the Wireless Institute of Australia, I commend to you this 31st Contest. It has the dual purpose of enthusiastic participation in an enthralling hobby and the opportunity to pay tribute to those of your own fraternity who offered their skills and their services and, in some cases, their lives in time of need.

Indirectly, of course, it serves another very important need these days — it brings together fellow enthusiasts regardless of colour or creed and it makes a positive contribution to world unison and fellowship.

The speed and accuracy of communications will improve technically with time and this will happen whatever we do, but understanding is something which needs the constant and active attention of all men and women and I believe that the friendly but highly competitive spirit of this contest is just such a positive contribution.

As you go forward into the next 24 hours, pause briefly to reflect on this contest as a splendid memorial to those 35 members of the amateur radio service who died in serving their country in World War II, and having done that enjoy this contest as I am sure they would wish you to do.

Be enthusiastic about it as they would have been had they still been with you. It is in this spirit that I now have great pleasure in declaring the 1978 Remembrance Day Contest open.

73s to you all. ■

AMATEUR SATELLITES

Bob Arnold VK3ZBB

AMSAT OSCAR 7

Disturbing news has been received from AMSAT on the condition of the batteries on board OSCAR 7.

Details are not known but it is possible one cell is not charging or a voltage controller is defective. As from 7th October, OSCAR 7 was placed permanently on Mode A to conserve power, and we all hope the problem will be resolved and in due course the satellite will revert to normal operation. Listen to signals on 29.502 MHz for further information.

OPERATIONS

Activity on OSCARS 7 and 8 in Mode A continue at a high level with a good selection of ZLs and VKs to work.

Communication on Mode J of OSCAR 8 is still limited but a few stations continue to make reasonable QSOs.

OSCAR 8 REFERENCE ORBIT

The latest reference orbit which corrects orbit time previously reported is:—

Orbit 2725 EQX 0141 GMT at 64.4 degrees west.

OSCAR 7 PREDICTIONS

Have you noticed how OSCAR 7 is drifting westwards? Early this year the first orbit of the day was on occasions only 55°W. Now the nearest approach to the meridian is 60°W. In thirty years hence the day's first orbit will commence due north of Australia!

THE IC202 ON LSB

In September AR details were published of a method of converting the IC202 to receive signals on LSB.

Michal L. Alas F10K has now published a simple method of achieving the same result without an additional crystal oscillator. This can be found in AMSAT Newsletter for September 1978 and in Radio Communication (RSGB) September 1978 (Technical Topics Section). ■

ORBIT PREDICTIONS — DECEMBER 1978

Date	OSCAR 7				OSCAR 8			
	Mode	Orb. No.	Eqx GMT	Eqx °W	Mode	Orb. No.	Eqx GMT	Eqx °W
1	B	18485	0009	63	A	3771	0119	60
2	A	18598	0103	76	J	3785	0125	61
3	B	16520	0002	61	J	3799	0130	62
4	B	18533	0057	75	A	3813	0135	63
5	A	18546	0151	88	A	3627	0130	65
6	B	16558	0050	73	A	3840	0002	41
7	B	18571	0145	86	A	3854	0007	42
8	A	18583	0044	71	A	3668	0012	43
9	B	16595	0136	85	J	3882	0018	44
10	B	16608	0038	70	J	3896	0023	46
11	A	18621	0132	84	A	3910	0028	47
12	B	18633	0031	68	A	3924	0033	48
13	B	18646	0126	82	A	3938	0038	49
14	A	18658	0025	67	A	3952	0044	51
15	B	18671	0119	80	A	3966	0049	52
16	B	18683	0018	65	J	3980	0054	53
17	A	18696	0113	79	J	3994	0059	55
16	B	18708	0012	64	A	4008	0104	56
19	B	18721	0106	77	A	4022	0109	57
20	A	16733	0006	62	A	4036	0115	59
21	B	18745	0100	76	A	4050	0120	60
22	B	18759	0154	90	A	4064	0125	61
23	A	18771	0054	74	J	4078	0130	62
24	B	16784	0148	88	J	4092	0135	64
25	B	16796	0047	73	A	4106	0141	65
26	A	18609	0142	86	A	4119	0004	41
27	B	18821	0041	71	A	4133	0009	42
28	B	18834	0135	85	A	4147	0014	43
29	A	18846	0035	70	A	4161	0019	44
30	B	18859	0129	83	J	4175	0024	46
31	B	18671	0028	68	J	4169	0029	47

WICEN

Ron Henderson VK1RH

Federal WICEN Co-ordinator.
53 Hannaford St., Page ACT 2614
Ph. (062) 54 2059, A.H.

The introduction of distinctive WICEN callsigns is very much a divisional matter, compiled with P. & T. co-operation.

The situation at the time of writing is:

A.C.T.: Uses VK1WI "WICEN Net Control".

N.S.W.: VK2WIA is the WICEN net control callsign and several regional WICEN callsigns in the VK2WIA-WIZ group have been requested.

VIC.: No information available.

QLD.: VK4WIT Townsville, VK4HM Cairns and VK4WIM Mackay, are used for WICEN purposes. VK5WIE is the WICEN net control callsign.

W.A.: VK6DY is the WICEN net controller.

TAS.: No information available.

N.T.: VK8DA is in use for WICEN purposes.

Wednesday evening is becoming the WICEN net night, VK2WIA, VK5WIE and VK6DY, in that order, can be heard conducting nets on 3600 kHz as the evening progresses. A good scheme for the passage of information, let's support it.

A SIMPLIFIED GUIDE TO EMERGENCY OPERATING

Aim

To provide the ordinary amateur radio operator who has had no WICEN training with a simple guide to emergency communications for use when caught up in an emergency situation.

Needs of Emergency

This guide is devoted to the situations where the amateur operator has to bridge the gap in normal communications in a hurry. He is then linking an emergency site or disaster area with the "outside world" and its normal communications.

Operator Actions

The amateur operator should call on the most suitable band — on the WICEN-designated frequencies listed below, to establish initial contact. If no contact results, use any frequency in use to stimulate a reply.

The operator should declare his call an emergency call by using one of the pro-words below, and should not be put off 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

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

WICEN calling frequencies are as follows: 3600 kHz, 7050 kHz, 14100 kHz.
Secondary frequencies will be spaced: +25 kHz for SSB, —25 kHz for CW.
VHF calling frequencies are: Channel 50 (146.5 MHz FM), available repeater channels.

PROWORDS

Mayday — (SOS in CW) —
The station sending is threatened by grave and imminent danger and requests immediate aid.

PAN — (XXX in CW) —
The station has a very urgent message to transmit concerning the safety of ship, aircraft or person.

WICEN —
The sending station wishes to set up a Wireless Institute Civil Emergency Net or link.

STATE WICEN CO-ORDINATORS:

A.C.T.: VK1ZJR, 19 Gungarra Cres., Rivett, A.C.T. 2611. Ph. (062) 88 5624, A.H.

N.S.W.: VK2NL, c/- Wireless Institute Centre, Crows Nest 2065. Ph. (02) 665 7434.

VIC.: VK3AED, Lot 8, Ballarto Rd., Skye, Vic. 3977. Ph. (03) 647 3877.

QLD.: VK4ZMG, QTHR.

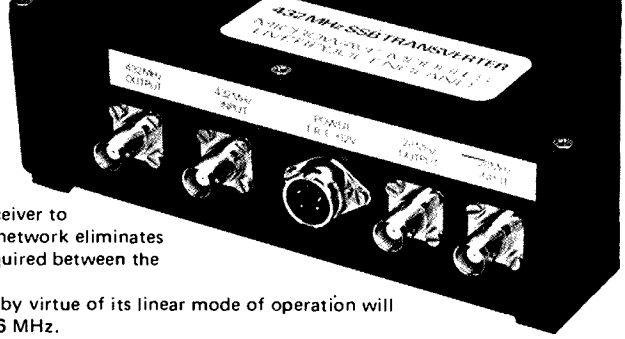
S.A.: VK5BW, QTHR. Ph. (08) 503555.

W.A.: Sid Jenkins L60206, QTHR. Ph. (09) 349 6909, A.H.

TAS.: VK7RR, QTHR. Ph. (002) 23 7454, A.H.

N.T.: Darwin Amateur Radio Club, P.O. Box 37317, Winnellie 5789. ■

Transverter Model MMT 432/144'S'



UTILIZING an IF of 144MHz * 10 WATTS DRIVE of ½ WATT * VOX OPERATED, TWO SELECTABLE RANGES
FEATURES EXTENDED COVERAGE FOR OSCAR 8

This 432 solid state linear transverter is intended for use with a 144 MHz transceiver to produce a high reliability transceive capability. A 10 watt load and RF sensing network eliminates the need for any anciliary circuitry. A single coaxial connection is all that is required between the transverter and the associated 144 MHz transceiver.

A wide range of applications is offered by the MMT432/114 transverter, which by virtue of its linear mode of operation will enable 144 MHz SSB, FM, AM or CW equipment to be used at 432 MHz. to 436 MHz.

Simply connect direct to your 2 metre rig, 12 volt supply, fit 70 cm antenna for instant SSB, FM, AM, CW operation, coverage 432-434/434-436 in two ranges.

FEATURES: High quality double-sided glass fibre printed board * Highly stable zener controlled oscillator stages * PIN diode aerial changeover relay with less than 0.2 dB through loss * Extremely low noise receive converter, typical 3 dB * Separate receive converter output gives independent receiver facility * Built in Automatic RF VOX with override facility * Built in 10 watt 144 MHz termination, selectable attenuator for ½ watt * Use of the latest state of the art Power Amplifier transistors provide reliable 10 watts continuous output

MODEL MMT432/144 'S' Price $295

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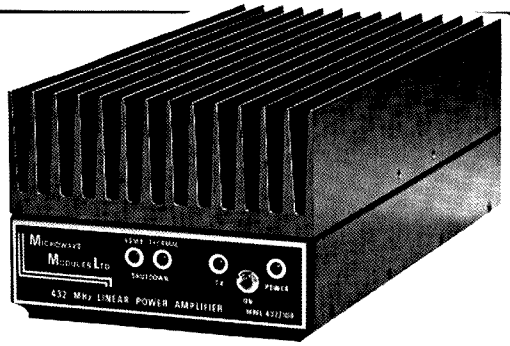

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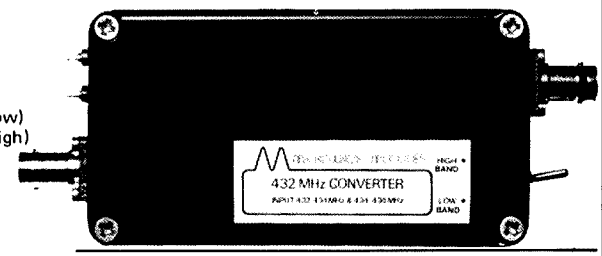

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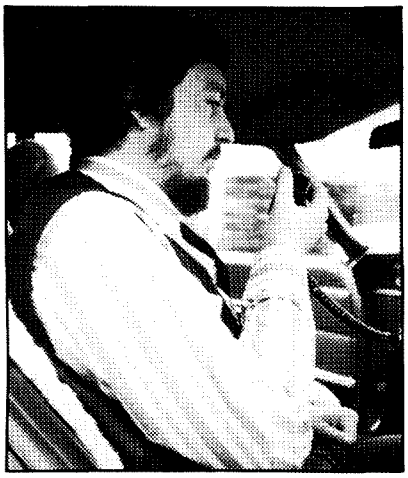

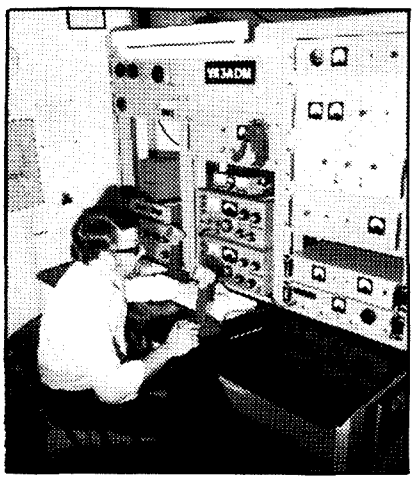

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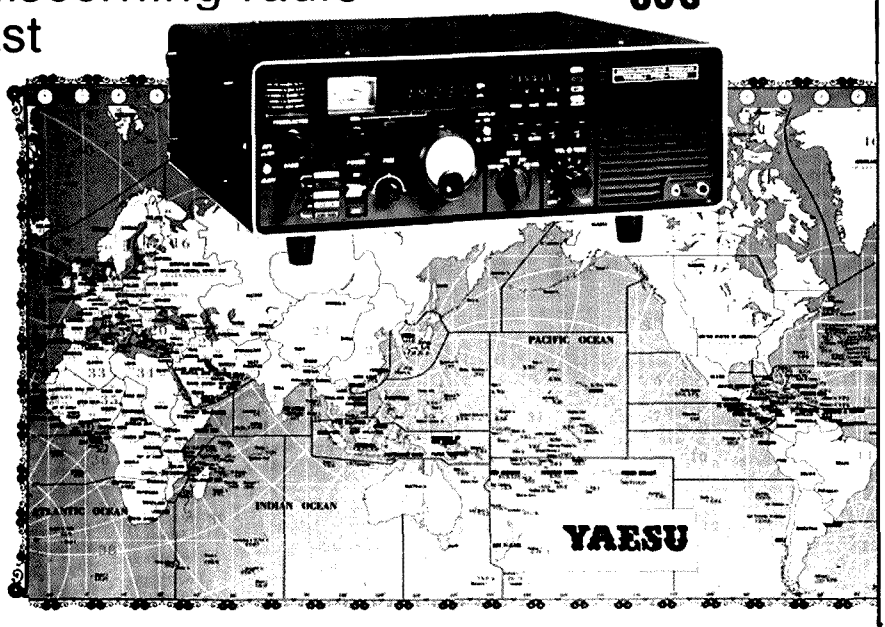

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RETURN OF THE SIX METRE BAND TO AMATEURS — PART 2

Eric Jamieson VK5LP

LETTERS AND OPINIONS

Following now are the variety of opinions expressed in writing to me by those amateurs who sent letters, followed by any relevant comments by myself.

The total overall opinion was for the return to the Amateur Service of the whole of the band 50 to 50 MHz. There will be those who say the reduced useage of six metres doesn't warrant so much space. But this situation could have been forced upon operators due to Ch. 0 causing interference to amateurs' receivers, making operations very difficult — quite apart from any TVI the amateurs themselves may cause. As the amateur population grows, and it is growing rapidly through the ranks of the novices in particular, many of whom have come through the ranks from CB. Future useage will no doubt include six metre repeaters in line with overseas operating, where the segment 52 to 54 MHz is largely used for FM operation.

"I would like to see the 50 to 52 MHz segment returned to the Amateur Service, to give us the full 4 MHz. If not possible I would like to see at least 50 to 50.1 MHz reinstated so that we can at least have part of the international band."

Comment: Restricted as this is, it would be better than we are at present, except that during good openings signals can be heard much further up the band, at least to 50.3.

"I would suggest we exchange our 52 to 54 MHz segment for 50 to 52 MHz, we would then be compatible with overseas countries and tie in with a portion of the New Zealand allocation."

Comment: If there is no chance whatever of obtaining the whole 4 MHz then this should surely be well worth pursuing. There will be those "local" operators who will scream because they may need to purchase new crystals to allow them to operate on 51.1 in lieu of 53.1, or 50.525 instead of 52.525, but the more serious operator will already have a VFO, possibly in a transceiver, and either presently capable of operating 50 to 52 MHz or soon will be after the installation of suitable crystals. It might be remembered, too, that even at this stage a proportion of the 6 metre population could easily operate both transmit and receive on 50 to 52 MHz. Declaring 50 to 52 MHz a commercial band or some other notation won't stop the importation of equipment capable of operating there. Remember, the Industrial and Medical Band at 27 MHz didn't stop the importation of a quarter of a million transceivers for use on that band, and they are being used, by the CB brigade. With exotic DX coming on 50 MHz how many are going to hold fire and just listen?

"If I wasn't a believer in the Amateur Code and a law abiding citizen, I would be very tempted to simply go ahead and use 50 MHz as I have full capabilities for operation there, just like other spectrum squatters, and then wait for the matter to be legalised."

Comment: I am quite sure the fact that the average amateur is law abiding and wants to do the right thing that he hasn't gone ahead with gay abandon and used 50 MHz — there are plenty of geographical locations where it could be done with little chance of detection. I certainly don't condone out of band operation, but when one looks at 27 MHz and notes the capitulation by the authorities, and how the CB operators work DX with much more than 12 watts PEP, it does make one wonder whether the WIA "cap-in-hand" approach in the past has resulted in amateurs having very little negotiating power, which was proved at the time of the 27 MHz takeover. The "Big Brother" is watching or listening complex has often governed the thinking, and no matter how well intentioned it all may have been the results were costly. No, I don't think the average responsible amateur wants to operate illegally, but I do think he is entitled to a fair go and to some consideration for changes in operating pattern and spectrum useage.

"I consider we should lobby for 50 to 54 MHz on a non-interference basis, since this already applies on 52 to 54 and 144 MHz."

Comment: As pointed out earlier, all amateur radio operating has to be on a non-interference basis anyway, despite satisfactory equipment. Jim VK5ZMJ at Port Pirie, 110 miles from Adelaide, is unable to operate on 144 MHz until most people have gone to bed, because so many people are using 100 foot towers and masthead amplifiers to receive Adelaide stations (well out of service area range, incidentally), make life unbearable for him and the Department is either unable or unwilling to help. Geoff VK3AMK has mentioned at times that low power operation can sometimes be undertaken in Melbourne using vertical polarization, but running more than a few watts brings rocks on his roof! There are scores of other operators in similar situations and they have had to live with the problem. However, there are plenty of areas around Australia where operation on 50 MHz could be undertaken with little chance of problems arising.

"Obviously like everybody else active on 6 metres I would like to see the Ch. 0 allocation scrapped and these stations moved to a higher channel, and the full 50 to 54 MHz returned to the Amateur Service. However, our existing useage for much of the year typically extends from 52.0 to 52.1 and 52.525 MHz. I cannot see much chance of P. and T. looking favourably at any request for the extended space.

"Probably the most sensible and practical proposition would be to request an allocation of say 50.000 to 50.500 MHz. This would provide us with common bandspace with other countries, and also provide more spectrum space than most of us use anyway. I would therefore favour approaching P. and T. for a shared allocation on a non-interference basis in the range of 50.0 to 50.5 MHz."

Comment: I agree, our useage of 6 metres is limited to the lower portions of 52 MHz, apart from the FM net on 52.525 and some operation on local nets, e.g. 53.1 in VK5. The change of mode to SSB has brought this about, having been copied from the HF operators in that everyone today works the other guy on his frequency. Compare the Ross Hull contest today with operation when everyone was on AM. Then stations were spread fairly thickly right up to 52.500 and often beyond, but then of course we didn't have Ch. 0 either! A shared allocation as suggested at 50 MHz may be OK providing we still had some exclusive allocation, i.e. perhaps 52 to 54 plus 50.0 to 50.5. But to have only a 500 kHz segment on a shared basis isn't looking too far into the future, maybe 20 to 30 years from now if we are still living or capable of living on this earth, we could find a small allocation on six metres very crowded.

"I prefer straight out availability of 50 to 52 MHz. If the allocation was increased to cover 50 to 54 MHz it may tend to fragment operation on six metres, i.e. Melbourne and Brisbane would be stuck with working above 52 MHz, while other areas areas would probably congregate around 50 MHz, with the possibility of a significant decline in local activity. Fragmentation would be overcome if Ch. 0 was shifted."

Comment: One would have to surely agree that if the whole 4 MHz is not to be available, then the preference would surely be 50 to 52, if Ch. 0 is shifted. Fragmentation of operation is always likely if something is added to that already in use, it is difficult for some to make changes however desirable they might be, so there isn't any doubt in my mind that those who operate 53.1 will continue to do so if they are permitted; such is their choice of course and we should respect that too. Melbourne and Brisbane would find 50 MHz operation much more difficult if Ch. 0 is still there, so their fragment would probably remain as of today.

"I believe the most achievable objective would be to attempt to gain a segment from 50 to 50.5 MHz, on a non-interference basis. Assuming we can get some agreement as to what ought to be aimed for — what do we do next? Our channels of communication to the P. and T. must be through the WIA (if our approaches are to be recognised), and I suggest Federal Executive be approached personally on this matter, with a view to a deputation to the Department, if unsuccesful, then a personal deputation to the Minister. We do, therefore, need to act in a professional way to try and achieve our objects."

Comment: One would certainly hope that following this article, that at least the WIA VHF/UHF Advisory Committee will be stirred sufficiently to have another look at this matter and try to see if something can be done.

(This article has been referred to the VHF/UHF Advisory Committee and a report is expected soon. —Ed.)

"I feel we should endeavour to obtain all of 50 to 54 MHz, but apart from the problems existing with Ch. 0 in certain areas, it would really mean in general most operators would simply move down 2 MHz and do most of their operating on the low end of 50 MHz instead of 52 MHz. Maybe in view of the loss of 27 MHz to CB operators, novice operators might be allocated a part of the six metre band. This would then give all amateurs a common band where full, limited and novice operators could meet, thus creating activity on the band to retain the allocation for the future."

Comment: It's certain the main centre of activity would shift down 2 MHz, and that's why despite the most desirable objective being the full 50 to 54 MHz, it is hard to justify the need, when it is obvious to all, including P. and T., we can get by today with 2 MHz. But the idea of extending the band for use by novice operators would seem to have much merit, and I have sufficient faith in the present novice operators that I feel their presence would be accepted by all who currently operate six metres. It would certainly give them a taste of what VHF has to offer, and may well win a considerable number over to limited or full call operation in an endeavour to make better use of bands further up the VHF spectrum.

"Contrary to previous predictions this sunspot cycle is supposed to reach a peak smoothed sunspot number of 150 in April 1980, making it the second highest sunspot maximum in recorded history. The greatest occurred in 1958-59. It would be a tragedy if VK and ZL were not permitted the use of the lower 2 MHz of the six metre band. Much could be added to the knowledge of VHF propagation if VK and ZL were permitted to use the part of the 50 MHz band which is useable to other VHF enthusiasist around the world. Let's face it, it is just not practical to try and tune over 2 MHz listening for weak signals. I can operate 52.0 to 52.5 if the worst case occurs, but I do hope you guys can get a 50 MHz allocation."

Comment: This letter came from the USA to support our aims, from an operator who worked 50 MHz to VK and ZL (mostly ZLs due to more favourable propagation conditions) in 1958 and 1959. I think the most relevant point from his letter is the statement "it is not practical to try and tune over 2 MHz listening for weak signals".

Of course it isn't. If operators in a certain part of the world are working a number of countries, say on 50.1 MHz or thereabouts, with marginal signals, but making the grade every now and again, it is inconceivable they will look for signals above 52 MHz under such conditions, the loss of gain due to the use of a normal antenna 2 MHz higher than the frequency for which it is cut will not help weak signals, if they are weak on 50 MHz they will certainly be weaker on 52 MHz all things being equal. But if VK stations were sandwiched in amongst stations from other call areas then it is likely contacts will result. There is little doubt VK stations have been deprived of many overseas contacts due to being 2 MHz higher than the majority of the world's 6 metre operators.

"Until the advent of CB, there was little large scale political pressure of the 'lobby the politicians' type. The Radio Branch was God, and although our

relationships may not have been ideal, we at least spoke the same language. The Amateur Service will never have sufficient numbers to really influence politicians. The Citizen Radio Service has this power, and have used it to 'rock the boat'. The P. and T. Department has been a casualty, and its masters are now more aware of its existence and operation."

Comment: How true!

"As a first step is there any reason why amateurs in VK1, VK5, VK6, VK7, VK9 and VK0 should not be allowed unrestricted operation from 50 to 54 MHz, and those in VK2, VK3 and VK4 outside a declared service area of the three main Ch. 0 stations also be given the same unrestricted operation? If any objection is raised to this scheme the obvious answer would then be 'If these stations using amateur power levels are likely to cause TVI to Ch. 0, how can there be any justification for more than one station using Ch. 0 anywhere in VK-ZL with the power levels they use!"

Comment: On the face of it there seems no reason why such a plan could not work, and the last sentence the justification. Co-channel interference between Ch. 0 and ZL Ch. 1 is such that ZL viewers are warned of possible deterioration of picture quality due to "interference from overseas TV".

"I would like to see all of 50 to 54 MHz available for the Amateur Service. If this cannot be on an exclusive basis, what is wrong with having the portion 50 to 52 MHz as Secondary Service for the amateurs?"

Comment: Nothing really. Unfortunately we are really only on a secondary basis in our 52 to 54 MHz allocation — non-interference operation is virtually the same thing, so that's no change.

The following amateurs were good enough to write to me, setting out their views, and I thank them for their time and trouble. There were a considerable number of similar opinions expressed which there would have to be on such a subject. A cross section of opinion has been taken. I would like to thank the following for their participation: VK3AMK, VK5KK, VK4ZIT, K6RNQ, VK2ATQ, VK3YEZ, VK3ZYO, VK4ZBB, VK7JG, VK6RM, VK4KK, VK6GB, VK4FU, VK5ZBU, VK5NA, VK3AUR, VK3OT, VK4AKT, VK3ANI and K5ZMS. I hope I have not missed anybody. I note all Australian States are represented.

SUMMARY

The following is a summary of the 6 metre situation. The various points are numbered so if anyone wishes to write further they can refer readily to the relevant points.

1. The most widely viewed opinion was for the use of the whole 6 metre band of 50 to 54 MHz.

   Comment: Great to strive for, and should be aimed at, but I see little likelihood of P. and T. agreeing to this in view of FM using up TV channels 3, 4 and 5. We will be told we cannot justify keeping 4 MHz even looking to the distant future. Can we answer that?

2. The next most popular opinion was to have the use of 50 to 52 MHz firstly on a primary basis, secondly on a secondary basis, and other variations.

   Comment: This would seem to be the fairest approach to be made. It would mean the retention of 2 MHz as at present, but placing the segment in the international section of six metres. There would be compounded problems for those in Ch. 0 areas if they were not shifted elsewhere. 2 MHz would still allow room for various nets, beacons, and repeaters if required, also for RTTY, slow scan TV, FM, etc. THIS IS THE SECTION WE SHOULD AIM FOR.

3. 50.0 to 50.5 MHz also appears acceptable, but may be selfish in the eyes of some, as appearing orientated towards DX working only, and leaving little room for other types of operation, especially during peak band conditions. It would virtually mean no repeaters. Apart from some problems with the fragmentation of the band, a better choice might be the retention of our present 52 to 54 MHz with the addition of the 50.0 to 50.5 segment either as primary or secondary basis depending on what could be worked out. This would then let those who want to work DX and other countries to be able to do so, would leave present operating practices to be changed or continued according to the operators' wishes, and would probably cause the least disruption.

4. To be allowed the legal ability to VFO down to 50 MHz and invite a station to come up to 52 MHz for a QSO (mentioned in September 1977 AR in the list of options) did not receive much support, which is probably fair enough. Perhaps some do it now? However, it could have been the start of something more worthwhile in the long term.

5. The other suggestion of being allocated operation down as far as 51 MHz aroused no interest apart from one comment that it may be better than we are, allowing more working of ZLs. My opinion is that you won't work many ZLs wherever you operate, the only ones I have heard for years have been working a few VKs above 52 MHz. Six metres in ZL appears to be worse than in this country, hence the cry from Japan "Where are all the ZLs on six?".

6. There was a lot of criticism of the WIA right throughout the letters, some quite justified, some perhaps not, but the general thrust seems to be that it is difficult to get past the situation that the Federal body is HF orientated. Maybe that's the fault of the VHF fraternity in not doing something about it, perhaps it's easy to criticise, maybe they are the only willing ones to work at executive level. Several commented on the "cap-in-hand" approach to the Department in the past by the WIA as if unwilling to step on any toes. Perhaps the P. and T. Department would be happier to see a stronger approach, I don't know.

7. The P. and T. Department came in for very little direct criticism, not because I felt anyone was afraid to say so, but because I think it would be generally accepted by a lot of amateurs that the Department does its best with what it is given and has to work with. However, at whatever level the following should be directed, I would trust the comments will at least be read and considered with some care and interest, and acted upon if possible.

   (a) There seems little doubt the P. and T. Department is almost totally unbending in its attitude towards the need to make changes from time to time. The refusal to make available even a spot frequency around 50.1 MHz for use in the Darwin area, where so much TEP activity has occurred in recent times seems unreasonable. I refer readers to the first page under Terms of Reference (a) (II), which should have been relevant in this case.

   (b) With the rapid growth of the peak of cycle 21 surely there could be some consideration given to making provision in the 50 MHz band for Australian amateurs to be able to share in the world-wide 6 metre contacts. Will it be a repeat of the 1957 situation when the PMG Department tarried so long that a year or more of peak TEP activity was lost whilst Australian amateurs attempted to operate between their allocation of 56 MHz and the international allocation of 50 MHz? Ultimately we received permission to use 50 MHz with outstanding results.

   (c) If a case has not already been made to shift Ch. 0 due to interference patterns, it can only be hoped that the next two to three years will produce such a wealth of interference that the point will be brought home strongly enough to Ch. 0 proprietors in the first place, and in turn to the frequency allocation authorities, that this non-standard TV allocation will be shown as a very poor choice and ultimately disappear as a primary service in Australia.

   (d) On the question of exchanging 52 to 54 MHz for 50 to 52 MHz, it can be born in mind that the section 54 to 56 MHz is already used for the fixed and mobile service, and it would seem sensible to group similar services together. This will then leave the 50 MHz area for experimental services, like the amateurs, who can operate in and around interference from other areas, particularly if that interference represents other amateur stations. To suggest the area 45 to 50 MHz is suitable for defence purposes is ludicrous to say the least, you never know who may be eavesdropping thousands of miles away. And on this defence matter, may I draw your attention to Item 6.4 The Defence Group, on the first page, other overseas administrations don't use those frequencies for defence purposes.

   (e) Let there be at least some consideration given to the request of the amateurs, a body of responsible operators, who though not having the opportunity at present of being counted in hundreds of thousands, have been around for a long time, and have made many useful contributions to the advancement of radio through the years.

8. Where do we go from here? I'm not quite sure, but I would hope the WIA will at least take up the cudgels as much as possible. There's enough material in this article for a start to be made. Could a conference of interested parties be held in Melbourne one weekend? I would be glad to attend. But whatever is done, let's get cracking and try to do something. We have the Wireless Telegraphy Act in the process of being re-written, we have WARC 79 looming up. Shouldn't the matters contained herein be pressed home at the appropriate level? What is that level? Let's find out!

9. Now you have read this, what about some more letters? Have you anything to add? Would you support a convention or discussion on the matter? PLEASE let me know now, straight away.

The Voice in the Hills. ■

QSP

SWL LISTENING PERIODS

A series of set listening periods (SLPs) for the short wave listener has been arranged for 1979. They will be of two hours' duration and will be held during the first full week-end of every month in 1979. All the six amateur bands will be used (10m-160m) and modes of reception will be Phone and CW alternatively. SWLs are asked to log every station heard in the set two hour period.

The objective of the exercise is to test propagation at a given time and to compare reception reports throughout the world. The SLPs are being published in all the world's DX magazines and news sheets. All logs will be summarised once a month and SWLs wishing to obtain a copy of the summary must send a SAE or one IRC if living outside Great Britain. Logs must show station heard, station being worked/called, time (GMT) and RST. All reports to be sent via the RSGB c/o Mr. D. A. Whitaker, Hillcourt, 57 Green Lane, Harrogate, North Yorkshire HG2 9LN, England, as soon as possible after each SLP. Brief details of each SWL's equipment should be shown plus comments on band conditions during the listening period. Although these SLPs are in no way a contest it is hoped to award a small prize at the year end to the SWL submitting the best selection of SLP entries.

Good luck to you all!

SET LISTENING PERIODS — 1979

Month	Date	Time (GMT)	Band MHz	Mode
January	7	15.00-17.00	21	Phone
February	4	07.00-09.00	1.8	CW
March	3/4	23.00-01.00	3.6/3.8	Phone
April	7	16.00-18.00	28	CW
May	6	07.00-09.00	14	Phone
June	3	05.00-07.00	7	CW
July	7	05.00-07.00	7	Phone
August	4	10.00-12.00	21	CW
September	2	13.00-15.00	28	Phone
October	7	06.00-08.00	3.5	CW
November	3	06.00-08.00	1.8	Phone
December	1	18.00-20.00	14	CW

■

HEARD ANY GOOD "RUMOURS" LATELY?
TELL A.R. ABOUT THEM

VHF-UHF
AN EXPANDING WORLD

Eric Jamieson, VK5LP
Forreston. 5233

AMATEUR BAND BEACONS

VK1	VK1RTA, Canberra	144.475
VK2	VK2WI, Sydney	52.450
	VK2WI, Sydney	144.010
	VK2RHR, Miltagong	144.120
VK3	VK3RTG, Vermont	144.700
VK4	VK4RTL, Townsville	52.440
	VK3RTT, Mt. Mowbullan	144.400
	VK4RBB, Brisbane	432.400
VK5	VK5VF, Mount Lofty	53.00
	VK5VF, Mount Lofty	144.800
VK6	VK6RTV, Perth	52.300
	VK6RTU, Kalgoorlie	52.350
	VK6RTW, Albany	52.950
	VK6RTW, Albany	144.500
	VK6RTV, Perth	145.000
VK7	VK7RNT, Launceston	52.400
	VK7RTX, Ulverstona	144.900
	VK7RTW, Ulveratone	432.475
VK8	VK8VF, Darwin	52.200
JA	JA2IQY, Nagoya	52.500
KG6	KG6JDX, Guam	50.110
KH6	KH6EQI, Hawaii	50.104
TI	TI2NA, Costa Rica	50.000
W	WA6JRA, Los Angeles, USA	50.091
ZL1	ZL1VHF, Auckland	145.100
	ZL1VHW, Waikato	145.150
ZL2	ZL2VHP, Palmerston North	52.500
	ZL2VHF, Wellington	145.200
	ZL2VHP, Palmereton North	145.250
ZL3	ZL3VHF, Chriatchurch	145.300
ZL4	ZL4VHF, Dunedin	145.400

I will be touring Western Australia as these notes are prepared and I am very pleased to be able to hand over the column for this month to my good friend David VK5KK who will provide you with some reading in his own style. Over to you, David, and many thanks.

AURORAL PROPAGATION

This is something which is not very common here as in some other places like Europe and Northern America because most of Australia is too low in latitude. However on 26-6-78 a large Solar Flare (Filament) created a visual aurora that could be seen as far away as Canberra in the early evening. The flare also had stirred the ionosphere close to the equator with unusually strong (5 x 9+) Japanese signals on 10 metres from 0900Z to 1100Z. The lower HF bands had the characteristic "buzz" of the aurora. At 0930Z Dave VK5MO heard Channel 0 with a rather distorted buzz peaking to the south-west from Adelaide. This was confirmed by several other stations from the Adelaide area. At 0955Z a very weak and distorted signal appeared on 52.05 MHz. The SSB signal was a VK7 but still DFing towards the south-west. The signal disappeared at 0959Z. Fortunately later on the 2 metre band opened into Western Victoria and several tests on 6 were arranged via Ch. 7 Mt. William. VK3OT was audible from 1200Z peaking 170 deg. from Adelaide. Steve worked VK3ATN, VK7LZ, VK5KK and VK5ZMO. All were audible at this QTH but contact was only made with VK3OT on CW at 1325Z and on SSB at 1350Z. Noteworthy out of the above was VK3ATN who was using 3-6 watts into an 11-element beam. VK5ZMO was also able to hear my reflected CW signal quite strong even though we are only 35 miles apart. VK5AVQ was able to hear some signals but did not make contact. It is hard to break into an auroral QSO simply because at best, the phase distorted signals on SSB are barely readable, two signals sound like noise! CW signals are at least 1 kHz wide. Last signals were heard at 1400Z, by this time Channel 0 had disappeared altogether. It is interesting to note that at 1400Z the A index had peaked to 78.

The best opening for 10 years for some people, though back 2 years ago signals via aurora from VK7 were quite good to VK5, was missed by many people. Unsuccessful attempts were made on 2 metres to get contact via the aurora. It is also a pity that there was no activity from VK0 on 6 metres. VK0GM on an Oscar pass on 29-8-78 said all HF communication had been cut and the aurora was still visible. Oother effects of the flare included a quietening of the upper HF bands for a day or so, locally and abroad.

(Another auroral opening occurred on 30-9-78 with VK1, 3, 5, 7 participating — Ed.)

BEAMING MORE TOWARDS THE NORTH

Below the Tropic of Capricorn things have been fairly low key on 6 metres. Well at least to about mid-August when VK1RK worked Yoshi JA2BZY and partially worked JH1GUL at 0930Z on 15-8-78. Reports have also been received from VK6 and VK2 about one or two openings to JA in the first half of September. Locally though everyone pricked their ears up on the 16-9-78 when 10 metres was wide open to Europe well past midnight. Next day at 0548Z I worked one JR1, 5 x 5. However, more was to come when at 0845Z the band opened to Townsvilie with 5 x 9 signals. Those worked from VK5 included VK4s TL, ZYA, ZJP, ZEZ, ZBJ, JH, RO and MS. However, everyone down here was able to listen to the VK4s work JAs via Type 2 TEP. This can be frustrating when you cannot hear the JAs on any form of extended mode. Pity! Up in northern VK4, 6, 8 TEP has been very good each day for some weeks now to Japan and other Pacific areas. For example KH6EOI, the Hawaiian beacon, has been through several times, into Townsville on 22-9-78 5 x 9 at VK4ZJP's QTH.

Next day, 18-9-78, the band opened on 6 metres to VK4 at 0936Z with VK4ZWH. The band had already opened from Bundaberg to Japan and one had to compete with the JAs to get a contact. Several other VK4s could be heard working to Japan. Then at 1000Z it became possible to hear the Japanese dogpiles and by 1003Z the first JA had been worked on CW via this extended mode of propagation. In the following 40 minutes two more stations were worked on CW, signals poor enough to make it CW only working. At 1045Z signals became strong enough for SSB. Between then and 1157Z signals averaged 5 x 6 with some to 5 x 9, mainly JA1s and JA2s with a couple of JA3s. Signals were down in Adelaide, VK5ZMO and VK5ZZZ working 2, VK5FT 3, and VK5AVQ 2 on CW, whereas over a page and a half were worked at VK5KK. The opening of 17-18th of September were the first into VK5 for four months from Japan. VK7RH reported that JAs were heard on the 18th in Launceston on 6 metres. Also John VK2BHO has been working JAs on 6 around that date. KG6 has been worked in northern VK4, 6, 8 quite a few times in the last weeks along with HL9, VS6, etc. Jim VK5ZSA at Kadina, 100 miles north of Adelaide, reports hearing the opening of the 18th but unable to operate because of severe TVI problems.

I think a few people interested in 6 metres in the southern States could take note of the above opening as it may be the way things could become in the following months. Signals were equal to some of the best Type 1 openings seen so far although not without the characteristic Type 2 10 Hz flutter. As far as true non-extended Type 2 TEP openings go at this latitude (35 deg.) only two in the last decade can barely qualify. Both occurred during the peak of Type 1 TEP activity and were identical and within days of each other. They occurred relatively late (1245Z to 1400Z) and at a time of very low sporadic E activity. This occurred on the 13th and 16th of April and signals were the strongest ever seen for a long time, some over S9 on a system with a 50 microvolt S9 setting! That is a very Scotch S-Meter, believe me. In terms of some 6 metre systems! Several tests were done with respect to radiation angle and it was indeed very low angle. Two beams of virtually the same gain but with one at 10 metres in height and the other at 20 metres were used in the test. Although the lower antenna was well clear of any nearby objects it came a poor second to the higher one. This also was found, to a lesser extent, on Type 1 opening to be true. The old sporadic E tale of anything equal or better to a piece of wet string is good enough may loose a few people some contacts under the relatively poor conditions seen in the southern States so far.

Two metres is another band which has been in the news with the latest batch of TEP openings, not only JA/VK8 but Africa/Europe and Central/South America. However our own JA/VK8 contacts by far outnumber many times over all other efforts in quantity and strength. At an average of 3100 miles a contact VK8GB must be in line for an award for the several million miles covered so far! However where will JA be worked from next on 2 metres? There must be something in the almost perfect north-south path business else Darwin would have worked JAs from the 1, 2, 3, 4, 5 areas instead of the 4s and 6s and handful of 5s. This would explain (despite rumours) why northern VK4 and VK6 have yet to work on 2 metres as no part of Japan is north of them. This does not mean that they will never work JA on 2 as the peak of the sunspot cycle is a few years ahead. However, I think if the present world record is to be a guideline on path distance and direction, then Alice Springs to JA2, 3, a distance of 4000 miles, may hit the headlines next. So take note! During the two Type 2 TEP openings of April, 2 metres was constantly monitored on 144.11 MHz, both here and in Japan and regular test CQs were made from both ends but no resulting contacts. I strained 200 watts PEP and 32 elements beaming 0 deg. with several good 6 and 2 metre operators including JA1RJU, but despite that JA1 is exactly due north in the same plane as the VK8/JA contacts, the 4850 miles took its toll! From other people's observations it definitely seemed that the mode of propagation was not yet good enough so maybe *time will tell.* But keep listening on 2 metres as one day you may have a pleasant surprise.

AROUND AND ABOUT

This paragraph will cover lots of subjects in short so watch out. It would seem that suddenly automatic CW keyers have become the rage on 6 and 2 metres, types ranging from simple 32 byte diode programmed keyers to RAM types with several k/bytes. VK3AUR has his micros rigged up to answer calls with "QRZ QRZ I AM A COMPUTER" VK5EM can read onto RAM CW off the air, after sending an auto CQ. Several others (and myself) are using RAMS for digital tape loops, tail-enders, etc. Voice tape loops are still popular but the digital stuff is more fascinating! This is good, but when they are set going on call frequencies it can be annoying. Unless you are fairly remote from active operating areas use a nearby frequency, e.g. 52.040 to 52.045 MHz otherwise you will get the situation similar to one that happened recently when a VK5 and a VK3 set their keyers going on 52.05 MHz for nearly an hour, both unable to hear each other but very amusing to others, especially those who could hear both! Perhaps we should have a national keyer frequency. As the season goes on they will probably be used less. VK4OT's transverter project for VR4DX has been delayed due to the fact that VR4DX has sold his Yaesu FT101 series transceiver and got a TS820S. The FTV650 all-valve transverter, originally for the Yaesu 400 series, needs an external supply for the 5 voltage rails as Kenwood transverters are all solid state and not all working voltages are brought out the back. Also to complicate the problem it draws more HV current than the later B model and requires ¼ to a ½ watt of 28 MHz drive whereas the 820 has only, at the most, 10 mW available at the exciter out socket because no more is required by all solid state transverters. It is only a matter of changing the 12k resistor in the input line to the Tx mixer on the FTV650B (I have now a FTV650B going from an 820 before) but the older one is a little more difficult. All the best, Steve. Would you believe that a Channel 0 translator has been installed in Townsville and has been going for several months! It runs 500 watts and is beamed inland so its primary area is inland. VK4RO says it makes a good beacon from his QTH in Ayr 50 miles from Townsville. I wonder how JA TVI would be under the good TEP conditions? How many JAs are being interfered with, though its 500 watts probably is low enough to be unnoticed. The authorities must be getting desperate for channel space! VK9ZM is on 6 metres and has been worked by VK4s and JAs from Willis Is. VK4ZJP said that he was to be on 52.05 MHz at 1000Z 18-9-78 but only thing heard in VK5 was what he was working. A tip worth following when looking for 6 metres DX is 10 metres. It also works for sporadic E. Over a period of time one develops an acuteness to the various signs but generally a lot can be obtained from 10 as to whether 6 will open or not on some paths. The older operators know this, but to the newcomer, esepcially the dual licence N and Z calls, this can be one way to relate the two bands closer. DX-peditions take note, how about taking 6 metres with you even if you are going to the South Pole. There is a lot of challenge in covering paths that may be common on 20, good on 15, rare on 10, and unheard of on 6! If equipment is a problem see if you can get in touch with an

active VHFer, he will most probably know of someone who can lend/sell something. How about an equipment pool similar to SMIRK's. (P.S.: one surplus FTV650B at this QTH.) Wintertime sporadic E has only been fair with only a few openings into VK5. VK2YDY reports that 6 was open an hour before the RD contest to VK7 for a short while. By the way, Phil 2YDY has a novice call (VK2NOM) and should have received his full callsign when you read this.

TROPOSPHERIC OPENINGS HAPPEN ALL THE TIME!

Heading the good stuff are the openings on 10-11 September. At 2335Z on the 10-9-78 VK3AUR, along with others, was able to hear the Orange Repeater on Ch. 2. For the next 6 hours the repeater had very little QSB (±1 to 2 dB), being just workable at the peaks. Rob tried to get someone up on 2 metres SSB but no takers. Unfortunately Phil VK2YDY was away from Moree at the time. From this end VK5IK, Eundunda, was able to work into the repeater on the 10-11th. Ian has one up on all of Adelaide in that he is on the other side of the Mt. Lofty ranges and along with Peter VK5ZPW have a beautiful takeoff to the East, all we see is lots of hills! No-one on the Adelaide plains was aware of the opening.

The Adelaide beacon went off air on the 17-9-78 with a defective keyer and as of today (26-9-78) is still off air. It should be going again by the end of September, as long as the old motor drive for the ID wheel can be repaired. It would be interesting just how many beacons are left that use this sort of keyer. I can think of only one user. With channel 5A for the Hamilton area a lot of people have already gone quiet on 2 metres, compared to activity two years ago it is dead. VK3ATN can be worked any time on 6, 2 or 0.7 metres, yet he is further away than some VK3s and VKs from Mt. Gambier. To prove a point, Mark VK4AVQ *took* a FT221 and a 5 el. yagi to Mt. Gambier on 14-9-78. At 1200Z Mark could hear my CW Q5 and SSB Q3-4 on 144.1 MHz. In return Mark's 16W CW signal was Q4. It should be added that Mark had to compromise transmitting because he was hanging on to the antenna! Although at the lookout, no tropospheric conditions were about and it was raining both ends! The distance covered was 262 miles. Not bad for portable operation. Antenna being hand held meant that Mark could see if any polarity rotation was occurring but the signals were definitely horizontal. No other signals could be heard. The Adelaide beacon on 144.8 was not heard.

EME report unfortunately will be missing from this issue, however I have a couple of interesting bits of news. Chris VK5MC has had his dish mounted for some time and feeds installed. In early September, Chris conducted tests back to Adelaide on 432 MHz with Peter VK5ZPS. Although Peter has a damaged feed on his 432 MHz, yagi signals were quite good one way. Chris can receive sun noise on both 432 and 1296 MHz but I am not quite sure whether he is fully set up for transmission yet. VK3ATN is continuing with his Radio astronomy project with VK3AUR. At the moment they are experimenting with some **NEC** transistors on 432 MHz and getting noise figures of the order of 0.99 dB. Don't expect to buy that one from your local shop as it is a little expensive.

Barry VK5ZAU recently went mobile on Kangaroo Is. with 144, 432, 1296 and 2304 MHz. He was conducting experiments with Reg VK5QR on the propagation over this long path (not line of sight at all). On 25-8-78 Reg worked Barry two-way on 144 and 432 and one-way SSB on 1296. By the way, Reg has for some time been running high-level mixed SSB on 1296 MHz and uses an IC202 as the driver. Barry was sel Cape du Couedic, not far from the light-house, which is the southern most tip of the Island. Path to Adelaide is about 110 miles which over half is water. I also worked Barry on 144 and 432 two-way, a distance of 140 miles.

There seemed to be very little tropo as signals had the usual fade and averaged 5 x 5. By the way, I only stumbled on to the goings on when, tuning a new pre-amp on 1296 MHz, I found Reg on 1296.1 MHz SSB. Reg, though 35 miles away and beaming S-E, was still his usual 5 x 9 plus signal due to reflections off various nearby objects, mainly the Mt. Lofty Ranges. Antenna 1 metre dish at 40 feet. On 26-8-78 very good tropo conditions enabled Barry to work from the same QTH VK5s GL, KK, AVQ, ZPS at to 5 x 9 plus. On 432 he worked VK5KK 5 x 9 and VK5s AVQ and ZPS 5 x 5. No other bands tried and all contacts between 1055Z and 1210Z. Signals also about on the next morning when Barry made partial contact with VK5ZMJ in Pt. Pirie, a distance of over 200 miles, ¾ over land, on 144 MHz. Barry tried another experiment with VK5QR on this side of the Island during the next week but no further information on that one.

Gordon VK5ZGV recently left for Sydney after being resident here for over two years. Gordon has previously held VK3 and VK6 callsigns and was one of the original SSB stations on 2 metres from VK3 in the late fifties. Before Gordon left on 28-8-78 he rigged up his TS700A with a horizontal mobile antenna. From this QTH (Wasleys) we were able to keep in contact on 2 metres SSB from 0329Z (in Adelaide) to 0626Z some 15 miles east of Blanchetown on the River Murray, some 70-89 miles from here. It should be noted that in between us for the last 40 miles were hills up to 1700 feet in height. I am about 400 feet a.s.l. The last 40 miles were relatively poor but about 5 x 5 signals. Over the same path FM signals usually disappear once over the hill. All the best in Sydney, Gordon.

OTHER DOINGS, ETC.

Soon to hit the market is the new ICOM IC402, a 432 MHz transceiver of similar specs. to the IC202 and 502. Those who can remember the impact the IC202 had three years ago (doesn't seem that long, does it!) may all be wondering how the 402 will affect MHz. But I think the price (this has been a killer for other UHF rigs) may stop some and the ever popular microwave modules has probably cornered a lot of the market. Anyhow, we shall soon see. The IC402 is double-conversion with a tuneable first IF and four 200 kHz bands, 3 watts PEP on transmit on USB/LSB/CW. Apart from the Belcon Liner and KLM transceivers it is a first for ICOM. Who will be the first to make an add-on linear amp? Try a 2N5946 which with 12.5V DC and 3W drive will give 13W out on 430 MHz. A MRF646 with 13W drive and 12.5V DC will give 45 watts on 430 MHz. The 2N5946 sells for about $13.00 and the MRF646 for about $28.00. The MRF646 works very well at this QTH with the 10 watts drive from the transverter. Circuit as per the Motorola RF Data Manual, Ref. 12-49. Make sure you DO use teflon fibre board (Er — 2.55).

Yaesu have released their new FT225RD and FT625RD. The 625 is quite a change from the earlier 620 series now having single conversion, FM and optional digital readout and memorizer. Both the 225 and the 625 are designed with similar styling to the FT901. Also you can now get a FTV901 transverter which . . . wait for it . . . is designed to give transmit facilities on 6, 2 and 7 metres in the one box (as well as receive) with the FT901DM. One would hate to guess at the price of both transverter and transceiver decked out with all the options! Back to the 625 and 225, both have a rated 25 watts output making them both good for driving grounded grid tubes like the Eimac 8873, 874, and 8875. With 2 kV and 25 watts drive, 600 watts PEP could be interesting (1 tube).

From the SMIRK newsletter for 8-78 some interesting modifications for the FT620 series: Q401 (3SK40M) can be replaced by a 3N201B Mosfet for more gain and better signal/noise ratio. Q401 is the only one on the board in a socket. The receive mixer can also be replaced (Q403) with a 3N201 or 3N211. While on modifications a useful one ot try with the FTV650B is replacing the RF amplifier Mosfet with a 3N201 or a 3N210 Mosfet. The later one is in a different package to the original but has the same configuration. The 3N210 also has too much gain with the original gate 2 dividers so one of the resistors (R303) will have to be reduced to about 22k. This can easily be done by paralleling a 33k resistor with R303. The FT221 and FT221R can be improved as far as signal handling goes by replacing the original FET mixer (Q402) with a Mosfet. Other mods tried to both TS700As and FT221s included improving the woofy audio on FM by reducing the values of coupling in the respective FM microphone amps. There is no reason why, with minimal modification, and 700 and the 221 type transceivers cannot achieve 2 dB noise figures. In fact most 700s encountered only need minimal adjustment to T1 and T2 on X55-1120-00 to achieve something close to this. The fact that a lot of 700s do not have much gain compared to some transverter systems must not be confused with a lack of sensitivity. The pre-amp on the newer 700SPs does not change the noise figure a great deal but does provide a little more gain. Those IC202 owners probably know know that the typical noise figure is about 5 to 6 dB so with the addition of any power amplifier over 30 watts something should be done to improve this side of things. Changing the front end Mosfet only (Q2) partially affects a cure (try 3N210) but the real problem lies with D25 the diode which isolates the receiver during transmit. During receive a small current flows through this diode generating noise. Those who like fiddling may like to use a miniature relay to switch the antenna over. Otherwise a more complete solution is to include a receive pre-amp in the linear switching and leave the 202 as is. There is quite a difference between an unmodified IC202 and a very *good low* noise receiver on a weak signal.

Locally 432 and 1296 has been quiet but one is becoming more aware of the increase of activity on these bands. Would you believe that if you called CQ on 432.1 MHz most nights you would have about the same chance of getting a bite as if it was 144.1 MHz (yes, it's that bad!). Anyway with the announcement of UHF for Ethnic TV a lot more people are reappearing back on 2 metres. We still are going to have problems with Channel 5A being allocated elsewhere in the country along with Channel 0 but at least it is a big step in the right direction. Our nearest Channel 5A is 90 miles from here, at Loxton, and although it does not affect the Adelaide area, it has killed ALL 2 metre activity in that area. That's it for this month from VK5KK. Next month you shall have Eric back on the pen and full of fight after his recent holiday!

73s from David VK5KK. ■

AROUND THE TRADE

BWD EXTENDS RANGE

BWD have announced the release of two new oscilloscopes and probes.

The Model BWD645 is a dual trace storage oscilloscope. It provides variable persistence storage, 30 MHz bandwidth, 1 mV sensitivity and battery operation.

The Model BWD880 is a new innovation. It is designed specifically to meet *the needs* of the power control field. Many features essential when working with power circuitry are incorporated.

Two new probes have been added to the range. The P36 probe has a 300 MHz bandwidth.

The P37 probe has a 100 : 1 divide ratio, a frequency range of 100 MHz and a voltage rating of 1.5 kV.

Details can be obtained from BWD, PO Box 325, Springvale, Vic. 3171. Ph. (03) 561 2888. ■

NEW AUSTRALIAN AGENT FOR WORLD FAMOUS RADIO PAGING EQUIPMENT

Multitone Electric Co. Ltd., Britain's leading manufacturer of radio paging equipment, has appointed TR Services Pty. Ltd. of Chatswood, NSW, as their agent in Australia.

Both principal and agent believe that there is a rapidly growing market in Australia for the multitone equipment, with hospitals being one of the major users.

Multitone is nearly fifty years old, and began life as a small manufacturer of hearing aids. In 1955 the famous St. Thomas' Hospital in London asked Multitone to develop and produce the world's first pocket paging system.

The company now exports some 70 per cent of its production to seventy countries and have to their credit a long list of firsts in the history of radio paging. They employ about 600 people, and have built up its very extensive research and development department to keep Multitone in the forefront of radio paging throughout the world.

TR Services Pty. Ltd., whose General Manager is Mr. M. R. Hall, is a joint venture company between Email Ltd. of Sydney and Telephone Rentals Ltd. of London. ■

KIMBERLEY TRANSCEIVER

A lightweight, modern radio transceiver is made by West Australian company, R.F. Systems Pty. Limited.

The transceiver, known as the Kimberley, is a dash-mounted VHF and UHF model. It is suitable for mobile or base station operation or as a fixed link or repeater.

For protection and an attractive finish, the set is encased in a Comalco aluminium extrusion surround.

The transceivers are also becoming popular overseas. R.F. Systems recently exported sets to Kenya and Malaysia where they are used by the telecommunications department.

The transceiver was designed to withstand difficult conditions. Each radio set is extensively tested before it is marketed. Tests include a heat test to 60°C, vibration and drop tests.

Further information about the Kimberley is available from R.F. Systems Pty. Limited, 98 Guthrie Street, Osborne Park, WA, telephone 446 8322. ■

AWARDS COLUMN

Brian Austin, VK5CA

P.O. Box 7A, Crafers SA, 5152

DARC DX AWARDS

Deutscher Amateur Radio Club

General Rules:

1. DARC's official DX awards Europa Diplom, WAE and EU-DX-D can be obtained by licensed radio amateurs and SWLs all over the world. The specific rules of these awards are given below.

2. All contacts must be made from the same country. Awards for club stations will be issued to the club, not to an individual operator.

3. The DARC-DX awards are based on the "European Countries List".

4. All amateur bands for which the applicant holds a valid licence may be used.

5. A set of application forms for DARC-DX awards is available for a large size SAE plus 3 IRCs at the address below. The use of these official forms is obligatory.

6. QSL cards for all contacts claimed must be submitted with the application. All cards must be presented in their original form. Any altering or forging will result in disqualification.

7. The service charge of 10 IRCs or equivalent per award or 3 IRCs or equivalent per endorsement covers the mailing of the award and the return of cards by registered mail.

All applications go to:
DARC-DX Awards,
Post Office Box 1328
D-895 Kaufbeuren
Germany (FRG).

8. New certificate holders will be published in "CQ-DL", the club magazine of DARC.

9. The decisions of the DARC-DX Committee are final.

European Countries List:

C31, CT1, CT2, OL, DM, EA, EA6, EI, F, FC, G, GC Guer., GC Jer., GD, GI, GM, GM Shetland, GW, HA, HB9, HB0, HV, I, IS, IT, JW Bear, JW, JX, LA, LX, LZ, M1, OE, OH, OH0, OJ0, OK, ON, OY, OZ,, PA, SM, SP, SV, SV Crete, SV Rhodes, SV Athos, TA1, TF, UA1346, UA Franz Joseph Land, UA2, UB5, UC2, UN1, UO5, UP2, UQ2, UR2, YO, YU, ZA, ZB2, 3A, 4U1, 9H1.

EUROPA DIPLOM

1. The ED is awarded for working (SWLs hearing) amateurs in European countries.

2. Applicants must prove a total score of at least 100 points by submitting QSL cards. The score is computed as follows:

(1) Contacts:

The basic idea of the award is to work as many European countries as possible on different bands in different calendar years. There are no restrictions as to modes of operation or specific amateur bands.

(2) Multiplier:

Confirmed contacts of the current and preceding year count 1 point (multiplier 1.0). Older confirmations are devaluated by a quarter point per year (multiplier 0.75, 0.5 or 0.25). QSL cards dating back more than four calendar years have lost their value for the certificate.

(3) Annual Score:

The sum of all confirmed European countries on different bands in a calendar year multiplied by the respective multiplier produces the annual score.

(4) Total Score:

The total score is the rounded sum of all annual scores.

(5) Example:

Date of application — June 17, 1972.

	1972	1971	1970	1989	1968	1967
(1) confirmed QSOs	8	48	36	41	21	7
(2) multiplier	1.0	1.0	0.75	0.5	0.25	0.0
(3) annual score	8	48	27	20.5	5.25	0
(4) total score	8	48	27	20.5	5.25	—109

3. Europa Diplom Honor Roll:

(1) Each certificate holder with an actual score of at least 100 points will be listed in the ED Honor Roll. The ED-HR arranged according to the scores will be published in DARC's "CQ-DL" twice a year. Members of the Honor Roll are awarded an additional sticker.

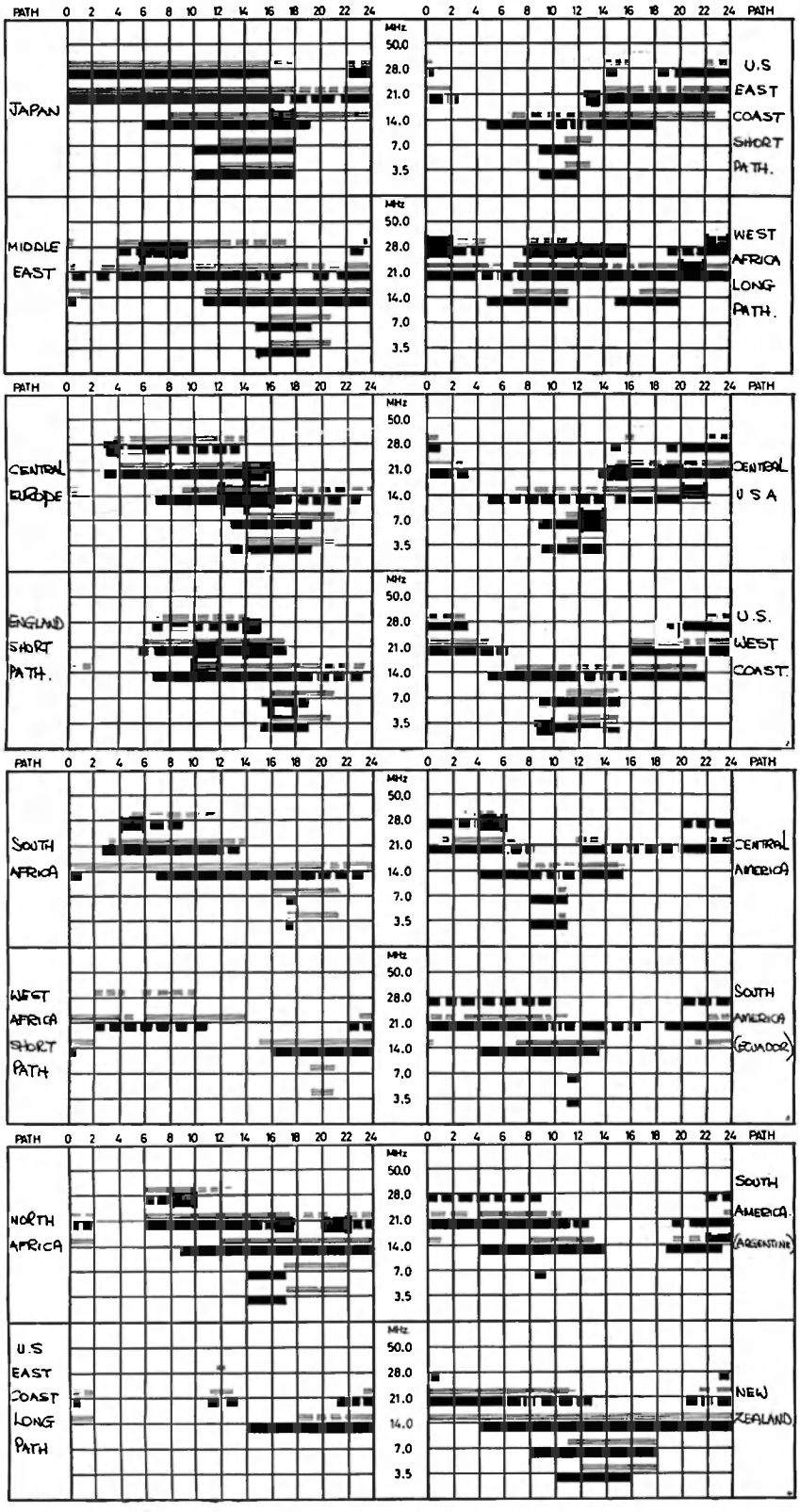
(2) To improve the score suitable QSL cards may be turned in twice a year. Make sure that the award manager receives them before the end of June or December to be considered in the subsequent publication.

(Rules for the "Worked All Europe" and "EU-DX-D" will be published at a later date.) ■

QSP

THOUGHT FOR THE MONTH

"Those who persistently trigger repeaters without saying anything perhaps would rather have people wonder why they don't say anything rather than come out with a comment and then leave people wonder why they bothered to say anything."—Break-In. ■



LEGEND

FROM WESTERN AUSTRALIA

FROM EASTERN AUSTRALIA

BETTER THAN 50% OF THE MONTH, BUT NOT EVERYDAY

LESS THAN 50% OF THE MONTH

PREDICTIONS COURTESY I.P.S. SYDNEY.

ALL TIMES UNIVERSAL UTC (GMT).

Propagation during the winter months has been quite mixed and now having moved into spring conditions the longer skip distances are quite pronounced. Solar activity is still very much up and down very closely coupled to the sun's rotational period (approx 26 days). There has been considerable storm activity and a great many flares with resultant fade outs right through the spectrum. One particular storm on August 27th produced a fine auroral display on August 28th.

The movement of the K-indices produced quite some interesting figures from the classic quiet period and enhancement effect prior to the storm. It commenced at 0246 UTC on August 27th and the K indices from Mundaring in Western Australia and Toolangi in Victoria tell an interesting story. For the eight 3-hour periods were as follows:

	Time (UTC)							
	00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24
Aug.								
25	1	0	2	3	2	2	2	2
	1	1	2	3	2	2	2	1
26	1	1	1	1	1	1	2	1
	1	1	1	1	1	1	2	1
27	3	3	3	4	5	4	4	3
	3	3	3	4	4	4	3	3
28	3	6	6	5	5	6	5	4
	3	5	7	7	8	5	3	2
29	6	5	7	5	6	3	3	3
	4	4	6	5	5	3	2	2
30	3	4	3	4	5	4	6	4
	2	3	3	4	4	4	5	4
31	4	3	4	4	3	3	2	4
	3	3	4	4	5	4	4	2

Figures shown opposite date — Mundaring — bold figures in second line — Toolangi.

Storm finish time was 1600 UTC, August 31.

From reports the auroral effect was felt from quite low frequencies up to VHF.

Some issues back I mentioned the Ohl/Sargent method for predicting the forward smoothed sun spot number from the geomagnetic activity recorded in the downward position of the previous cycle. One of the notable research centres for geomagnetic activity tested the method against data from the previous cycle. They found the method fitted quite nicely into place and calculated that the next peak came up with a smoothed figure of 235, which if it eventuates, will be an all time high.

Researchers around the world are keeping a close eye on all these figures and they generally agree the method shows promise. Should the method prove itself, then the whole field of solar studies will need revision, particularly with respect to forward predictions. It could give a 48 month period of relatively firm data, whereas at this time little effort is given to casting more than 6 month forward predictions.

Solar activity is in somewhat of a lull at the time of writing with just short bursts of activity to liven things up. Though the overall levels are rising ever so slowly.

Provisional sunspot data from Zurich for June, July, August are 94.1, 68.4 56.7 monthly means.

In June daily counts above 100 were 14 days highest 158 on 22 and 23. July daily counts above 100 were 8 days highest 127 on 11. August just made the 100 on one day, 31.

Smoothed running numbers 12-77 — 55.4, 1-78 — 58.6 (Ohl Sargent Prediction 59.6), 2-78 — 62.7.

Zurich predictions for 11-78 — 102, 12-78 — 108, 1-79 — 114, 2-79 — 120.

2800 MHz solar flux figures for 5-78 — 147.3, 6-78 — 143.1, 7-78 — 131.7, 8-78 — 114.7 follow very closely the month mean sunspot numbers predicted figures were 5-78 — 149, 6-78 — 151, 7-78 — 150, 8-78 — 148. As always — unpredictable!

As you probably have noticed, we have added some extra paths to the usual list of the past few years. We hope that they will assist users. The parameters used for predictions are taken as when perfect conditions apply over those paths. However, the range of variations likely to occur can be considerable. Within these bars are periods of much larger reflections. Usually those without beam antennas cannot always take advantage of this mode — sometimes the reverse occurs. Your take-off angle will largely govern your propagation during these periods. I am looking at the possibility of refining the charts to greater detail, but think perhaps that East and West take-off could complicate the matter. I will try perhaps for one month to try from Eastern Australia to evaluate results. ■

VIC. WESTERN ZONE
CONVENTION
at
BALLARAT
NOVEMBER 4th and 5th
Further details and bookings
for Dinner to
VK3ZBS or VK3ZHH

CONTESTS

Wally Watkins VK2ZNW/NCU
Box 1065, Orange 2800

CONTEST CALENDAR

November:

4/5	RSGB 7 MHz (CW)
4/5	ARRL CW SWEEPSTAKES
18/19	ARRL PHONE SWEEPSTAKES
25/26	CQ WORLD WIDE DX (CW)

December:

2/3	ARRL 160 METRE CONTEST
9/10	ARRL 10 METRE CONTEST
16/ JAN 7	ROSS HULL VHF/UHF MEMORIAL CONTEST.

ROSS HULL VHF/UHF MEMORIAL CONTEST RULES 1978-79

DATE:

0001 GMT 16-12-78 to 2400 GMT 7-1-79.

The Wireless Institute of Australia invites Amateurs and SWLs to join in this annual contest which is held to perpetuate the memory of Ross Hull, who did so much to further VHF/UHF.

A Perpetual Trophy is awarded annually for competition between members of the WIA, and is inscribed with some details of the man the contest honours. The name of the winning member of the WIA for each year is inscribed upon the trophy and that member also receives a suitably inscribed certificate.

OBJECTS

Amateurs from Australia and Territories will endeavour to contact as many other Amateurs as possible under the following conditions.

DATE OF CONTEST

10th December 1977, 0001 GMT to 8th January 1978 2400 GMT.

DURATION

Any seven calendar days within the dates mentioned above which need not be consecutive. These periods are at the operator's convenience. A calendar day is from 0001 GMT to 2400 GMT.

RULES

1. There are two divisions, one of 48 hours duration, and the other of 7 days duration. In the 7 day division there are four sections.

(a) Transmitting Open
(b) Transmitting Phone
(c) Transmitting CW
(d) Receiving Open

An open log is one where points are claimed for more than one mode, i.e. Phone, CW, RTTY, ATV, SSTV. (AM, FM and SSB are grouped together as phone.)

In the 48 hours division, the best score over any consecutive 48 hour period is the winner.

In the 7 day division, the best score over any seven days (not necessarily consecutive) is the winner.

2. Any Amateur operating fixed, mobile or portable within the terms of his licence may participate.

3. All Amateur VHF/UHF bands may be used, but crossband contacts are not acceptable. At any one time, single frequency operating only is permitted. Cross mode contacts are permitted.

4. Amateurs may enter for any one of the sections and either or both divisions. 7 day certificate winners are not eligible for 48 hour awards.

5. Two contacts per band per day, irrespective of mode are permitted provided that at least two hours elapse from the previous contact with that station on that band.

6. Logs from a multi operator station are not acceptable. One operator only may operate a station at any one time, and must submit a log for his own operation.

7. Entrants must operate within the terms of their licences.

8. The exchange of RS or RST reports with a serial number starting at 001 and advancing by 1 for each successive contact will be proof of contact.

9. Entries should be set out on Quarto sheets, using one side of the paper only, and must be forwarded to reach the Federal Contest Manager, Wireless Institute of Australia, Box 67, East Melbourne, 3002, in time for the last opening of logs on Friday, February 17th. Envelopes should be clearly marked Ross Hull Contest. Early logs will be appreciated.

10. Scoring will be based on the following table:

Freq. MHz	Less than 200 km	More than 200 km within Call Area	More than 200 km other Call Areas
52	2	5	10
144	2	5	10
432	5	15	25
576	10	25	50
1296 and above	20	50	100

Bonus points: Each new call area contacted, 20 points, once only per band per day (including own call area).

Operation via active repeaters or translators not permitted for scoring purposes.

11. Logs should be set out as in the example and must carry a front sheet showing the following information:

Name
Address
Section
Call sign
Claimed 7 day score
Operating days
Operating dates
Highest 48 hours score
Operating period

Declaration — I hereby certify that I have operated in accordance with the rules and spirit of the contest.

Comments

12. All times to be logged in GMT only.

13. Awards: Certificates will be awarded to the highest scorers in each section, in each call area. Additional certificates will be issued to contestants who break any VHF/UHF record during the contest.

The VK contestant who returns the highest score in the transmitting section, and who is a member of the WIA will have his name inscribed on the trophy which will be held by his Division for the prescribed period.

Certificates will be awarded to the highest 48 hours entrants in the transmitting section, who have not won a 7 day certificate.

RECEIVING SECTION

1. SWLs only may enter for this section.

2. Contest times and logging of stations will be the same as the transmitting section except that there will not be a 48 hours section.

3. Logs must show the callsign of the calling station, the serial number given, and only the callsign of the other station. Scoring will be as for transmitting stations.

4. Any scoring contacts may be logged. There is no limit to the number of times that a station may be logged provided that serial numbers are given.

5. The logs for any 7 days may be submitted and the winner of the section will be highest scorer.

6. Certificates will be awarded to the highest scorer in the contest, and if sufficient interest is shown, to state winners.

GENERAL

It is preferable that complete logs be submitted as an aid to checking, but contestants must clearly show their best 7 days or 48 hours.

Enjoy yourself in another friendly contest, and remember — it is only as friendly as you make it.

EXAMPLE OF A VK3 TRANSMITTING LOG

Date/time GMT Dec. 16	Band MHz	Emission	Callsign	RST sent	RST rec.	Points	Bonus
0156	52	SSB	VK4DT	59001	58037	10	20
0207	52	CW	VK4XA	569002	579012	10	—
0212	144	SSB	VK7ZAH	58003	58026	10	20
0216	432	SSB	VK3ZBB	59004	59042	5	20
0320	1296	SSB	VK3ATN	53005	52023	50	20

IARU NEWS

RECIPROCITY OF LICENCES

Much detail was published on page 25 of AR Jan. 1978 on the subject of reciprocal licensing.

An up-date of that might be useful.

For intending residents of Australia, the list of countries with which the Australian Admiinstration has reciprocal arrangements remains unchanged to see AR for August, 1972.

There is also no change concerning "guest licensing" — i.e. licences to temporary visitors to Australia. Guest licensing, according to one informant, has now become more extensive irrespective of whether or not a reciprocal agreement exists. Apparently visiting amateurs can obtain amateur licences not only in Australia, but also in Botswana, Belgium, Brazil, France, West Germany, Israel, Luxembourg, Morocco, Portugal (maximum 30 days), Rhodesia, Swaziland and Sweden. Some of these countries require proof of 12 w.p.m. morse qualification and have no "no-morse" licence grades.

It would appear as if you cannot obtain a U.K. reciprocal licence unless you can produce a current licence, and your passport to show that you are a national of the country where your licence is current.

According to another source, applications for a U.S.A. amateur licence by aliens of the U.S.A. must be made to the FCC Gettysburg PA 17325 instead of to Washington.

The U.S.A. now has reciprocal agreements with 50 countries. Add Liberia and Greece to the list. The FCC form to use is 610-A.

FRANCE

From "Mobile News" of July 1978 comes the news that a reciprocal licence for G stations in France, which was free, now costs francs 117.50. This is calculated as 250 times the cost of a local telephone call and is for one year.

WARC 79

Radio Communication of July 1979 sets out brief details of the UK preparatory draft for WARC 79 as affecting the amateur service in that country. One or two extracts might be found interesting as pointers towards the enormous problems of frequency allocations.

In relation to the band 4 to 30 MHz "radio amateurs have asked for an extension to one of their existing bands and an addition of several fairly wide new bands". The comments were — "It should be mentioned that should the proposed reductions in fixed service requirements not be realized at the 1979 WARC the extra provision proposed for other services may not be realized in full. This will depend partly on the reaction of those developing countries whose use of the HF bands for fixed services is still vital, particularly in the bands below about 10 MHz".

Relating to 30-108 MHz it states — "In Region 1 there is no internationally allocated amateur service band in this part of the frequency spectrum. The 70 MHz allocation in the U..K is the subject of national, not international, regulations". "Radio amateurs (and ISM) interests have also asked for extra provisions in the existing television Band 1. Until the future of Band 1 is clearer it is not possible to say whether these needs can be satisfied". ■

SIDEBAND ELECTRONICS IMPORTS

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WAREHOUSE 78 CHAPMAN PDE., FAULCONBRIDGE
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Many models of our HY-GAIN antennas are moving so fast that even with our large stock of them, some may all be sold soon. However, a second large supply is due early December, in time for those possible Christmas presents!

Our own Xerox machine is still able to make copies of manuals at cost.

HY-GAIN ANTENNAS:

18-AVT/WB 10-80M vertical 23' tall	$125
TH6-DXX 10-15-20M senior 6 el. Yagi 24' boom	$300
TH3-MK3 10-15-20M senior 3 el. Yagi 14' boom	$240
TH3-JR 10-15-20M junior 3 el. Yagi 12' boom	$175
204-BA 20M 4 el. Tiger array 26' boom	$230
HY-QUAD 10-15-20M fill size Cubical Quad	$260
2M 8 el. Yagi with balun 12'6" boom	$30
2M 5 el. Yagi (due December)	$25
2M 14 el. Yagi (due December)	$40
BN-86 balun for HY-GAIN beam buyers only	$20
BU-5 Japanese balun suitable for 10M beams	$14

ANTENNAS SUITABLE FOR 10M:

11M 5 el. Yagi 17' boom	$70
11M G.P. with 3 radials	$20
11M 5/8 vertical with 3 radials (CLR-2) 19'10"	$40
11M 5/8 vertical with 4 radials (CLR) 22'9½"	$50

ACCESSORIES & COAX CONNECTORS:

SWR-50A Twin meter 3.5-150MHz 1KW SWR/Pwr meter	$22
Bumper Mount with ⅜" 24 thread antenna mount	$7
Gutter mount with ⅜" 24 thread antenna mount	$4.50
5M length RG-58U with PL-259 one end	$3
M-ring body mount	$3
12V regulated supply	$26
GLP right angle RG-58U to SO-239 w/lock nut and weatherproof cap	$3.50
MLS right angle RG-58U to PL-259	90c
PL-259 standard & solderless, RG-8U & RG-58U	75c
In-line splice RG-8U & RG-58U	75c
SO-239 chassis connector with 2 hole mounting	75c
Right angles & T-connectors	$1.50
Double male connectors	85c
Mic. sockets, chassis & in-line, 3 & 4 pin	85c
3 circuit mic. jacks	85c
Crystals for QUARTZ-16 2M transceiver:	
Channel 51 T/R 146.55 — pair	$5
Channel 64 T/R 146.20 — pair	$5
No. 14 hard drawn copper wire — per meter	10c
¾" H.D. foam coax extra low loss — per foot	$1
Type RG-8U foam coax — per yard	80c
Type RG-58U coax — per yard	30c
8 core rotator cable — per yard	65c
KEN KR-400 rotator with 28V AC control box	$125
CDR HAM III rotator with 28V AC control box	$175

SUNDRIES:

FRG-7 5-30MHz General coverage receiver	$350
ICOM IC-202 2M SSB portable transceiver	$175

KENWOOD PRODUCTS:

TS-520S 10-160M SSB/CW transceiver 240V AC	$700
TS-820S 10-160M SSB/CW w/Digital readout	$1100
TS-700SP 2M all-mode transceiver	$800
TR-7400A 2M transceiver	$475
TR-7500 2M transceiver	$275
DG-5 Digital display for TS-520S	$200
TV-506 6M transverter	$225
TV-502 2M transverter	$250
AT-200 Antenna matchbox	$175
DS-1A DC-DC converter	$70
DK-520 adaptor for DG-5 to TS-520 use	$20
LF-30A low pass anti-TVI filter	$30
VFO-820 external VFO for TS-820S	$175
VFO-520S external VFO for TS-520S	$150
SP-820 external speaker for TS-820S	$60
SP-520 external speaker for TS-520S	$30
YG-88C CW filter for TS-820S	$55
YG-3396C CW filter for TS-520S	$50
MC-10 hand-held microphone	$20
MC-50 desk microphone	$45
HC-2 Ham clock	$25
SM-220 Station monitor	$300
BS-5 (TS-520S) & BS-8 (TS-820S) pan adaptors for SM-220	$55
TS-120V 12V DC mobile transceiver with NB, VOX, IF Shift and digital readout 30W PEP (expected delivery December)	$600

NOVICE SPECIALS: Still available at these low prices

Transceivers for 10M coverage, AM/USB, 15W PEP	
(a) SIDEBAND SE-502 240V AC/12V DC w/inbuilt SWR/RF meter 28.300-28.600 MHz	$150
(b) UNIVERSE 224M 12V DC 24 ch. 28.480-28.595 in 5 KHz steps Clarifier operates on both transmit and receive	$125
Sets of Crystals for Amateur licence holders for converting 23 ch. 27MHz CB units to 28MHz, suitable SIDEBAND, UNIVERSE, KRACO, HY-GAIN etc. SSB/AM units:	
Set of 4 crystals converts to 28.300-28.600 (limited quantity)	$15
Set of 8 crystals converts to 28.480-28.595	$40

ONE OF EACH ONLY:

Yaesu Musen FT-3015 160-10M HF all mode 12V DC 30W	$700
ICOM IC-710 = IC-701 with RM-1 programmer	$1200
USED SIGNAL ONE CX7A, perfect condition, 400W PEP 160-10M, N.B. & auto-keyer	$1000
FDK MULTI 800D 2M mobile transceiver 800 ch.	$375

All prices quoted are net, ex Springwood NSW, cash with order, subject to change without prior notice. All risk insurance is free: freight by air, road, rail or post at cost. All orders cleared on a 24 hour basis after receipt with payment.

Arie Bles (VK2AVA) Proprietor **Roy Lopez (VK2BRL) Manager**

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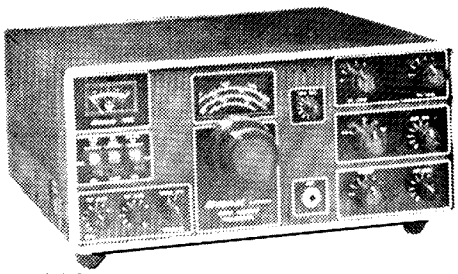

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FULL 300 PEP INPUT ON SINGLE SIDEBAND SELECTABLE 80 OR 100HZ CW AUDIO FILTER. BUILT IN AC POWER SUPPLY. BUILT IN 25 KHZ CRYSTAL CALIBRATOR FOR MODEL 350B.

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FOR YEARS SWAN HAS CONSISTENTLY PRODUCED THE FINSET HAM EQUIPMENT FOR YOUR TRANSMITTING AND LISTENING PLEASURE. TO ACCOMPLISH THIS, WE HAVE COUPLED VALUE ENGINEERING WITH CUSTOMER SERVICE. VALUE ENGINEERING HAS SAVED YOU MONEY BY ELIMINATING UNNECESSARY COMPONENTS WITHOUT EFFECTING PERFORMANCE. OUR CUSTOMER SERVICE POLICY KEEP YOU ON AIR BY LETTING US HELP TO SOLVE YOUR PROBLEMS WHETHER IT'S THE 700S, 350B OR 350D, YOU CAN DEPEND ON THESE CHAMPIONS FOR TROUBLE-FREE PERFORMANCE — EVERYTIME!!!!

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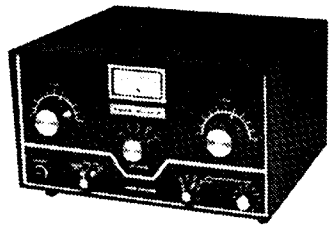
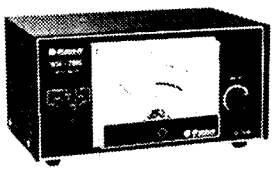
444 DESK MICROPHONE $77.00



PEAK READING SWR WATTMETER

WM200A $140



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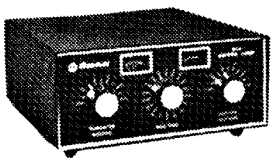

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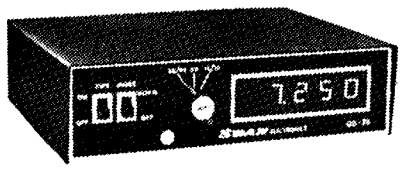

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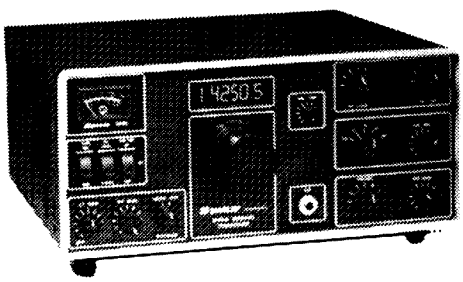

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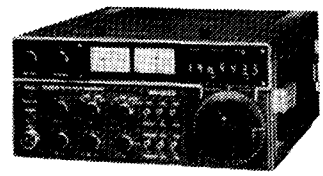

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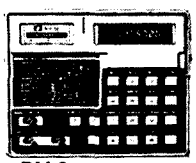

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LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

211 Hopetoun Avenue,
Vaucluse, Sydney, 2030.
25.9.1978

The Editor,
Amateur Radio.

Dear Sir,

I have had a certain amount of difficulty with my local Council regarding my application to erect an antenna on my own property.

I eventually submitted the plan as attached to this letter and you may if you so wish publish this plan if you think that it would be of assistance to other 'Hams'.

I also had an objection from a neighbour, I persuaded the neighbour to come in my car and took him to see a similar antenna (already erected), ha then withdrew his objection, so it would appear to be a good plan to show any objectors what the finished result looks like.

I trust that my experience will be of help to anybody contemplating the erection of an antenna in the future.

Yours faithfully,
Les Simons VK2NLE. ■

Erik W. Bierre VK2BEK
Apt. 8, 66-68 Florence St.,
Hornsby, 2077

The Editor,

Dear Sir,

Perhaps you may be interested in the following. About 6 months ago I received a letter from a young man in the U.S.S.R. He was about 26 years of age, married with a young daughter and he was a teacher of English in a smallish town.

He said he got my name and address from a U.S.S.R. ham I had worked and said he was anxious to have a pen friend in Australia.

Well, we passed several letters back and forth and I sent him a book of coloured views of Sydney. I sent it by air mail, but it was never received.

I then asked him in a letter if he would be allowed to receive a letter from me recorded on a cassette. He replied that would be fine and he would like to hear my voice.

So I recorded this — it was full of simple things about life in Australia — our Sydney climate — our wine industry etc. Then I said to him that as a radio ham I had many friends all over the world and frequently had long, interesting conversations with them. But when I contacted hams in the U.S.S.R., all I ever got was "thank you for the call, your signal is such and such a strength, my QTH is so and so, the box is so and so, Thank you for a FB QSO, please QSL". I said "it would be much more interesting if we could have longer conversations, is it that they are not allowed longer conversations? Or is it that they do not know any more of the English language?"

I sent this letter by air mail about four months ago and have never heard from him since. But yesterday, I received my tape back in the original packing. It had been opened by the U.S.S.R. authorities, tied up with string and the knot sealed with sealing wax with the imprint of U.S.S.R. on it.

Just the tape, nothing else. ■

Mount Victoria Police Station, N.S.W.
22nd September, 1978.

The Editor,
Amateur Radio,

Dear Sir,

On the 25th August, 1976, a Mrs. Thelma Clee, O.B.E., suddenly collapsed and died at her residence at Mount Victoria in New South Wales and this was at the time that telephone communications had broken down in most states.

At that time I was approached at the Mount Victoria Police Station to inform the relatives of the late Mrs. Clee of her death and at that time the Police Station was suffering also with a total communications breakdown.

The only communications I had at the time was my own Amateur Radio Station which is on the Police Station premises and as there were several States to be notified I called these states for assistance.

All messages were delivered via Amateur Radio to Police Stations in the States concerned and I would like to thank on behalf of Mr. Bill Clee of Mount Victoria, the husband of the deceased, and myself, to all amateurs who were involved in relaying these most compassionate messages, particularly VK7NFR, Fred VK2BLP, Laurie VK4UF, Doug VK4NGE, Reg. VK2PT, Allen VK2NHN/4, Vern and all other Amateurs that I have neglected to mention. Thank you most sincerely.

Yours Sincerely,
Paul Robertson O.I.C. VK2NIZ
Mt. Victoria Police Station, N.S.W. ■

16 Hilton Avenue,
Lakemba 2195.
August 31st, 1978.

The Editor,

Dear Sir,

Our VK2 Minibulletin requests operators to operate amateur equipment donated by a Sydney electronics firm and which would help promote AR.

By all means promote AR and my services are available to any worthwhile cause, but in this instance I would be operating "tongue in cheek".

The donor did a great deal towards flooding the market with CB radio, and I doubt very much any genuine interest in AR as such.

Am I a bigot? Only to the extent that I value the AR licence and oppose any means whereby it could be downgraded, and any publication which advocates and condones the illegal use of radio equipment.

Along these lines, Amateur Radio Action publication is lacking, and has already been the loser by not getting the full backing of a lot of amateurs.

What about that amateur who was set upon by those CB idiots? Did the WIA do anything to help?

Yours faithfully,
G. Lanyon VK2AGL. ■

The Editor,

Dear Sir,

I am 30 years old, technical engineer in metallurgy, working in a steel plant (Sidmar, Ghent), married, father of a son (2 years) and interested in radio amateurism. I am studying momentarily electronics and radio-electricity to undergo in September an examination to obtain a licence. I have still no equipment. Radio amateurism is exercised in Australia, too, and as I am interested in the Australian people, country and way of life, I should like to correspond with a radio amateur to exchange some books and periodicals; maybe we can make QSOs when I am licensed.

Yours faithfully,
Da Moor Marc, Vredestraat 13, B-9729 De Pinta, Belgium, Europe.

Marc's address is quoted if any of our readers would like to correspond with him.—Ed. ■

10 David Street East,
Springwood 2777
3rd September, 1978

The Editor,

Dear Sir,

Each year the Institution of Radio and Electronics Engineers in this State offers two Efficiency Pennants for competition by Radio Clubs registered with the WIA (NSW) Education Service. This arrangement has been "running" for many years with respect to the Youth Radio Service, which has now been incorporated into the wider Education Service framework.

Determination of the winning School and Non-School Radio Clubs is on the basis of "Efficiency Points" on a prescribed scale with points for each YRS Certificate, each Novice examination subject and each AOCP subject gained by Club members.

The Pennants earned for the 1977 Training Year by successful Clubs are: (I) Non-School Club — Blue Mountains Amateur Radio Club; (II) School Club—Marist Brothers High School, Eastwood.

Arrangements are in hand for representatives of these Clubs to receive them from IREE officers. Brother Cyril Quinlan (VK2ACQ) has been engaged in Youth Radio Service and Radio Club activities for many years and has conducted very effective School and Radio Clubs in various Marist Brothers' High Schools. The Blue Mountains Amateur Radio Club has been operating Novice classes ever since the introduction of this grade of amateur licensing, and conducted the very first Trial Novice examination in 1975. The Trial Novice idea "caught on" and now is a regular feature of the WIA (NSW) Education Service's programme.

Yours faithfully,
Rax C. Black VK2YA,
WIA (NSW) Education Service. ■

10 Milan Terrace,
Stirling, SA 5152
8/9/78

The Editor,
Dear Sir,

I had a crack at the Ch. 5A beast. I decided to use a different argument. I wrote to the Hon. the Minister and pointed out that Ch. 5A was not an international television channel. I also pointed out that many satellites used this frequency and listed a whole raft of them.

I told the Hon. gentleman that clobbering satellites was no way to win friends at home or abroad, and pointed out to him that his department had already messed up the FM band by using it for television, and suggested that it wouldn't be a good idea to repeat such an error.

Well, I got a reply which told me that these matters would be considered and a detailed letter would follow. It must have gone into the too hard basket because I have heard no more.

I have found that Government departments will do what they are going to do, no matter how absurd. The only thing that affects a politician is votes. Fears of losing that vast salary and fat pension produce immediate action. Nothing else counts. I hate to be a wet blanket, but that's how it is.

David S. Robertson VK5RN. ■

34 Toolangi Road,
Alphington 3078
17th September, 1978

The Editor,
Dear Sir,

In view of the problems connected with Novice examinations, the threat to the two metre band from Ch. 5A, the coming WARC conference and the growing pirate market for amateur equipment one would think there would be a strong incentive for all amateurs to get together to try to work out some answers to these threats to their continued existence. Unfortunately this does not seem to be the case.

A number of clubs in the Melbourne area have been meeting to discuss various matters affecting their interests. This in itself could ba a good thing except for the fact that they have rather pointedly avoided asking along any representative of the Victorian Division of the WIA. A recent meeting on the 16th September was fairly widely publicised as was the fact that on the agenda there was to be a discussion as to whether — in view of the growing numbers and strength of the clubs — the WIA was any longer necessary. Although I had not been invited I felt that, as club and zone co-ordinator of the Victorian Division of the WIA, I could at least turn up at the meeting and learn something of the feelings and perhaps offer some ideas on this particular matter.

When I arrived, however, I found that it was apparently to be a highly secret affair and, after some discussion, and a show of hands, and a casting vote by the chairman, I was kicked out of the meeting. I happen also to be a member of one of the clubs which was represented at the meeting, so it seems that not only anyone from the WIA but also the members of the clubs themselves are not allowed to know what their elders and betters are discussing.

It is rather pathetic to find that just when the WIA is shaking off some of its past weaknesses

and narrow attitudes, these seem to have been inherited by the clubs. It is hardly likely that the WIA will be affected in any way by a mild attack of megalomania among some of the leaders of a handful of local clubs, but it is most disheartening to see a cloak and dagger circus replacing what should be a co-operative effort to try to work out how each group could best play its part in working to help amateur interests — and they certainly need helping! — as a whole.

Sincerely,

Roy Hartkopf VK3AOH. ■

RTTY NOTES

The NSW RTTY group has been restructured to represent all the RTTY operators. Not only those in NSW but in all of Australia, and has been renamed "The Australian National Amateur Radio Teleprinter Society". It is thought that as a national society we can assist the amateur RTTY operators in Australia to become more active in the mode and to help them become more proficient with the modern technology.

We have been running a Sunday broadcast for the past year on RTTY. Broadcast number 52 was radiated on 3rd September. This is the only official RTTY broadcast in Australia and incidentally one of only four official RTTY broadcasts throughout the world. For the broadcast we use the recognised international amateur standards of 45.45 bauds and a shift of 170 Hz. There are other standards for other services, but as amateurs we use the world-wide amateur standards, which is only logical, and the international frequencies of 7045 kHz, 14090 kHz and 146.6 MHz at 0030 GMT on Sunday mornings and 3545 kHz and 146.6 MHz at 0930 GMT on Sunday evenings.

With the use of these frequencies we have a complete coverage of Australia and the surrounding islands which of course makes us very happy. We have had requests for permission to re-broadcast the news on other frequencies. This matter is being looked into and as soon as formalities are completed it is possible that there will be a rebroadcast of the RTTY news in each capital city. The society feels that this would assist all members, not only in receiving the news, but to adjust their equipment to the correct amateur standards.

In NSW two RTTY repeaters are in the process of being activated, one in Newcastle and one in Sydney. Both these repeaters will be able to be used for the rebroadcast of news but they will also provide a standard signal for line-up of equipment. Neither of them will accept Phone or CW signals.

There are now well over 250 amateurs actively interested in RTTY throughout Australia. Most of them have become interested over the past 12 months though a great number seem to be only interested in receiving and not transmitting. But it is hoped that in the near future more will start transmitting. We need more signals on the air to make our presence felt. Just because you cannot type, or type fast, is not a good excuse. We all had to learn to type and the only way to find out where the keys are is to use them. The more that you use them the better you will become. You will find that the chaps on the air will be very patient with you and will help you in all kinds of ways to improve your typing. The act of getting on the air and using the keys is the start to good typing. We know that you are in there listening, so why not get on the air and let us all hear you.

By the time you read this the VK/ZL/Oceania RTTY contest will be over. We hope that you sent in an entry, be it ever so small, for every entry counts. It was our first venture in the RTTY contest field and we hope that we will be able to make it a yearly event and that you will all come to the party and help us make it a big contest. But it is over for this year and the results will be available early in 1979. If it was your first contest and you had some fun and a lot of experience, well there are more to come. Every time you have a contact or enter a contest you are gaining experience, your operating technique is improving, and after all that is what it is all about. If you did have a contact during the contest, please let us have your log, if for no other reason than it can be used as a check log to see that all entries are correct.

The next contest for this year is the WAEDC European contest which will be held on the 11-12th November. The operating times are 0000 GMT Saturday to 2400 GMT Sunday. Operations on all bands 3.5 MHz to 28 MHz. Though the contest is for 48 hours you are not permitted to operate for more than 36 hours. The 12 hour rest period may be taken over one but not more than three rest periods and all rest periods must be marked on the logs. Exchange of number is RST plus three figures for the QSO number, thus 599-001 for the first contact. Also there are extra points for QTC exchanges. QTC is the report of a previous QSO to a European station that you are working. As each QSO can only be reported once a different QTC must be sent each time. A maximum of 10 QSOs may be sent in each QTC. Each QTC must be in sequence. Thus when sending a QTC you must indicate QTC 3/7, that is, QTC number three and has seven QSOs reported. Score one point for each contact and one point for each QTC reported, multiplied by the number of countries that you have worked on each band. Only one contact is allowed with each station on each band. I know that it all reads very complicated but when you get into the contest and see what the other chap is doing it will all work out for you.

And finally the society has kits for demodulators, modulators, filters and other kits for RTTY work. So if you are interested please contact the society at 14 Atchison Street, Crows Nest, Sydney, and ask for information about them. If you wish to receive the newsletter of the society please forward two dollars to the above address and you will receive the newsletter every two months.

S. E. Molen VK2SG,
Broadcast and Publicity Officer ANARTS. ■

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Syd Clark, VK3ASC

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SHORTWAVE June 1978
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The Magazine Index is very short this month due to the delay of magazine arrivals attendant upon the wharf strike. ■

QSP

STATISTICS — AMATEUR STATISTICS
The 30th June 1978 comprehensive statement issued by the P. & T. Department shows 9400 licensed radio amateurs in Australia. This is 1577 more than 30th June 1977. Leaving aside 22 stations licensed in the external Territories (20 full, 1 restricted and 1 Novice) full licences totalled 5369 (up from 5000), limiteds 2669 (up from 2362) and Novices 1320 (up from 4148). The number of stations in each State was (figures in parentheses are full, limited and novice in that order) — N.S.W. 3312 (1924, 821, 567), Vic. 2615 (1459, 902, 254), Qld. 1071 (605, 341, 125), S.A. 1054 (567, 301, 186), W.A. 706 (429, 177, 100), Tas. 321 (186, 91, 44), A.C.T. 204 (147, 36, 21) and N.T. 95 (52, 20, 23). ■

1979 SUBSCRIPTIONS

- **WIA Members are reminded that 1979 Subscription notices will be mailed out during December.**
- **1979 is the year of the great WARC when amateur radio and the WIA will need every ounce of support — so please arrange early payment of 1979 subscriptions when you receive the notice.**
- **Members wishing to be re-graded as pensioners — write NOW for clearance — write to your Division NOW.**
- **New members joining in 1978 — you will receive a notice for a pro-rata amount to render you financial to 31st December 1979. Early payment of this will avoid problems with AR.**
- **All members are reminded that AR address labels will be automatically suppressed for those still remaining unfinancial after a short period of grace.**
- **ADDRESS CHANGES, CALL-SIGN CHANGES, OTHER CHANGES: Write NOW to WIA, Box 150, Toorak, Vic. 4132, advising all changes—please do not wait for subscription notice to reach you.** ■

HAMADS

- Eight lines free to all WIA members. $9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

FOR SALE

Transceiver SSB/CW, 10-11-60 metres, solid state, 250 watts PEP input, 240 volt AC or 12 volt DC operation, Dynamic mic. included and inbuilt speech processor installed in transceiver, de luxe mobile mount and 12 volt cable, owner's manual included, new. Complete electrical noise suppression kit for car, boat supplied with transceiver, type Hallicrafters FPM 300 Mk. II, late model, made in USA, excellent condition, $495; also solid state amplifier, 3-29.5 MHz, receiver pre-amplifier built in, switchable, 8 watts PEP drive, 160 watts PEP output, usese pair Motorola MRF 453 rugged high power transistors, 12 volt DC, new, made in USA. $200. VK2JO. Ph. (02) 36 7756. Write PO Box 505, Bondi Junction 2022, NSW.

Hygain 204BA 20m full size Vagi, 4 elements, 26 ft. boom, good cond., 3 yrs. old, $165. B. Bathols VK3UV, QTHR. Ph. (03) 90 6424 A.H.

Yaesu FRO 7 Rx, with manual, as new, $250. VK2BIW, QTHR. Ph. (02) 27 6432 Bus., or (02) 449 2198 A.H.

Realistic AX190 Rx, amateur bands, 3.5-29.5 MHz; also CB band, new cond., $200. VK2ZXK, QTHR. Ph. (02) 602 3245, evenings only.

Yaesu FT301D Tcvr, complete with all filters; Yaesu FP301D, de luxe power supply with ID, etc.; Yaesu FV301, external VFO; Yaesu mobile cradle for 301 Tcvr; all for $1,125, ONO. VK4NDE, QTHR. Ph. (07) 341 4767.

TS-520, in good cond., all accessories and original carton, $570. Richard Cowles VK2NBN, QTHR. Ph. (02) 699 9403, after 6 p.m.

FT101 160m thru 10m, incl. 11m xll mike, fan, English and Jap manuals, excellent order, $525; ART 13 with genemotors, cables, etc., any reasonable offer. VK2LH, QTHR. Ph. (02) 456 2027.

ICOM IC202 2m SSB Transceiver, mint cond., with small solid state linear and RF preamp, $175. VK2BHH, 8 Ida Street, Hornsby, NSW. Ph. (02) 476 2818.

Unemployment forces sale of complete station in mint cond., complete with original cartons and manuals. Drake TR4C with spare new finals, $700; RV4C remote VFO, $150; 34PNB noise blanker, $100; AC4 power supply, $150; Yaesu FRG7 Rx, $300; KW107 super match, $200; Mosley TA33, $150; Drake TV3300 low pass, $25; Shure 201 mike, $15; Tech Trapider GDO, $45; mike mixer pre-amp, $10; VK2ASH, QTHR.

Morse Code Cassettes, C60s, beginners up to 12 words/min. Interstate agents, enquiries welcome. Graeme VK3ZR, QTHR. Ph. (03) 89 4645.

HC500 Antenna Tuner, 80-10m, still in box, mint cond., handbook, $100, ONO. VK2BBD, 128A Booralie Road, Duffys Forest 2084. Ph. (02) 450 2026.

TS520, mint cond., manual, best offer. VK2AXR, QTHR. Ph. (02) 44 1389.

Swan MB80A Miniature Transceiver, 160W input, all solid state, ideal for 80m mobile/portable/home station, $270. VK2AVQ, QTHR. Ph. (02) 88 2359, A.H.

TS520S Digital Readout CW Filter, DC-DC converter, D104 desk mic., $950. Dave VK2NGB, QTHR. Ph. (02) 604 4241.

Yaesu FV101B VFO $110; YP150 Dummy Load Wattmeter $95; SP101 ext. loudspeaker. All suitable FT101E. Also FT7 Tcvr $485. All as new, including manuals and original cartons, absolute mint condition. VK7NAB. Ph. (003) 31 7914 — Launceston. Genuine offers only.

FT101E Tx (latest type: front panel processor level control plus 600 Hz CW filter, little use, exc. cond., orig. packing, $825 ONO. FR-101D digital Rx, 160m-2m ham bands plus CB plus SW BC bands, separate AM, SSB, FM and CW filters, exc. cond., orig. packing, $1100ONO. Hygain 18AVT/WB vertical, 60m-10m, with radials, $110. Or $1950 the lot, incl. cables, LP filter, key, etc. Going o/seas. Alan Beagley VK4NDV. Ph. (07) 371 1611 bus.; (07) 370 8343 A.H.

Ken KP202, fitted Ch. 40, 50, R2, 4, 6 and 8, spare crystals for R7, complete with nicads, charger and helical ant., $150. VK1CDR. Ph. (082) 66 3855 bus.; or (062) 47 4104 A.H.

Yaesu FRG7 Rx in mint condition, $300. VK3ZJE, QTHR. Ph. (03) 90 1166.

ZL Repeater Xtals, complete set for chans. A, B, C, D for Ken KP202, hand-held FM transceiver, $32. Jim Preston VK6JP, QTHR. Ph. (09) 364 1779.

Teletype model FRXT4, combined typing reperforator/transmitter distributor in one unit, no cover, $65. Teletype model 14 transmitter/distributor, $35. Both set to 45.45 baud. Can be set to 50 baud on request. Steve King VK3ZY, QTHR. Ph. (03) 277 4748.

Novice Station — Yaesu FL50 Tx, FV50B VFO, xtals, spare tubes, $170 ONO. DX160 Rx, as new, $150 ONO. M. Hooper VK5ZMA&NMH. Ph. 08) 337 9643.

Tandy TRS-80 Microcomputer and Power Supply. Exc. cond., in orig. carton, instr. book and tapes, $490. David VK2NOB. Ph. (02) 476 1048.

Icom IC701 Deluxe 200W Tcvr and matching power supply, the whole only 4 weeks old, still in carton, features dual VFOs, SWR meter, desk mike, digital freq. display and full broad band automatic tuning. Price Tcvr, $1125; power supply, $225 ONO. Steve VK4NHN. Ph. (07) 273 1388.

Yaesu FTDX100 Transceiver, inbuilt power supply 240V AC/12V DC, fully solid state except for driver and final tubes, excellent condition, C/W all cables, plugs, microphone and manual, $460. G. Gaspars VK3AAU, QTHR. Ph. (03) 651 1360 bus., (03) 725 7970 A.H.

Kenwood TS820S 160m-10m transceiver with digital frequency readout, perfect condition, including desk mic. and service manual, $1150. L. MacDonald, 317 Eureka St., Ballarat, 3350. Ph. (053) 31 3166 (09.00-17.00h weekdays).

FT101E, good cond, $725; Standard SCR146 2m hand-held and SCR430 70cm handheld, plus charger and nicads, aerials, manuals, $400 the lot; Cannon telephoto lens 25-100mm, C-mount TV camera lens. Lionel VK3NM, QTHR. Ph. (03) 88 3710.

Collins 75S-2 Rx with NB, CW filter, extra xtals, $420. John Fluke Mod. 910A true RMS wattmeter, 10 Hz to 7 MHz, $85. VK1VP, QTHR. Ph. (062) 48 5882.

Dentron 80-10AT Random Wire Antenna Matcher, $70. Len VK2NYE. Ph. (046) 77 1484.

Kenwood TR7200G VHF/FM Transceiver, complete with all accessories and English instruction manual, crystals for Channels 8 and 50, in perfect order, unit has never been used as mobile, $135. Ross Treloar VK2BPZ. Ph. (02) 239 5267. office hours.

Swan Transceiver, model 240 Mk II, 80-40-20, VFO, USB-LSB-AM, with mic. and spare valves, $150; plus external matching 240V power supply with additional VFO, VOX and 100 KC marker, $100; plus mobile Swan DC power supply, $75; or the lot for $250. All in excellent condition and appearance, with service manual and original carton. VK2LX, QTHR. Ph. (043) 96 4231.

Mosley TA33 JR. 3 element, 20-15-10 metre beam, had little use, complete, ready to erect, $100; BSR stereo turntable, diamond stylus, mounted on 5-ply base, good condition, $20; four 15 ohm, 10W 8 in. (2 round, 2 oval) twin cone speakers, $6 ea. or $20 for 4. VK2BDB, QTHR. Ph. (02) 546 2163, Blakehurst.

Yaesu FT75B HF Transceiver, one xtal each band, DC75, DC supply, FP75B AC supply, FV50 VFO, mobile mounting bracket, manuals, excellent condition, $420; Homebrew 70A slow scan TV monitor, P26, 9 inch tube, W6MXV scan converter, $350 ONO. Allan VK2GR, QTHR. Ph. (02) 47 4344.

Swan 250 Transceiver and remote VFO with PSU $400; 6 Mtr linear amp. TB/750 final and PSU, $100; C42 transceiver with PSU, $50; University valve tester, $10; two Selson motors, offers; RAAF wing flap motor, offers; MK3 Pye carphone on 53.1 MHz, $10; home brew phasing exciter SSB 6-2 Mtrs and matching linear amp. QQEO/40 finals, $100; 6 Mtr 6 element yagi, as new, $40. Many new and used valves, some hard to buy, offers. Estate late VK5ZKW. Contact G. Schlementz. Ph. (088) 52 1447, 8-5 p.m., Mon.-Friday.

Icom IC701 and matching AC supply, IC701PS, in original mint condition, includes condenser, desk mic., manuals, etc., only one month old, $1395 for both, air freight anywhere in Australia. VK3TK, QTHR. Ph. (03) 311 2363.

Communication Rx, Realistic SX190, covers 500 kHz portions of the 80, 49, 40, 31, 25, 20, 19, 16 and 11m bands, plus 2 additional xtals supplied for increased coverage, with owners manual and matching external speaker. Price $175 or near offer. Ideal SWL Rx Creed Model 7B teleprinter, VGC, $65. W. Babb. Ph. (03) 337 4902.

Forest Phone (AWA), good working cond., converted to 160m, 1.825 MHz, AM, 10W RF output, $90. John VK3BJE, QTHR. Ph. (03) 435 4599.

Bearcat Model 210, 5 band programmable VHF/UHF scanning Rx, mint cond., $370. Ph. (03) 232 9616, A.H.

Bendix Frequency Meter BC221AK, Aust. version with built in AC/DC power supply, as new cond., $80; Swan 500, the famous one, complete with the Aust. heavy duty power pack (AC), 480W PEP, 80 to 10, original unmarked cond. and a proven top performer, with manual, $480; Heath HW32 20m transceiver, 200W PEP, HB PS, excellent performer and cond., manual, $275; TV camera power supply, RCA mod. WP168, M1-26094B, solid state regulated, metered max. 350V at 2A, A1 order, $35; Bendix power supply MP28B, large genemotor, 540V, 450 mA, regulated and remote control with modulator 6N7 6F6 PP807, $25; Western Electric genemotor, 12.5V to 625V at 225 mA, $10; Inverter, 12V to 240 AC, 250W, goes well, $80; Europa transverter, new, 28 MHz to 144 MHz, sensitive Rx and 200W PEP output, an economical way to get on 2m sideband for the coming DX season, $200. VK3DS, QTHR.

FT75B, FP75B, DC75B and FV80C (VFO), $500 ONO; AR22 rotator, $55 ONO; National AM FM SSB, 5 band portable AC DC receiver Model RF1150LB, $125 ONO. VK4NAX, QTHR.

For Novice and Full Call Candidates. The best and cheapest morse practice tapes — only $2 posted. Write mentioning morse speed to WIA (NSW Div.) Morse Service: F. Santos VK2BYJ, 8 Cooper Street, Blacktown 2148.

WANTED

Broken Kyokuto or similar Tx in any condition. Richard Cowles VK2NBN, QTHR. Ph. (02) 699 9403, after 6 p.m.

TR10 9R-59DS Communication Rx in good operating condition, any reasonable price. Considered details to Tony Juttner, Yuendumu, via Alice Springs 5751, NT.

R1155, BC348 and 1674, any parts, sub-assemblies or ccts., also ch. 6 Rx xtal lor 1674. Replies to Dave Morrell VK5NDM. Ph. (08) 225 6647, Bus., or (08) 44 4226 A.H.

HF Transceiver FT200 or FTDX401, etc., together with matching power supply, external VFO also considered; a good price is offered for a good rig. Peter Bottrell L60257, QTHR. Ph. (09) 330 4975 A.H.

Valve Comm. Rx, reasonable sensitivity and selectivity, covering all HF amateur bands. Details to Adam Carter VK5NKA, 8 Swan Street, Brighton, SA 5048. Ph. (08) 298 2788.

Circuit and Tune-up Instructions for RCA AR88(LF) receiver, will arrange photocopying if necessary. VK2ZJF, QTHR. Ph. (02) 969 4539.

Dual Gang Transmitting Capacitor, 250 + 250 pF, 0.075 in. spacing. VK5HC, 10 White Street, Millicent, SA 5280.

Yaesu FL2100B Linear Amplifier or equivalent, for use with TS520. "Bill" VK3BAV, QTHR. Ph. (03) 598 8665.

6m SSB Transceiver FT820B or similar. Lionel VK3NM, QTHR. Ph. (03) 88 3710.

Magazines, Past Copies of AR (before 1960) and Radio, Television and Hobbies (before 1952). VK3BCC, QTHR. Ph. (03) 561 1151.

HT32 Transmitter. Price and condition. VK3ACN, QTHR.

Noise Bridge in any condition, preferably Omega-T Type TE7-01. Bob Slutzkin VK3SK, QTHR. Ph. (03) 527 1861.

SR-C146 or Ken KP202 hand held transceiver including charger; Swan 700CX inc. power supply; Telescopic ower in good order. Price and paricu-lars to VK3GM, QTHR. Ph. (053) 49 2490.

Dick Smith or similar 10 or 11 metres to 80 metre transverter, 30 watt PEP linear amp., 10 metres or similar. Details required. VK4NAX, QTHR.

For all Novice Candidates. The revised (600 new questions) and commercially printed new edition of text of 1000 questions for Novice licence candidates. Written to suit new official Novice syllabus. $3 post paid. WIA (NSW Div.) Education Service, PO Box 109, Toongabbie, 2146.

EXCHANGE

Drake 2B Rx and Hammarlund HX80 Tx, exchange for a good quality general coverage Rx .5-30 MHz, incl. SSB reception and good bandspread. VK3ACD, QTHR. Ph. (058) 21 2484.

TRADE HAMADS

XITEX "Glass Teleprinter", needs only a keyboard and TV set to originate and display 16 lines of 64 chars; switchable for 45.45 Baudot-110/300 ASCII, 20 mA or TTL interface; full U/L and Greek chars in ASCII mode, addressable cursor; feed on-board PSU 9-12V AC or plug into an S-100 slot; micro computer controlled pre-programmed; full kit, $169, including delivery and sales tax; suitable keyboard kit. $70. From The Micro Shop, Box 207, Gawler, SA 5118.

Trying to sell your gear? Let us help you in the next issue of Dalcom's Amateur Equipment Listing. It's read by people wanting to buy gear like yours. For details write to PO Box 37, Fisher, ACT 2611.

Want something specific? You could find it in the current issue of Dalcom Electronics Amateur Equipment Listing. For details write to PO Box 37, Fisher, ACT 2611.

Position Vacant — Technician with good experience solid state audio equipment and a knowledge of RF transmission required as technical assistant at a progressive provincial broadcasting station. Successful applicant will be encouraged to aim at securing broadcast operator's certificate of proficiency. Apply "Technician", P.O. Box 1885, Brisbane.

QSL cards, log books, contest log sheets. Send a 20c stamp for samples and prices to Linda Luther VK4VV, P.O. Box 498, Nambour, Old. 4560.

OBITUARY

KEN GILLESPIE VK3GK

Ken passed away on 23rd Sepetmber, 1978, after suffering a long period of illness.

Ken was one of the "younger" old-timers, and he saw active aarvice with the Merchant Navy in World War II as a ship's radio operator.

He later joined the Victorian Railways as a signaller but retired early due to ill-health.

He was an excellent CW operator and an avid home brewer.

Ken, who was well known lo many of Australia's amateurs, will be remembered for his active involvement with Institute affairs.

For over 12 years Ken was associated with the publications committee ol Amateur Radio magazine and his talents as a drafts-man were widely known.

In recent years, Ken's health de-teriorated, however he still attended the monthly committee meetings in an advisory capacity.

He was active on the committee up to time ol his death.

One of Ken'a greatest achievements was in the operation of and his total dedica-tion to the Melbourne Science Museum's Amateur Radio Station VK3AOM.

Ken was one of the driving forces behind the original installation and daily function-ing of the station. He enjoyed meeting members of the public and promoting amateur radio.

Ken often mentioned the lack of volun-tary assistance given by ether amateurs in helping to maintain the daily operation of the station, and one ol his last requests was that we bring to everyone's notice the importance of this station.

It is often said that no one is irre-placeable, and this statement la quite true, but in Ken's case from his most active association with the Institute, the job will be that much more difficult.

On behalf of the WIA Executive, the WIA Victorian Division, and the AR Publications Commmittee, we extend our deepest sym-pathies to Ken's wile and family, and to all who were associated with him.

Bruce Bathols VK3UV

In accordance with Ken's request, If any amateurs can offer some aaaistance for a short period of duty each month at the Melbourne Science Museum Station VK3AOM, please contact Paul Tozer VK3AAQ, Ph. (03) 299 1489, or the Vic-torian Divialon Rooms (Ph. (03) 41 3535), 412 Brunswick Street, Fitzroy.

SILENT KEYS

It is with deep regret thal we record the passing of —

Mr. J. HARVEY	VK4ZJO/NJH
Mr. W. H. PETERSON	VK8LW
Mr. R. W. S. HUGO	VK6KW
Mr. K. L. GILLESPIE	VK3GK
Mr. L. F. CLARK	VK7CK

LEOPOLD FRANCIS CLARK VK7CK

Radio amateurs around Australia and In-deed in many countries throughout the world will be seddened to hear of the sudden passing of Leopold Francis Clark, VK7CK. "Poley" as he was known, died at his home at Lanena on the Tamer River in nolhern Tasmania on September 15th, 1978. He was aged 77.

To my knowledge, Poley received his AOCP in early 1932 and was active from his home al Upper Netone on the North West Coast where he was engaged in ferming.

It was this location that Poley con-structed and operated his own electricity supply by harnessing the watere of a small creek on the property and using a small water turbine coupled to an ASEA alternator.

This electricity supply wes used to power machinery on the farm and also to run the various rigs that Poley used At this time, the antennas used were mainly long wires and end led arrays.

Polay was a member of the Old Timers Club and had travelled extensively through-out the world meeting his radio contacts in person. His operation on the bands identified him as one of the gentlemen of the air, kind and courteous and always more than ready to assist his fellow ama-teurs and newcomers to the band.

To Poley's wife Etta and to all the members of the family, we extend our deepest sympathy.

M. O. Burleigh, VK7JU ■

ADVERTISERS' INDEX

WE'VE A LOT IN STORE FOR THE AMATEUR

YAESU

NEW incredible CPU-2500RK 2M unit. The best 2M FM unit in Australia today! Hi/lo power 25/3 watts, full up/down scanner, 4 memories and full keyboard entry. See it in action today! Cat D-2889 $575.00

FT-227R 2M synthesized. Cat. D-2890 $395.00

FT-227RA with up /down scanner. Cat. D-2891 $445.00

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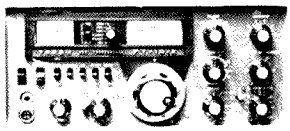

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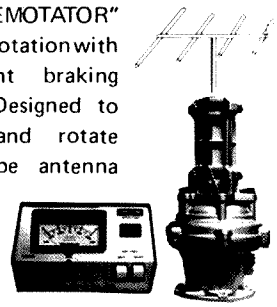

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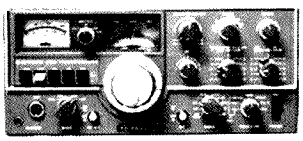

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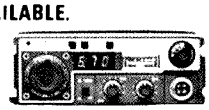

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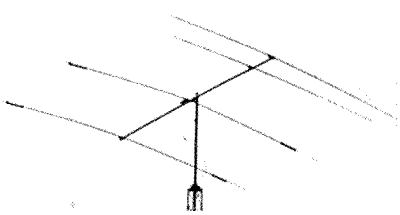

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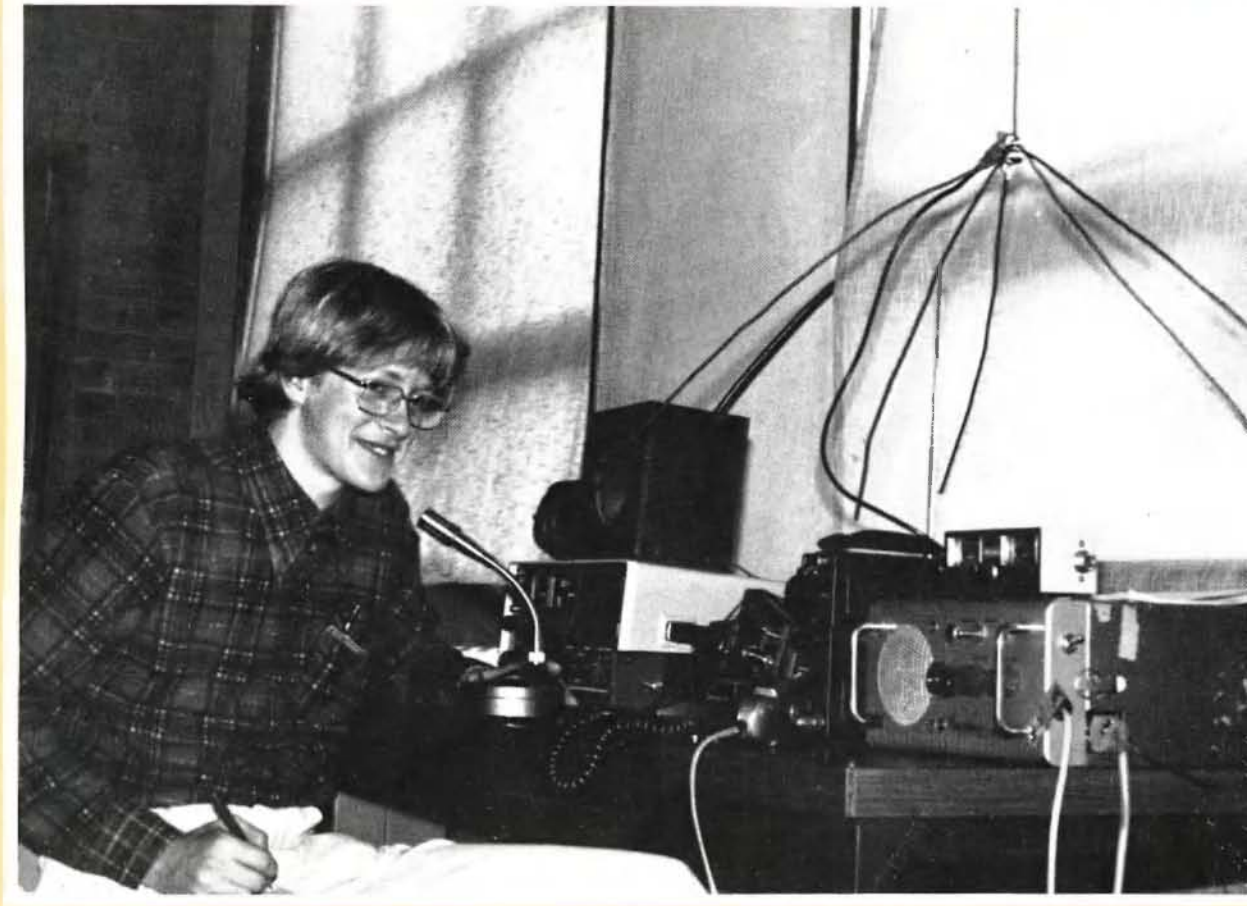

VOL. 46, No. 12 DECEMBER 1978

SPECIAL NOVICE ISSUE

COVER PHOTO

Michael Goard VK2ZNV operating portable at the amateur radio week-end held at Katoomba in July, and organised by the WIA Education Service incorporating the Youth Radio Service. Sixty newcomers were introduced to amateur radio.

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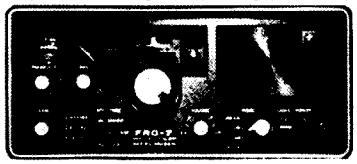

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DECEMBER 1978
Vol. 46, No. 12

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VK7 Mr. P. D. Frith VK7PF

Staff: Mr. P. B. Dodd VK3CIF, Secretary.
Part-time: Col. C. W. Perry, Mrs. J. M. Seddon and Mr. P. Simmons (AR advertising).

Executive Office: P.O. Box 150, Toorak, Vic., 3142. 2/517 Toorak Rd., Toorak, Ph. (03) 24 9652.

Divisional Information (all broadcasts are on Sundays unless otherwise stated):

ACT:
President — Mr. E. W. Howell VK1TH
Secretary — Mr. Ted Radclyffe VK1TR
Broadcasts— 3570 kHz & 146.5 MHz: 10.00Z.

NSW:
President — Mr. D. S. Thompson VK2BDT
Secretary — Mr. T. I. Mills VK2ZTM
Broadcasts— 1825, 3595, 7146 kHz, 28.47, 52.1, 52.525, 144.1, Ch. 8 and other relay stations: 01.00Z. (Also Sunday evenings 09.30Z and Hunter Branch, Mondays 09.30Z on 3570 kHz and ch. 3 and 6).

VIC.:
President — Mr. E. J. Buggee VK3ZZN
Secretary — Mr. J. A. Adcock VK3ACA
Broadcasts— 1825, 3600, 7135 kHz — also on 6m, 2m SSB and 2m Ch. 2 repeater: 00.30Z.

QLD.:
President — Mr. A. J. Aarsse VK4QA
Secretary — Mr. W. L. Glells VK4ABG
Broadcasts— 1825, 3580, 7146, 14342, 21175, 28400, kHz; 2m (Ch. 42, 48): 09.00 EST.

SA:
President — Mr. C. J. Hurst VK5HI
Secretary — Mr. C. M. Pearson VK5PE
Broadcasts— 1820, 3550, 7095, 14175 kHz; 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.

WA:
President — Mr. L. A. Ball VK6AN
Secretary — Mr. P. Savage VK6NCP
Broadcasts— 3600, 7080, 14100, 14175 kHz, 52.656 and 2m (Ch. 2): 01.30Z.

TAS.:
President — Mr. I. Nicholls VK7ZZ
Secretary — Mr. M. Hennessy VK7MC
Broadcasts— 3570, 7130 kHz: 09.30 EST.

NT:
President — Dick Klose VK8ZDK
Vice-Pres. — Barry Burns VK8DI
Secretary — Graeme Challinor VK8GG
Broadcasts— Relay of VK5WI on 3.55 MHz and on 146.5 MHz at 2330Z. Slow morse transmission by VK8HA on 3.555 MHz at 1000Z almost every day.

Postal Information:
VK1 — P.O. Box 46, Canberra, 2800.
VK2 — 14 Atchison St., Crows Nest, 2065 (Ph. (02) 43 5795 Tues & Thurs (10.00-14.00h).
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 3535 Sat 10.00-12.00h).
VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton (Ph. (08) 254 7442).
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (incl. with VK5), Darwin AR Club, P.O. Box 37317, Winnellie, N.T., 5789.

Slow morse transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

VK QSL BUREAUX

The following is the official list of VK QSL Bureaux, all are inwards and outwards unless otherwise stated.

VK1 — QSL Officer, G.P.O. Box 1173, Canberra, A.C.T. 2601.
VK2 — QSL Bureau, C/- Hunter Branch, P.O. Teralba, N.S.W. 2284.
VK3 — Inwards QSL Bureau, Mr. E. Trebilcoek, 340 Gillies Street, Thornbury, Vic. 3071.
VK3 — Outwards QSL Bureau, Mr. R. R. Prowse, 83 Brewer Road, Bentleigh, Vic. 3204.
VK4 — QSL Officer, G.P.O. Box 638, Brisbane, Qld., 4001.
VK5 — QSL Bureau, Mr. Geo. Luxon VK5RX, 203 Belair Road, Torrens Park, S.A. 5062.
VK6 — QSL Bureau, Mr. J. Rumble VK6RU, G.P.O. Box F319, Perth, W.A. 6001.
VK7 — QSL Bureau, G.P.O. Box 371D, Hobart, Tas. 7001.
VK8 — QSL Bureau, C/- VK8HA, P.O. Box 1418, Darwin, N.T. 5794.
VK9, 0 — Federal QSL Bureau, 23 Landale Street, Box Hill, Vic. 3128.

QSP

NORTH POLE AMATEUR

The first person ever to make it to the North Pole alone is a radio amateur . . . and amateur radio helped to make the achievement possible!

Naomi Uemura JG1QFW, who encountered marauding polar bears and other hazards along the way, reached his destination at the top of the world by dog sled on May 1, 1978. Working in close co-operation with the operators of VE8RCS, at Alert, Northwest Territory, and a nearby base camp station manned by another Japanese amateur, Yuko Tada JG1FOA, members of the National Capitol DX Association of Washington, DC, maintained daily schedules in support of the expedition over a 59-day period without a miss. Traffic handled for the expedition included weather forecasts, messages dealing with broken equipment and arrangements for re-supply flights. After a few days on the ice at the North Pole, Naomi returned to Alert by air, visited VE8CRS and took part in one of the schedules from there. He spoke with expedition supporters, received congratulations from dignitaries around the world, worked each member of the NCDXA who had participated in the series of schedules, and generally livened up 20 metres.

From IARU R2 News, August 1978. ■

MESSAGES THROUGH THE EARTH

According to W2HR's editorial in Ham Radio, June 1978, a group of atomic physicists predicts that some time this year the first message will be transmitted through the earth, rather than around it, along a beam of neutrino particles from a particle generator. In experiments with the 400,000 million-electron-volt proton accelerator in Illinois a 20 microsecond pulse of protons directed into a bar of aluminium yields about 10,000 million neutrinos per pulse resulting from atomic collisions The beam of neutrinos generates about one reaction per pulse in a bubble chamber containing 25 tons of liquid neon one kilometre away. The average neutrino is capable of passing through most of the matter of the universe without slowing down or losing any of its energy. When a beam of neutrinos is passed through a large volume of water, all along its path some of the collision products emit a forward core of Cerenkov photons which can be detected by a light collector-phototube system. Billions of neutrinos from the sun pass through your own body every second, day and night, but an estimate puts about once in 10 years as the interaction with one of the atoms in your body. ■

SLOW MORSE QRM

The VK5 broadcast was about to begin "This is VK5WI about to commence the evening slow morse session, get your pens ready." Then Big Carrier right on frequency "Stand by" says VK5WI, just above the carrier, pause, more carrier, tune up, tune up, so it goes on. After some minutes in sheer exasperation VK5WI says "O.K. If that's what you want, this is VK5WI closing down". Who can blame him!

From SWARS "Feedback" 1978 Convention Issue. ■

CORRECTION

Custom Communications apologise for any misunderstanding caused by their October advertisement. They are distributors for Kenwood, and Sole Australian Agents for Swan. ■

QSP — TOWARDS YOUR FUTURE

The International Radio Consultative Committee (CCIR), the technical consultative committee of the ITU, has been given the task of carrying out the necessary technical studies and organising a Special Preparatory Meeting (SPM) to prepare a report providing technical bases for the WARC 1979 and for the use of administrations in preparing their proposals.

It must be stressed that the SPM can only concern itself with technical considerations, and cannot make specific proposals for revised or new allocations. It is intended that the SPM shall present a comprehensive and self-contained report consistent with the various Agenda Items of the WARC.

Many administrations see the SPM as an important stage in the evolution of the ultimate determinations of the WARC.

Australia has regarded the SPM as being of particular importance and will be host of a Regional Seminar arising from the SPM in the first half of next year.

Australia has submitted a paper to the SPM relating to the Amateur Service. Canada and the United States of America have also submitted papers dealing with the Amateur Service. The Australian paper contends that it is no longer necessary to preserve a harmonic relationship between bands allocated to the Amateur Service and that the communication capability, and therefore operational effectiveness. of the Amateur Service in the HF bands would be significantly enhanced by allocations at intervals of 3 to 4 MHz between 3 and 30 MHz.

The WIA was invited to provide a delegate as a member of the Australian Delegation to the SPM so that expertise as to the particular requirements of the Amateur Service would be available.

Thus, Dr. David Wardlaw will be a member of the Australian delegation for the first two weeks of the SPM, and Mr. Michael Owen for the remaining two weeks.

The Federal Council at the last Federal Convention accepted the importance of the SPM and budgeted for the costs associated with amateur members of the Delegation. These costs must be borne by the WIA.

The SPM therefore represents a further heavy cost associated with the WARC, but a cost that It is believed is more than justified. Let it never be said in the years to come that the WIA failed to respond to the challenge of the WARC.

D. A. WARDLAW VK3ADW, Federal President
M. J. OWEN, VK3KI, IARU Liaison Officer ■

EDITOR'S DESK

Bruce Bathols VK3UV

One wonders why the end of the year always seems to come around so quickly.

It seems almost only like last week that we put together our December 77 issue "Australia's Window on the World".

Anyway, here it is again — Christmas and New Year — and what have we got to show for it?

Well, let's re-cap a little —

Things went along quietly for the first couple of months, then away we went:

We had our Novices using VFOs, next an extension to the Novice segment of 80 metres.

Several joint P&T/WIA committee meetings were held, the system is working smoothly and with each group appreciating the other that much better and ironing out many problem areas.

Renewed interest in respect of Channel 5A has kept a lot of amateurs on their toes — but there is still a long way to go.

Oscar 8 was launched and performing as it should, and adding extra enthusiasm to our hobby and investigations.

The introduction of RTTY sections in Australian contests has opened up further fields.

Participation in contests, particularly the RD, has been an all time high.

Jamboree of the Air was a huge success with over 3000 scouts and guides taking part.

A proposal for opening up the UHF band for ethnic TV, and proliferation of UHF CB will undoubtedly cause further pressures on amateur operations in that area.

The VK8 boys just missed out on setting a world record on 2 metres earlier this year — will they crack it in the coming DX season?

And so on it goes, amateur radio never stands still, there is always something new to keep one's interest held.

With this issue of AR, we have selected some articles which we hope will be of interest in particular to our many hundreds of up-and-coming and existing Novices, and also for all our other readers.

We have designated this issue our "Special Novice Issue" and have arranged for several hundred extra copies to be printed and be made available to the general public.

The extra copies are available from selected retailers, and also from the WIA, PO Box 150, Toorak, Vic. 3142.

The price for this issue only is $1.20 PLUS 50c posted, the higher price being to offset the greater publication costs involved.

If you require an extra copy — say as a Christmas gift — please place an order now.

WHAT NOW OF NEXT YEAR — 1979?
The main items at this stage are Channel 5A and UHF TV and of course the WARC in September.

The WIA needs all of the support **YOU** can muster, don't just sit back and let your over-worked Divisional representatives carry the brunt — **GET IN THERE AND HELP!!** — You know what is required and we are only working for all of us.

If Amateur Radio is to continue to survive, it needs **YOU** to get behind it and give it that extra push — in other words — **GET YOUR HEAD OUT OF THE SAND.**

With those few words, the Publications Committee and Executive extend our Christmas and New Year greetings to all. ■

WIANEWS

ITU/WARC 79 FUND

A letter has been sent to each non-member licensed amateur in the call book records explaining about WARC 79 and soliciting a donation for this purpose and/or joining the WIA.

Many readers of July 1978 AR may have observed from the Federal accounts for 1977 printed on page 32a provision for $1613 for Amateur Satellites. At the September Executive meeting it was decided to re-name this provision "Satellites and Special Projects". This provision has been increased to $4613 and includes funds required for Project Asert.

A petition, seeking extensions to the existing amateur allocations on 80 and 40 metres, and signed by 415 amateurs, was sent to the Chairman of the APG Committee No. 2 (Amateur) for back-up purposes in the WARC 79 preparations.

NOTES OF MEETINGS

PUBLICATIONS COMMITTEE

At the Publications Committee meeting on 3rd October the passing of Ken Gillespie VK3KG was recorded with a sense of great loss. Ken had been a member of the Committee for many years, with special responsibilities for drafting of AR diagrams and drawings.

Photographs of amateur interest were noted as being an urgent requirement. The meeting decided to print an additional quantity of this issue of AR for sale to the public through selected outlets. Further discussions were held on the possible publication of a VHF book containing reprints of good articles from past issues of AR, advertising, technical articles and many other subjects.

DONATIONS, WARC 79

The Executive wishes to acknowledge with grateful thanks the receipt of the following donations to the WARC 79 fund:—

F. J. M. Phillips VK2ZQ, $10; Tumut and District Radio Club ($2 each from VK2PN, VK2ALZ, VKTZAA, R. Chapman and the Club), $10; Eastern and Mt. Districts RC, $100; Anon, per Federal President at EM and DRC, $10.

THE EXECUTIVE EXPRESSES CHRISTMAS AND NEW YEAR GREETINGS TO ALL MEMBERS ■

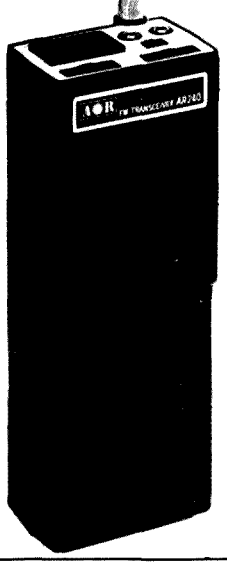
ARE YOU AN ACTIVE MEMBER?

Are you an active member,
The kind who would be missed.
Or are you just content to see
Your name down on the list?
Do you attend each meeting
And mingle with flock,
Or do you stay away, then criticise and knock?
Do you take an active part to help and work along
Or are you satisfied to be the kind who'll just belong?
Do you push the cause along and make things really tick,
Or leave the work to others, and talk about 'The Clique'?
Think this over, member — you know right from wrong,
Are you an active member, or do you just belong? ■

Well, it had to happen !

2m hand-held 800ch Synthesised

144-148 MHz **Palm size**



Sooner or later it had to happen. Now Vicom are proud to introduce the first ham hand-held synthesised 2m rig with thumbwheel dial-up of frequencies 144–148 MHz. The palm size (40 x 62 x 165 mm) and 400 gram weight of this NiCd rig makes it ideal for the ham on the go!

RF output power	:	1.5w
Harmonics	:	–60 dB
Spurious	:	–70 dB
Repeater offset	:	+600 KHz or –600 KHz
Sensitivity	:	0.3 uV 20 dB SINAD

The unit features high quality construction with double sided glass-epoxy pcbs.

And your new hand held comes complete with VICOM 90 day warranty and service back-up.

$399.

1.5w

WOW

NEW!

VICOM **SPECIAL** of the month

KENWOOD

Try us for a trade-in

90 day warranty

TS520S	HF TRANSCEIVER 10–160M, 240 Vac	P.O.A.
TS820S	HF TRANSCEIVER 10–160M, 240 Vac	P.O.A.
AT200	ANTENNA TUNER	P.O.A.
SM220	STATION MONITOR	P.O.A.
BS-5	PAN ADAPTER FOR TS820 SERIES	P.O.A.
BS-8	PAN ADAPTER FOR TS520 SERIES	P.O.A.
TL922	LINEAR AMPLIFIER	P.O.A.
SP520	MATCHING SPEAKER TS520S	P.O.A.
SP820	MATCHING SPEAKER TS820S	P.O.A.

NEW

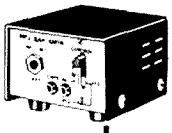
TS-120V

HF MOBILE TRANSCEIVER

$ 630.00

SAVE

MFJ 40T QRP transmitter. Work the world with 5 watts on 40 meter CW. No tuning. Matches 50 ohm load. Clean output with low harmonic content. Power amplifier transistor protected against burnout. Switch selects 3 crystals or VFO input. 12 V DC operation. **$49**



new !

vfo option $49

5W

CW FILTERS

FT101E	filter	$49.00
TS520S	(YG3395C)	$57.00
TS820S	(YG88C)	$57.00

Popular VC2 swr/pwr meter covers 3-150MHz with power measurement 12/120 watts. Will handle up to 1000w. 50 ohms impedance, twin meters, this quality thru-line instrument is ideal for the shack or for permanent mobile installation.

$35

TRY US FOR A TRADE-IN

WE SELL PRE-LOVED GEAR

MICS

VM-1	Noise cancelling, hand ptt, low Z	$10.00
VM-2	Desk mic with pre amp, low Z	$27.00
MC-10	Kenwood hand ptt, high Z	$20.00
MC-35S	Kenwood hand noise cancelling	$25.00
MC-50	Kenwood desk mic, high/low Z	$45.00
HM-1	ICOM Hand ptt, low Z	$18.00
HM-3	ICOM military style hand ptt	poa

HAL

DSR3000	CW, ASCII, BAUDOT, Keyboard & display	poa
ST6000	RTTY demodulator	poa

OSKERBLOCK PROFESSIONAL SWR/PWR METER

The professional bridge using thru-line principle covers 3 to 200MHz with dual impedance 52 and 75 ohms. Each instrument individually calibrated and covers four power ranges: 2/20/200/2000 watts

PALOMAR RX NOISE BRIDGE $93.00

"THE PROFESSIONALS"

TUBES

6JS6c	$12.50
6KD6	$13.00
12BY7A	$ 3.50
6146B	$13.50
572B	$61.00

spares

MORSE KEYS

HK702	Deluxe key with marble base	$41.00
HK708	Economy key	$23.00
HK706	Operator's key	$25.00
MK701	Manipulator (side-swiper)	$45.00
EK1032	Electronic keyer	$336.00
PALOMAR	IC keyer	$149.00

MULTIMETERS

DM3003	Daiwa digital	$120.00
TP-10S	2000 ohms/V	$29.50
117-FET	Quality FET VOM	$54.00
OB-330	20,000 ohms/V inc. field strength	$41.00
MC270	Professional field strength m	$259.00

bankcard

DINERS CLUB

The law requires that a licence be held for all transmitting equipment.

Russell Kelly, VK3NT
Director

Peter D. Williams, VH3IZ
Director

AT VICOM WE DO NOT SELL RIGS IN FACTORY - SEALED CARTONS !

When we despatch any of the fine pieces of equipment sold at VICOM we want to be certain it meets or exceeds the manufacturer's specs. We thoroughly pre-delivery check all transceivers before shipment and back this up with our Vicom 90 day warranty (this excludes final tubes and transistors). If getting a super discount from some "backyard" show is important to you – or if you insist on a factory-sealed carton from a supermarket – we suggest you shop elsewhere.

But if you want the positive assurance that you are receiving the value and performance you're entitled to, plus ethical business conduct – then VICOM is the supplier for you!

Give us a call today for that friendly personalised service for which VICOM has become famous!

vicom

(03) 699. 6700

DEALER ENQUIRIES INVITED

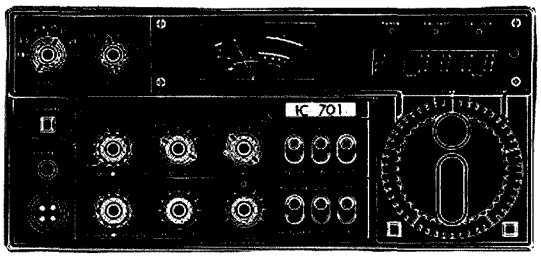
68 Eastern Road
Sth Melbourne Vic. 3205

open Saturday mornings.

Perth	446.3232	Sydney	681.3544
Adelaide	43.7981	Brisbane	38.4480
Gold Coast	32.2644	Hobart	43.6337
Canberra	82.3581		

VICOM ham catalog VICOM ham catalog VICOM

VICOM ham catalog VICOM ham catalog VICOM



SMALL ENOUGH FOR MOBILE!

IC-701 + IC-211

IC701	HF transceiver, solid-state	$1,480.00
IC701PS	AC power supply	$253.00
IC211	2m all-mode transceiver	$799.00
RM3	Remote control head	$169.00

OSCAR TRANSCEIVE ?

No one could ask for a better OSCAR station than the IC701 and IC211 together for a mode "A"; and adding a transverter to the IC701 mode B or J offers newer, better satellite horizons. Within the ICOM LSI based radios there is the capacity for the technically minded amateur to tune one radio of the pair with the VFO knob of the other (Oscar transceiver, anyone?). In addition, the LSI lends itself to being controlled by a parallel port on one of the increasing number of microprocessors now available for amateur use. Microphones and other accessories are compatible with both radios, such as the RM3 remote microprocessor frequency controller. This nifty unit provides memory and frequency control including automatic band change and memories for 4 different frequencies plus auto inerement or simple step timing in 100 Hz, 1, Hz or 25 Hz steps.

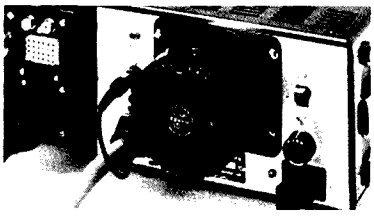
The 1980's features built into your ICOM radio will mean happy use for a long period of time without becoming old-fashioned. The systems possibilities with the IC701 and IC211 are so numerous that even we have not thought of all of them yet!

State of the art

ICOM
2M FM

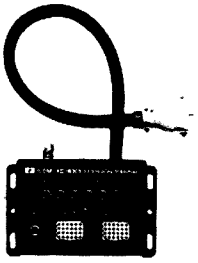
IC-22S

The famous IC22S transceiver — more of these sold in Australia than any other 2m Rig. Price: $330.00



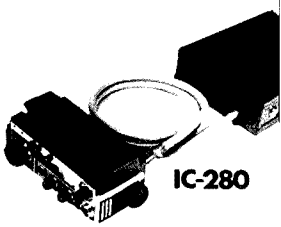
FAN OPTION

The CF1 optional cooling fan for the IC701 power supply. Easy to install. Price: $45.00



EX-1

The extension terminal for operating the IC701 with a linear amplifier. Price: $43.00



IC-280

The popular remotable 2m fm Rig Price: $450.00

fun portables

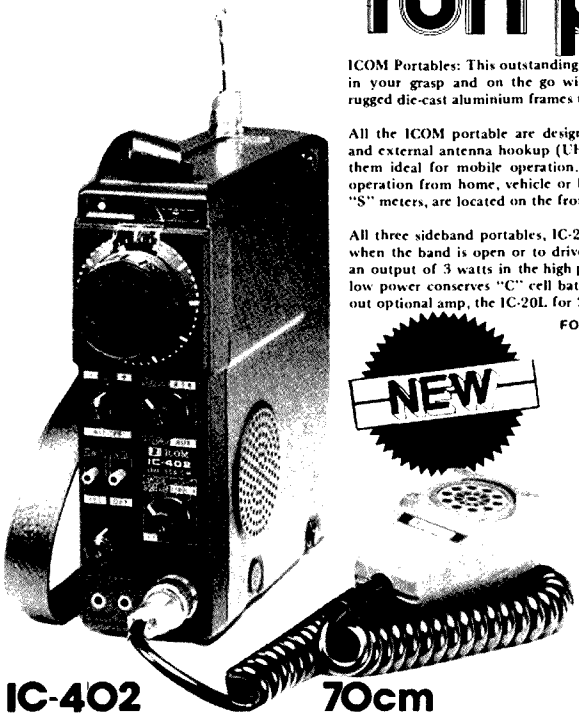
ICOM Portables: This outstanding group of ICOM portable transceivers puts Amateur communications in your grasp and on the go with high quality ICOM radios packed into extremely compact and rugged die-cast aluminium frames that are built for travel.

All the ICOM portable are designed with performance and features that allow for external power, and external antenna hookup (UHF connector); and the quickchange fold away mobile mount makes them ideal for mobile operation. The front-facing design of these radios contributes to convenient operation from home, vehicle or hill top. All controls, including single-knob tuning dials and lighted "S" meters, are located on the front panel, as are mic and external speaker plugs.

All three sideband portables, IC-202S, IC-502, and IC-402, put out a full 3 watts PEP to get through when the band is open or to drive a class AB1 amp to full output. The IC-215 FM portable delivers an output of 3 watts in the high power mode and 0.5 watts in the lower power position. The IC-215's low power conserves "C" cell battery life, and 3 watts from the portables jumps to 10 watts through out optional amp, the IC-20L for 2 meters.

FOR FULL DETAILS WRITE FOR OUR ICOM CATALOG.

Hold it!



IC-402 70cm

Specifications:	IC-402
Frequency Coverage:	430-435.2 MHz in any four 200 KHz bands
Antenna Impedance:	50 ohms
Power Supply:	13.8V DC negative ground
Current Drain:	
Tx	A3J, approx. 670ma
Rx	Approx. 100ma with no signal
Size:	183mm(h) x 61mm(w) x 162mm(d)
Weight:	2.0 Kg
RF Output Power:	A3J, 3W PEP; A1, 3W
Carrier Suppression.	Better than 40 dB

The new IC202S is the new ssb portable two metres now featuring BOTH sidebands and FM marketed together with the IC202E which has only USB. The IC202E replaced the popular IC202 with a number of circuit improvements.

The IC202S features a new style front panel together with the traditional high ICOM quality.

6m DX is fun with the IC502

IC215	2m fm incl. 5 channels	$245.00
IC402	70 cm ssb portable	$469.00
IC202S	2m ssb portable USB/LSB	$357.00
IC202E	2m ssb portable	$239.00

ACCESSORIES FOR THE PORTABLES

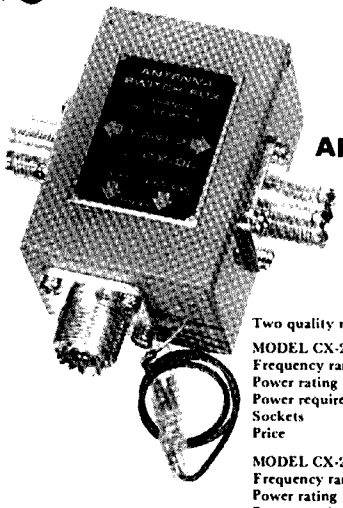
LC025	Leather case	$12.00
FA-1	Rubber ducky antenna	$12.00
MMB-B	Mobile mount	$22.00
BC-20	Nicad pack	$69.00

ICOM

IC-202S 2m

Distributed in Australia by VICOM

QUALITY ACCESSORIES from DAIWA



ANTENNA RELAYS

Two quality models:

MODEL CX-2L

Frequency range	:	1.8 thru 170 MHz
Power rating	:	100w pep
Power required	:	10–15v dc
Sockets	:	SO-239
Price	:	$48

MODEL CX-2H

Frequency range	:	1.8 thru 450 MHz
Power rating	:	200w pep
Power required	:	10–15v dc
Price	:	$69

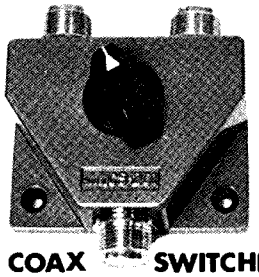
NEW

DIGITAL MULTIMETER DM3003

DAIWA

The new DAIWA digital multimeter is ideal for the serious amateur. This fine instrument handles DCV, ACV, DCma, ACma plus resistance with a high input impedance. Introductory offer, $120.00.

Also a range of precision swr & pwr meters



COAX SWITCHES

Coaxial Switches
2 Position/Model CS-201 4 Position/Model CS-401

Professionally engineered cavity
Construction: High isolation
Power Rating: 2.5 kW PEP, 1 kW CW
Impedance: 50 Ohm
Insertion Loss: Less than .2 dB
VSWR: 1:1.2
Maximum Frequency: 500 MHz
Isolation: Better than 60 dB at 300 MHz; better than 50 dB at 450 MHz; adjacent terminal
Connectors: SO-239

CS-201 $26 CS-401 $61.00

Write for literature.

QUALITY SPEECH PROCESSORS

DAIWA

Increases talk power with splatter free operation.
RF clipping assures low distortion. Simply install between microphone and transmitter.
Talk Power: Better than 6 dB
Clipping Threshold: Less than 2 mV at 1 KHz
Bandwidth: 2200 Hz at 6 dB down
Frequency Response: 300–3000 Hz at 12 dB down
Distortion: Less than 3% at 1 KHz, 20 dB clipping
Output level: More than 50 mV at 1 KHz
Power Requirement: 240 VAC 50 Hz, 1.4 W; or 13.5 VDC, 55 mA
Dimensions: 150 x 70 x 150 mm; 5 x 2.5 x 5 in.

Model RF550 (filter type)	$184.00
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Model MC330 Speech Compressor	$ 99.00

LOW PASS FILTERS

QUALITY LOW PASS FILTERS (3 SECTION)

	FD30LS	FD30M
Frequency cut-off	32 MHz	32 MHz
Power rating	100w cw	500w cw
	200w pep	1 Kw pep
Insertion loss	0.5 dB	0.3 dB
Price	$20	$39

ANTENNA COUPLERS DIRECT READING SWR-PWR METER

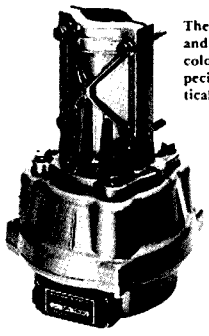
DAIWA

CROSS NEEDLES

MODEL CNW-217
Freq coverage : 1.8 thru 30MHz
Input power : 100w CW, 200w pep
Input impedance : 50 ohms unbalanced
Output impedance : 10-300 ohm unbalanced
$199

MODEL CNW-417
1.8 thru 30MHz
200w Cw, 500w pep
50 ohms unbalanced
10-300 ohms unbalanced
$245

ROTATORS



The quality DAIWA rotators are housed in weather sealed and factory lubricated die-cast aluminium housing with a colourful resin coating. The reduction gearing has been especially designed for dependable long-life operation and practically silent operation.

COMPLETE WITH CONTROLLER
ATTRACTIVE

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Rotation time	60 secs	64 secs
Rotating torque	500 kg/cm	600 kg/cm
Braking torque	2000 kg/cm	4000 kg/cm
Vertical load	200 kg	200 kg
Cable	6 core	6 core
Weight	4.5 kg	4.6 kg
Price (incl. control unit)	$199	$289

Cable for above $1 per metre.

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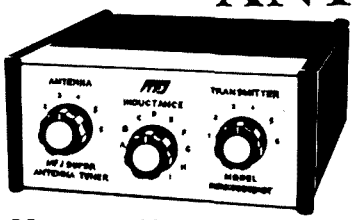


MFJ-901 Versa Tuner

The 901 features the same efficient air wound coil of the 941 — for more watts out! The coil inductor has 12 positions. The tuner will match everything from 160 to 10 meters. 200 watts RF output. 1:4 balun and SO-239 connectors. Works great mobile.

112.00 Call for yours today.

This NEW MFJ Versa Tuner II . . .

has SWR and dual range wattmeter, antenna switch, efficient airwound inductor, built in balun. Up to 300 watts RF output. Matches everything from 160 thru 10 Meters: dipoles, inverted vees, random wires, verticals, mobile whips, beams, balance lines, coax lines.

Only MFJ gives you this. MFJ-941 Versa Tuner II with all these features at this price.

A SWR and dual range wattmeter (300 and 30 watts full scale) lets you measure RF power output for simplified tuning.

An antenna switch lets you select 2 coax fed antennas, random wire or balance line, and tuner bypass.

A new efficient airwound inductor (12 positions) gives you less losses than a tapped toroid for more watts out.

A 1:4 balun for balance lines. 1000 volt capacitor spacing. Mounting brackets for mobile installations (not shown).

With the NEW MFJ Versa Tuner II you can run your full transceiver power output — up to 300 watts RF power output — and match your transmitter to any feedline from 160 thru 10 Meters, whether you have coax cable, balance line, or random wire.

You can tune out the SWR on your dipole, inverted vee, random wire, vertical, mobile whip, beam, quad, or whatever you have.

You can even operate all bands with just one existing antenna. No need to put up separate antennas for each band.

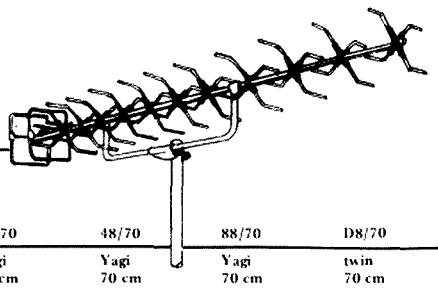
$139 160-10m TUNER

MFJ-16010 RANDOM WIRE TUNER FOR LONG WIRES.

$79

1.8 thru 30 MHz. Up to 200 watts RF output. Matches High and low impedances. 12 position inductor. 80-238 connectors. 2x3x4 inches. Matches 25 to 200 ohms at 1.8 MHz. Does not tune coax lines.

MFJ



JAYBEAM VHF/UHF BEAM ANTENNAS

Model	5Y/2M	8Y/2M	10Y/2M	10XY/2M	18/70	48/70	88/70	D8/70
Type	Yagi	Yagi	X yagi	Yagi	Yagi	Yagi	Yagi	twin
Band	2m	2m	2m	2m	70 cm	70 cm	70 cm	70 cm
Gain dBd	7.8	9.5	11.4	11.3	14.9	15.7	18.5	12.3
No of el	5	8	10	10	18	48	88	2x8
Horiz beam width	58°	47°	37°	38°	28°	26°	19°	45°
Max power	1 Kw	1 Kw	1 Kw	1 Kw	1 Kw	1 Kw	1 Kw	1 Kw
Length metres	1.6	2.8	4.4	3.6	2.8	1.83	3.98	1.1
Mass Kg	1.8	3.8	4.5	5.9	3.4	2.7	4.7	2.5
Impedance ohms	50	50	50	50	50	50	50	50
Price $	43.00	51.00	84.00	84.00	71.00	83.00	102.00	64.00

HUSTLER

HF MOBILE RESONATORS well designed

Model	Band	Price
RM80	80m	$30.00
RM40	40m	$25.00
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RM15	15m	$16.00
RM10	10m	$15.00
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6m beams

6 METRE BEAM, 5 ELEMENTS, 1 Kw MAX, GOOD QUALITY $159

6 metres DX is great fun!

NAGARA TRAP VERTICALS

Model V5Jr 5 band trap vertical:
Height: 6.7m
Weight: 2.3 Kg
Max Power: 1 Kw
Impedance: 52 ohms
80 thru 10m $129

Model 4Jr 4 band trap vertical:
Height: 5.2m
Weight: 1.8 Kg
Max Power: 1 Kw
Impedance: 52 ohms
40 thru 10m $ 99

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AS-NK	Bumper mount kit	$25.00
AS-KDA	Spring & swivel mount	$23.00
AS-GM	Gutter mount, stainless steel	$22.00
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Order By Mail or Call

2m MOBILE

M22T ¼ wave 2m mobile whip	$7.00
M25T 5/8 wave 2m mobile whip	$14.00
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Lindenow 5/8 2m mobile whip	$34.00

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Listener-3 short wave antenna for the serious SWL	$49.00
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BL50A RAK 50 ohm, 4 Kw model for dipoles	$32.00
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AS-BL ASAHI 50 ohm, ideal for beams	$36.00

TRAP DIPOLES

Midy VNB 80 thru 10m trap dipole, 23m long	$111.00
AL24DXN 20 and 40m trap dipole	$70.00
A4VPN 40m dipole kit	$27.00

PARABOLIC DISH

PARABOLIC DISH FOR 432 & 1296 MHz
A professionally engineered dish with 12 db and 20 db gain on 70 cm and 1.2 GHz. $349

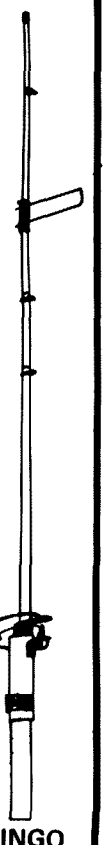
DISCONES

GDX-1 80 thru 480 MHz commercial discone	$85.00
SCAN-X 65 thru 530 MHz receive only	$39.00

FAMOUS RINGO

The RINGO RANGER ARX-2 is a 2m gain omni-directional antenna with 3 half waves in phase and a 1/8 wave matching stub. The Ringo gives an extremely low angle of radiation for better signal coverage. It is tunable over a broad frequency range and perfectly matched to 52 ohm. Price $49

4dB gain with reference to half-wave dipole.
6dB gain with reference to quarter-wave whip.



RINGO RANGER

There is no substitute.

hy-gain® Amateur Radio Systems.

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Super 3-Element Thunderbird for 10, 15 and 20 Meters Model TH3Mk3

Hy-Gain's Super 3-element Thunderbird delivers outstanding performance on 10, 15 and 20 meters. The TH3Mk3 features separate and matched Hy-Q traps for each band, and feeds with 52 ohm coax. Hy-Gain Beta Match presents tapered impedance for most efficient 3 band matching, and provides DC ground to eliminate precipitation static. The TH3Mk3 delivers maximum F/B ratio, and SWR less than 1.5:1 at resonance on all bands. Its mechanically superior construction features taper swaged slotted tubing for easy adjustment and larger diameter. Comes equipped with heavy tiltable boom-to-mast clamp. Hy-Gain ferrite balun BN-86 is recommended for use with the TH3Mk3.

TH6DXX	beam	$299
TH3Jr	beam	$219
TH3MK3	beam	$239
203Ba	beam	$189
204Ba	beam	$249
HyQuad		$269
18AVT	vert.	$149
14AVQ	vert.	$109

Electrical	TH6DXX	TH3Mk3
Gain—average	8.7dB	8dB
Front-to-back ratio	25dB	25dB
SWR (at resonance)	Less than 1.5:1	Less than 1.5:1
Impedance	50 ohms	50 ohms
Power rating	Max legal	Max legal

6-Element Super Thunderbird DX for 10, 15 and 20 Meters Model TH6 DXX

Separate HY-Q traps, featuring large diameter coils that develop an exceptionally favorable L/C ratio and very high Q, provide peak performance on each band whether working phone or CW. Exclusive Hy-Gain beta match, factory pretuned, insures maximum gain and F/B ratio without compromise. The TH6DXX feeds with 52 ohm coaxial cable and delivers less than 1.5:1 SWR on all bands. Mechanically superior construction features taper swaged, slotted tubing for easy adjustment and re-adjustment, and for larger diameter and less wind loading. Full circumference compression clamps replace self-tapping sheet metal screws. Includes large diameter, heavy gauge aluminum boom, heavy cast aluminum boom-to-mast clamp, and heavy gauge machine formed element-to-boom brackets. Hy-Gain's ferrite balun BN-86 is recommended for use with the TH6DXX.

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ALL ABOUT DIODES

by George Stanley
(Submitted by Bruce Marsh VK3ZHI)

Diodes may seem simple to you as they have just two leads, but do you know how to recognize and test the following: PN, Zener, Avalanche, SRD, Tunnel and PIN? In order to keep the number manageable I'm leaving out light-emitting four-layer, and microwave mixer diodes.

PN DIODES

Let's take the most basic first: the common, garden-variety PN junction diode. This is man's attempt to make a one-way switch. That is, ideally, no current would flow when the device is reversed biased and there would be no resistance when it is forward biased. Figure 1 shows the ideal.

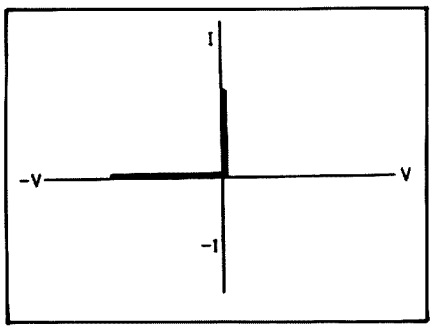

FIG. 1: Ideal Diode

Figure 2 shows what's practical for a germanium and silicon diode. Notice that very little current flows until a threshold voltage is reached (at room temperature approximately 0.2 for Ge and 0.6 for Si) and then the current through the diode

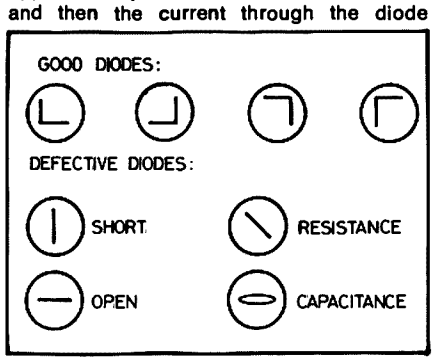

TABLE 1: Diode/Transistor Circuit Waveforms

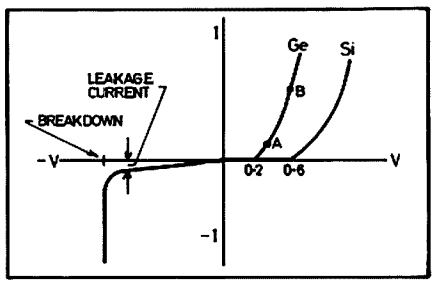

FIG. 2: V-I Characteristics

increases rapidly without much further increase in the diode voltage.

Testing a PN diode can be done in a number of ways. For example, an ohmmeter can be used to check the forward and reverse conductance. That is, it should show a high resistance when the diode is reverse biased and a low resistance when it is forward biased. You might wonder why the readings change somewhat when you change scales or use a different ohmmeter. The reason is because the diode curve is non-linear. It's like changing from operating point "A" to operating point "B" in Figure 2.

A more interesting way to test diodes is to display the V-I characteristic (Figure 2) on an oscilloscope. This can be done using the tester of Figure 3 which we will use again in a future article on testing transistors.

Examining Figure 3 shows that the *vertical* signal is proportional to the current through the device while the *horizontal* signal is proportional to the voltage across the device. *(The two 10 k resistors are only to protect delicate diodes or transistors if shorts develop in the scope cables.)*

Using this tester and the associated table of waveforms you can rapidly determine if a diode is open or shorted. It also tells if there is associated resistance or capacitance from neighbouring components such as on a PC board. This is a valuable tester which really comes into its own when you want to rapidly test the emitter-base and base-collector diodes on a many-transistor PC board.

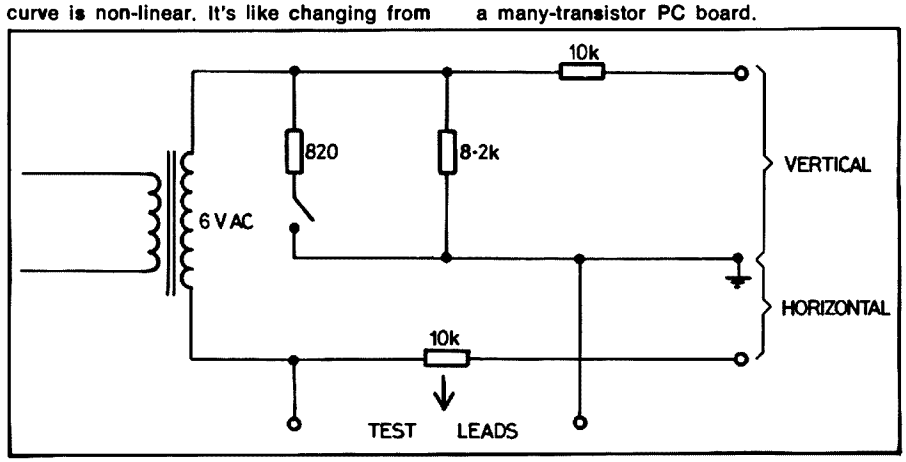

FIGURE 3: Diode/Transistor Checker

Applications of the PN diode are many. Leading the list are rectifiers, switches and temperature compensators. The garden-variety PN diode has a *negative* TC, or temperature coefficient, and this property is often used to counteract the *positive* TC of the Avalanche diode. Figure 4 shows the reason for the —TC. When heat is applied, the diode tries to turn on harder and its resistance falls. The current is limited by the 10 k resistor so the diode voltage *must* fall. Try it yourself. All you need is a battery (borrow the one out of your wife's radio), a resistor, soldering iron for heat, and your multimeter to track the voltage as you heat the diode.

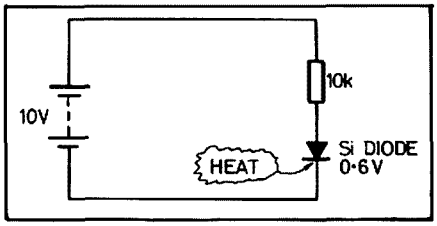

FIG. 4: Diode Voltage and Heat

ZENER AND AVALANCHE DIODES

Both Zener and Avalanche diodes are breakdown diodes (see Figure 2) but the Zener diode has a *negative* TC (the breakdown voltage falls as the temperature is raised) while the Avalanche diode has a *positive* TC (the breakdown voltage rises as the temperature is increased). This difference comes about from the different way breakdown occurs. Simply put, in the Zener diode (up to about 5V) electrons are freed by the applied field being strong enough to suddenly rip electrons out of the lattice structure and put them into the conduction band.

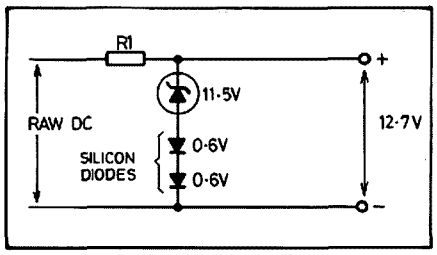

FIG. 5: Avalance Diode Temperature Compensation

In the Avalanche diode (above about 7V) the energy gap is wider and before Zener action occurs, free electrons are accelerated to a velocity high enough to knock out lattice bound electrons during collisions. In the 5-7 volt region breakdown diodes often exhibit a nearly flat TC because both processes are occurring and compensate each other to a certain extent. Figure 5 shows how a PN junction diode with its *negative* TC can be used to compensate the *positive* TC of an Avalanche diode.

The diode tester (Figure 3) can be used to check breakdown diodes if they breaks down below about 9 volts (6.3 volts of the transformer x1.414).

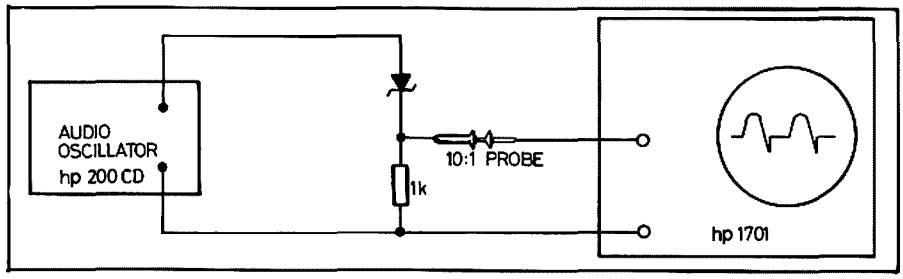

FIG. 7: SRD Display Set-up

STEP RECOVERY DIODE (SRD)

The Step Recovery Diode is a special PN junction diode. It has heavy doping near the junction which gives it a long charge storage, but when carrier recombination ends (electrons falling into holes) it ends abruptly and the device switches off *very* rapidly. Figure 6 shows the current through the device as a function of time.

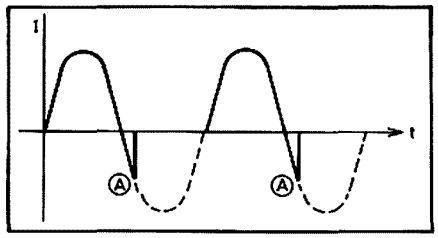

FIG. 6: Step Recovery Diode Waveform

Since this diode generates a very sharp "on-to-off" transition (Point A, Figure 6) it is often used as a harmonic generator. Testing can usually be done with the diode checker or with an ohmmeter (watch you don't use the Rx1 scales as it may put out a very high short circuit current). Look for opens or shorts. If you want to experiment a little, you can display the waveform of Figure 6. You will need a high frequency scope (50 MHz or higher) and at least a 500 kHz oscillator driving source. The arrangement of Figure 7 shows the detailed connections.

TUNNEL DIODES

Tunnel diodes are not as complicated as you have been told. Figure 8 shows their V-I characteristics.

Because of very heavy doping, the gap between electrons on the N material side and holes on the P material side of the PN junction is much narrower than in the plain PN junction. The result is electrons *tunnelling* after holes and vice versa even without bias. When forward bias is applied, conduction starts immediately as conduction band electrons (N material) find themselves next to valance band holes (P material) and the tunnel occurs with vengeance. This continues during region 1 on Figure 7. Current peaks at point 2 and then decreases because the gap between N side electrons and P side holes increases and becomes too wide for tunnelling. Current falls off very rapidly until it intersects the "normal" diode curve at 3.

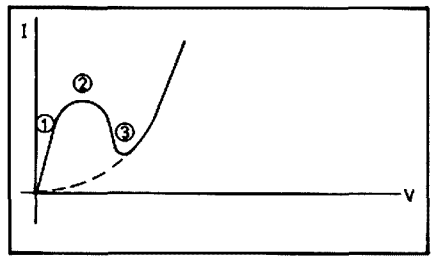

FIG. 8: V-I Characteristics of Tunnel Diode

Many tunnel diodes can be tested using the diode checker of Figure 3, but put the switch in the "In Circuit" position to obtain the proper current/voltage relationship.

THE PIN DIODE

The PIN diode consists of P material, Intrinsic material and N material. The intrinsic material is quite wide and is the key to its operation which is as a microwave attenuator. In a typical application the PIN is placed across microwave transmission line and a DC bias is applied to the diode. This bias injects a large number of holes and electrons into the intrinsic region. This large amount of stored charges means the diode continues to partially conduct even during the reverse bias part of the RF cycle. This is the key to its application. Note it does not act like a diode but rather as variable resistor. The amount of resistance (attenuation) is a function of the d-c forward bias, i.e. the more bias, the more stored charge and the greater the attenuation.

Failures are usually by shorting as it's difficult to provide a large heat sink in the middle of a microwave transmission line. However, sometimes after shorting the diode will open internally due to the heat produced when it first shorted. You can expect to find both situations. Not only are PIN diodes somewhat delicate but you have to be careful soldering them into the circuit as you don't want to set up a mismatch on the transmission line.

There are at least as many diodes I've left off as I've covered, but hopefully this short article will give you more insight into these fascinating devices. In a future article I would like to cover rapid transistor testing.

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QSLs — THE HOMEBREW WAY

J. T. Higson VK3ABW
24 Stapley Crescent, Chadstone, Vic. 3148

Over the years the problem in obtaining reasonable QSL cards at an attractive price has been a problem at this QTH. Prices are always geared to the amount produced, and small orders did not justify the outlay. In addition, a design cannot be changed without additional expenditure. This naturally led the writer to seek elsewhere, and the only way out was either to silk screen, or use some photographic method. Since one of my hobbies is photography, I decided to use my equipment to produce a suitable QSL card on postcard size double weight photographic enlarging paper.

Since this article will prove of interest to many who do not possess high quality dark room equipment, it was decided that the final prints should be produced using the minimum photographic requirements. Hence, a precision high definition flat plane lens is not necessary. A master positive is produced by using draftsman's tracing paper or mylar sheet as a semi or transparent base. The actual size of your card is determined by drawing a pencilled square, and within this square you will place all the information required. Fig. 1 "A" and "B" show the appropriate letterin glayout which was done with a product by the name of Letraset. This material is a rub on lettering system which transfers to any base, such as the mylar sheet, by rubbing with a soft blunt pencil. Some practice is needed to acquire the necessary skill to apply the lettering in a neat straight line. Squared graph paper under the base medium is a must. Letraset is of course available in various sizes. If you intend to include drawings, use only a base that will take an indian ink.

The drawings are usually traced, unless you are something of a commercial artist. I usually trace the drawings first because a mistake here does not waste the Letraset.

When the master is finished, your photographic skills will begin.

A negative must now be made with IH4 Ilfolith or Kodalith. This is a high contrast blue sensitive sheet film which can be handled in a bright red safe light. This material can be obtained from "Photo-Scope", 2 Macrina Street, Oakleigh. It is supplied in 25 sheet packs in 4" x 5" or larger. I doubt whether lesser quantities are procurable since it is a professional material.

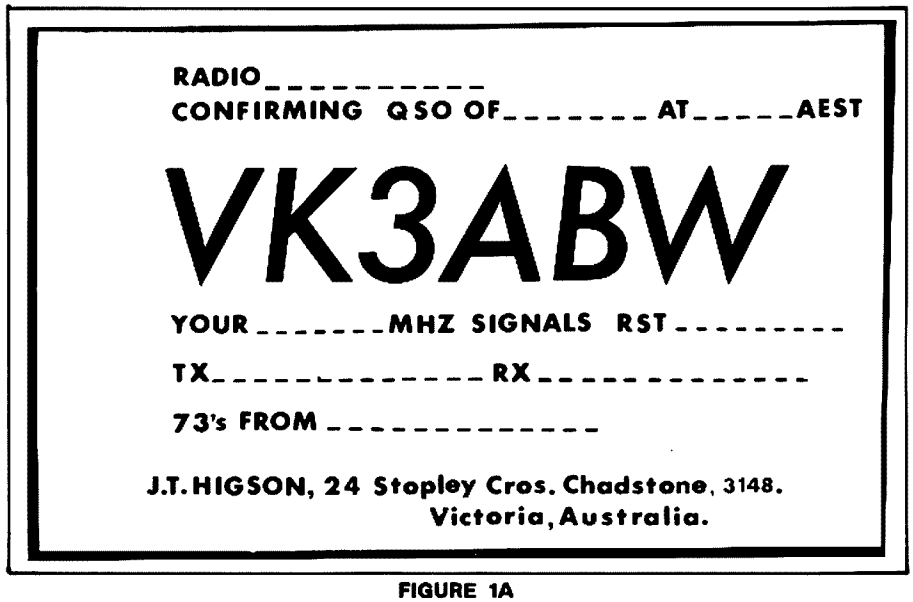

FIGURE 1A

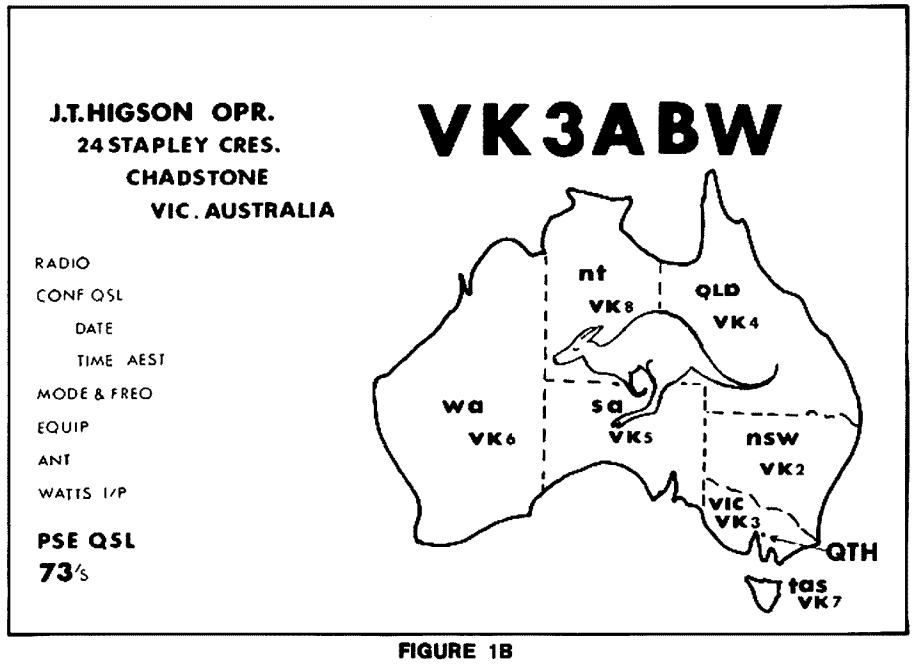

FIGURE 1B

This material is developed in a lith developer and fixed in a fixing solution available from the same source. The developing solution is made from two solutions "A" and "B" and only the amounts needed of the two are mixed prior to use. This solution once mixed keeps only a few hours. The developer contains alkalis which could reach a pH value of 10 to 13 and may trouble sensitive skins — so use print

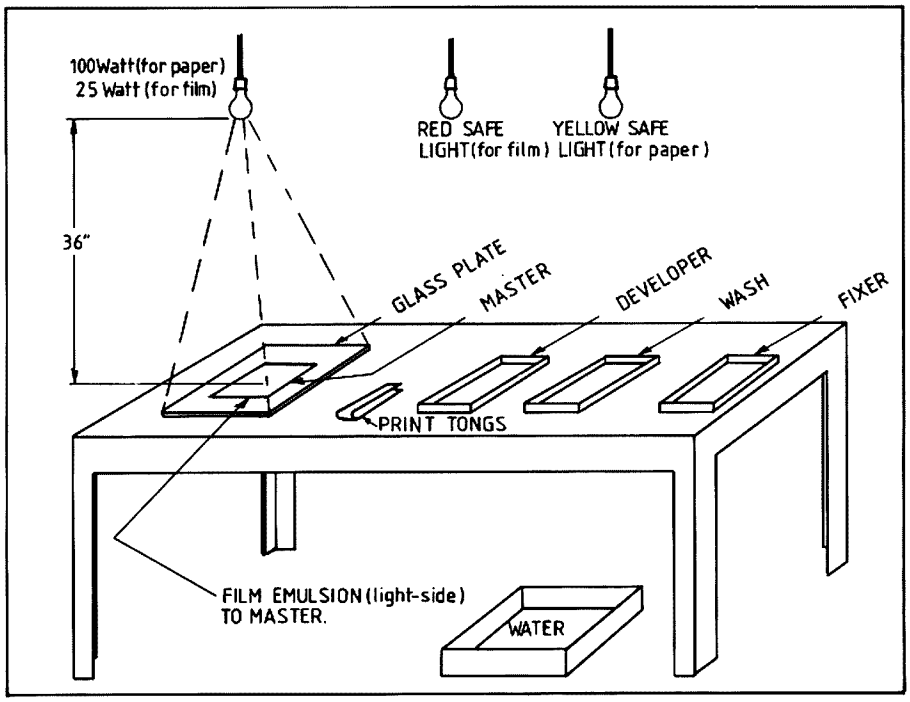

FIGURE 2: Bench Layout.

tongs.

There are four steps in processing:

1. Development
2. Wash
3. Fixing
4. Final Wash.

Do not use an acid loaded stop bath. This will produce small bubbles on the surface of the film due to the reaction with the alkali, and tends to create pin holes on the negative. It is better to use a plain water wash.

Now to the procedure in producing the negative — referring to Fig. 2, which shows the layout on the work bench, the equipment you will need is as follows:

25 watt clear lamp for film
100 watt clear lamp for paper
15 watt bright red safe light for film
15 watt yellow green safe light for paper
Print tongs
3 10 in. x 8 in. trays (must be plastic)
Sheet glass (old side window from car)
1 bucket of water.

(Safe lights should be purchased from photographic suppliers. Be sure that you purchase the bright red bulb, and not the low intensity one usually used with high speed ortho stock.)

PROCEDURE — FILM

Suspend the 25 watt bulb about 36 inches above the bench in a central position in line with the master and switch red safe light on. The first developing tray need not be 10 in. x 8 in., but only large enough to fit the film size. (The tray for the paper developer must be 10 in. x 8 in. because the developer will quickly exhaust when 50 to 100 papers are developed.)

Mix enough "A" and "B" solutions of the Ilfolith developer to half fill the tray.

Fill the second tray with plain water, and the third tray with fixer. I use Ilford rapid fix. It will be necessary to cut test strips to establish the correct exposure time. Place test strip under master, place glass on top, and try 2½, 3½, 5, 7 and 10 seconds. Develop by constant agitation for 3 minutes. Wash and fix. The fixing time will depend on fixed used. Under exposure will show by too many holes in the black portions on the negative. Over exposure will cause the lettering to be "unsharp" or to run into itself. The correct exposure will give very sharp lettering and a dense black silver emulsion.

Note the correct exposure time and make a full negative, develop and fix as before, but wash the negative for 15 minutes, then hang to dry.

PRODUCING THE CARD

Many of you who will be interested in this process will not possess a photographic glazing and drying machine. Therefore the normal paper base supplied with various surfaces will not be suitable for air drying. Unfortunately, old style papers dried in this way will shrink unequally. However, the photographic industry has come to your rescue with a new paper called Ilfospeed. The paper that supports the emulsion in this process has a resin base and does not absorb water, only the emulsion. This paper is a medium weight obtainable in glossy and semi-matt surfaces from the source mentioned previously. Indeed, this paper is now replacing the older style, and will be the only type on the market in the future. Since only the surface emulsion is wetted the paper dries quickly and remains flat and glossy. In the old process the papers had to be glazed using a polished plate. If you decide on glossy, a NYLON TIPPED PEN is the only medium that will write on the surface, when the time comes to fill in the details of a QSO.

To proceed, the developer needed is a normal paper developer, not the previous lith developer. This is available with instruction from the previously mentioned source.

PAPER PROCESSING

The safe light needed now is the yellow green photographic safe light. The three 10 x 8 inch trays are prepared and a final bucket of water to load the prints after fixing period. The fixing period will depend on the main chemical used in the fixer. Rapid fixers that fix in less than one minute, may use Ammonium Thio Sulphate. Slower fixers use Hypo which is short for Sodium Thio Sulphate which will taken ten minutes to fix. I prefer Ilford Rapid Fixer. The second bath must contain a stop bath. This can be a one per cent solution of acetic acid, or one of the commercial compounds sold by photographic suppliers. This is necessary in order to stop development and prevent the alkali-loaded developing solution being carried to the fixing bath. It was allowable in the previous process because only a few were being done.

You will now need the 100 watt bulb because the emulsion of the paper is much slower than the film. You may have to adjust the distance in order to satisfy your patience. I would adjust the exposure time to 3-4 seconds noting the distance of the light from the paper for future occasions. Ilford paper is excellent for maintaining its speed relationship from batch to batch. Exposure accuracy here is not important because no middle tones are involved. You require only a black and white finish. If you under expose the lettering will be grey rather than a deep black. If you overexpose too far the lettering will become unsharp and tend to run into itself. Perfect prints will take a little practice. After fixing for the required time, throw your prints in the bucket of water, and then wash further in fresh water for about half an hour. Sponge lightly and lay flat face up to dry. DO NOT ALLOW THE PRINTS TO COME IN CONTACT WITH EACH OTHER DURING THE DRYING PROCESS BECAUSE THEY WILL STICK TOGETHER.

TONING

There are various methods of changing the black photographic lettering of the black silver into another colour. A popular method is the sulphide-ferricyanide process which gives a red-brown finish. The silver is changed to a silver sulphide which is the most stable of all finishes, passing that of ink dyes. The silver image can also be changed to blues, reds and others. Any photographic formulae book will explain many of the methods. Also mordant dye methods can be employed changing the image into brilliant colours similiar to colour work. This system uses dyes which cause the silver image to react to derivatives of the chemical groups of paraphenylendiamine. Commercial toners are available from the photographic suppliers and it would be advisable to rely on these. ■

ANOTHER CW FILTER

Ivan Huser VK5QV
40 Flinders Ave., Whyalla Stuart, 5608

A simple aid to CW reception, this filter gives a choice of centre frequency and band-width. No claim or originality is made by VK5QV for the circuit.

Thumbing through some old copies of 73 magazine recently, I came across an article describing a simple CW audio filter. This article was in fact a reprint of the original by VE3EXA, published in "The Groundwave" (April 1975), the official bulletin of the Ottawa Amateur Radio Club.

The original circuit used some rather odd values of components, but design formulae were given and with a little time spent on calculations, circuit values were evolved to give comparable performance with readily available components.

The filter is basically an active type using a single parallel tuned configuration, the heart of the filter being a "gyrator".

Capacitor Cl is gyrated tc give an equivalent inductance (L equiv) which is connected in parallel with tuning capacitor Ct to form the parallel tuned circuit.

The Q of the circuit and hence the bandwidth can be controlled by shunt resistance Rs. Using values for R and Cl as shown in Table 1, an equivalent inductance of 1.8 Henry was achieved which, when paralleled with Ct (0.022 uF), gave a resonant frequency of approximately 800 Hz.

Table 2 shows how the Q and bandwidth varies with values of Rs. It has been found that with Q's greater than about 25, ringing can become a problem and with the extremely narrow bandwidth, some musical signals will in fact disappear outside the bandpass, thus making the filter ineffective. The narrow bandpass also makes receiver tuning quite difficult.

The centre frequency can be chosen to suit the preferences of individuals and design formulae are therefore included. Perhaps several values of Ct can be switched to give a selection of frequencies if so desired.

Sufficient output can be obtained to drive headphones or a loudspeaker at low level.

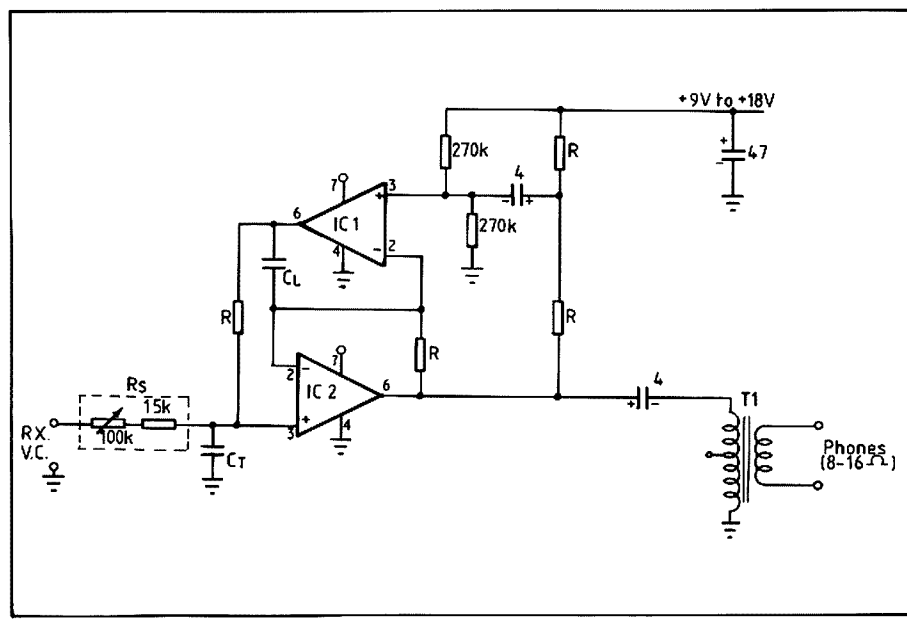

FIGURE 1

All resistors ¼ watt 5%
CT, CL polycarbonate or similar
T1 small audio output transformer
IC1, IC2 741 Operational Amplifier.

The value of supply voltage is not critical, and the unit will operate satisfactorily on voltages between 9 and 18 volts.

If you require something to improve the signal to noise ratio on CW signals, this may well meet your need.

FORMULAE

$$L\ equiv = R^2 . Cl$$

$$fo = \frac{1}{2\pi \sqrt{L\ equiv . Ct}}$$

$$Q = \frac{Rs}{\pi\ fo . L\ equiv}$$

$$BW = \frac{fo}{Q}$$

TABLE 1

R	**= 6.8k**	**L equiv.**	**= 1.8H**
Ct	**= 0.022**	**fo**	**= 800 Hz**
Cl	**= 0.039**	**Q:**	**See Table 2**
		BW:	**" " "**

TABLE 2

Rs (k ohm)	Q	BW (Hz)
15	3.3	240
15 + 50	14	55
15 + 100	25	31
15 + 150	37	22

■

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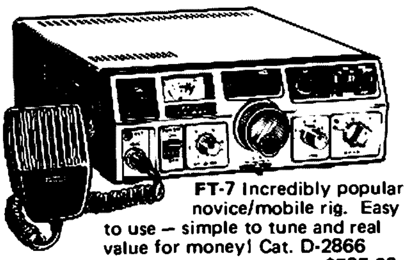

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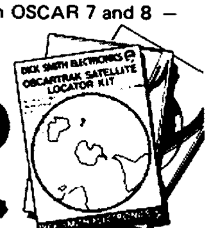

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BEGINNER'S GUIDE TO RADIO – King

This new edition of BEGINNER'S GUIDE TO RADIO continues the work of its predecessors, which have given many thousands of readers a sound basic knowledge of radio principles and practice. Gordon King has again completely rewritten the text in order to keep up to date with radio technology while reorganising and improving the description of fundamental principles.

The book takes you in logical steps from the theory of electricity and magnetism to the sound you hear from the loudspeaker. It describes the nature of the radio signal, what is involved in transmitting and receiving it (including stereo broadcasting), and what kinds of equipment are needed. Then it examines the components of a receiver, and how they are built up into circuits that will do the various jobs required. Finally, it outlines the improvements that are incorporated in modern (especially hi-fi) receivers and loudspeakers.

Written in a non-technical, highly readable style, with a minimum of mathematics this guide provides the newcomer to radio with an enjoyable introduction to the subject: it will open the door to further reading and to greater skill in handling radio equipment, whether for work or leisure.

RADIO CIRCUITS EXPLAINED – King

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2 WATT 80 METRE SOLID STATE TRANSMITTER

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During conversation both on and off air I found considerable interest shown, particularly by Novices, in a small transmitter that I had constructed when I first obtained my Novice licence.

The transmitter consists of a Pierce oscillator using a BC109 transistor which drives a 2N3137 power amplifier. The PA output transformer (L1, L2) Is wound on a toroid and the complete transmitter fits easily on a piece of single-sided fibreglass board about 3 in. by 4 in.

The oscillator stage operated well when modern plated crystals were used, but when some old re-ground pressure types were tried the oscillator refused to operate. This was cured by increasing the value of CX from about 220 pF to 1200 pF. If plated crystals are to be used exclusively the capacitor can be reduced to 220 pF or a value which gives good chirp-free output.

Much empirical type design took place with the PA stage and quite a few different toroids were tried before settling on an Amidon type T-80-2 mix 2. These toroids are available from a Sydney AR advertiser.

The primary winding L1 was made by twisting four pieces of 26 gauge enamel wire together using an eggbeater type hand drill. Eight turns of this wire was wound on and evenly spaced over the full circumference of the toroid.

Three pieces of 26 gauge enamel are then twisted together and eight turns are wound over L1. This forms the secondary L2 of the transformer. The individual strands are well cleaned of enamel, tinned, passed through the board and soldered.

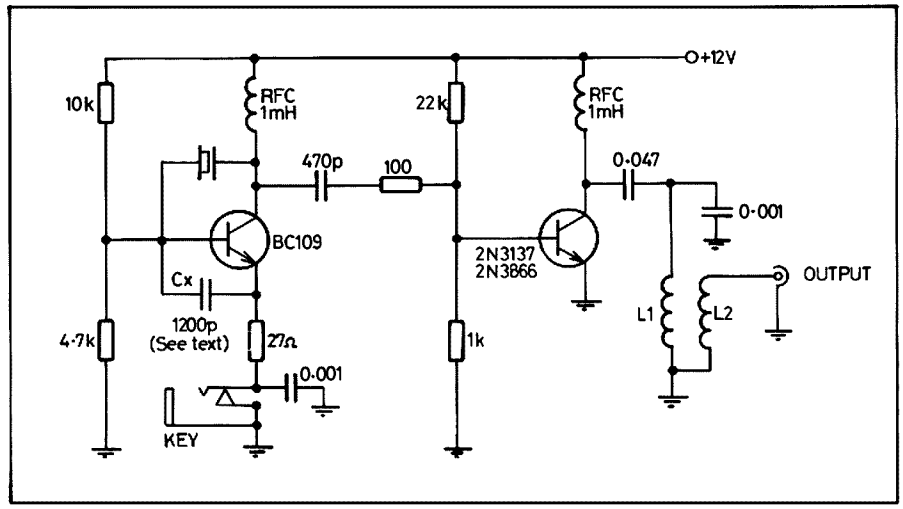


FIGURE 1

I wound the toroid from stranded wire as this was easier to get on to the toroid than solid wire.

The output transformer was quite broad in tuning and 1000 pF was found to give maximum output. L2 of the transformer was terminated with a 75 ohm load and the output was monitored using a simple diode voltmeter (see ARRL Handbook). Different values of capacitance were tried until maximum output was achieved.

The oscillator stage was found to develop quite an amount of power (for a BC109). When tested, the output of the oscillator was terminated in 470 ohms and 560 mW resulted. The BC109 ran hot at this power level and the output was reduced to 300 mW in the final version. I tried two other transistors — 2N3553 and 2N3866. These worked O.K. and gave about the same power.

Reports on air have been good for 2 watts, the transmitter keys well and is free of chirp and clicks.

Good DX!

(Note: In view of the simplicity and low Q of the PA output transformer, this transmitter may well produce significant output on harmonics of the chosen frequency. A good aerial tuner will be essential to minimise this problem.—Ed.) ■

TRY THIS

WITH

THE

TECHNICAL

EDITORS

AUDIO COMPRESSOR

Here is an audio compressor suitable for insertion in the microphone lead. The circuit was originally published in PAANO, 9, 1976. No performance details are available. ■

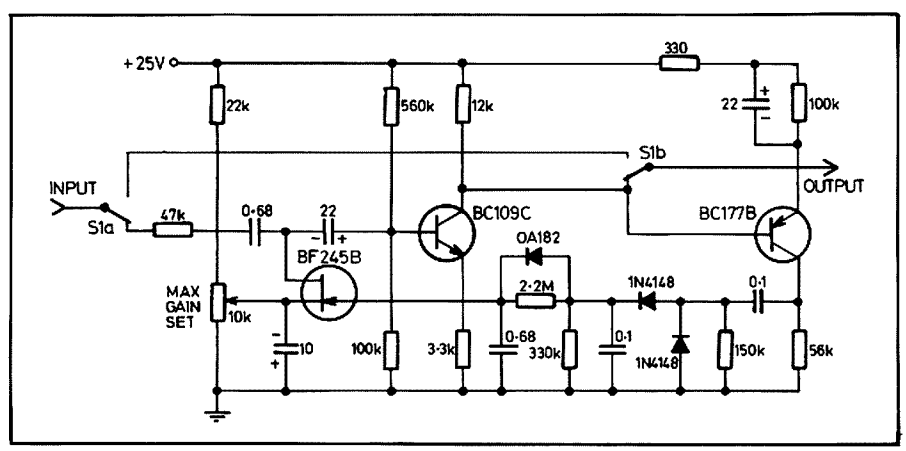


FIGURE 1

TRANSISTORS – WHAT DO THEY REALLY "LOOK" LIKE?

Roy Hartkopf VK3AOH

If you are one of the many people who feel they don't really understand how a transistor works, don't be discouraged. Even some so-called experts — people who think they are good enough to write school textbooks — have no more idea how a transistor works than the next door cat. The trouble is that many of these people get involved in fancy mathematics and formulae without having a basic picture in their minds as to how a transistor really works.

There are two ways of looking at transistors. The first picture is a fairly common one, that of visualising a transistor as a combination of two diodes back to back. This is shown in Fig. 1.

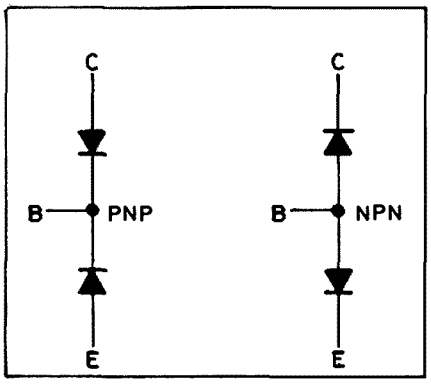


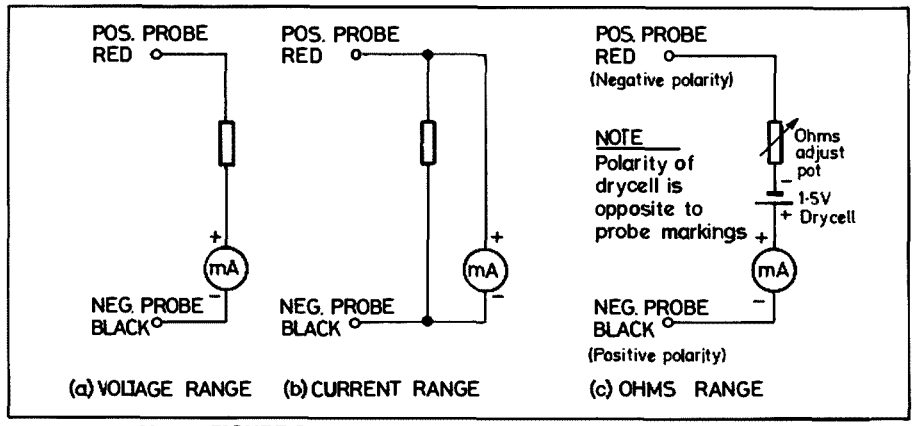
FIGURE 1

This is the kind of picture you get when you are checking a transistor with an ohmmeter. This incidentally is an excellent way of testing a transistor.

When using the ohm-meter section of a multimeter to test transistors *you* must remember that the actual polarity supplied by the meter is the opposite to the normal working of the probes. To see how this occurs refer to Fig. 2.

The probes are arranged to suit the meter movement polarity. However on the ohms range a battery (1.5V dry cell) Is used to provide a current source and Its polarity as seen at the probes is oposite to that marked on the meter.

If the positive lead of the ohm-meter is connected to the base of a NPN transistor we will get a reading of a few hundred ohms to both the collector and the emitter. If the positive lead (negative probe) Is placed on either the collector or the emitter there should be no reading to either of the other two terminals. The only exception is in some very large power transistors and the older type germanium transistor where there Is some leakage current. But it should be very small compared to the reading in the other direction. From now on we will talk about the NPN transistor, but the PNP one is exactly the same except that all the voltages are reversed, the collector being negative Instead of positive. Getting back to the NPN transistor, this will have a positive voltage on the collector and a slightly positive voltage on the base. We will look at the base voltage first. According to the ohmmeter test which we did before, the transistor looked as if it was made up of two forward biased diodes. Since the collector voltage is higher than the base voltage the one diode will be cut off but the second diode — between the base and the emitter — will still look like a forward biased diode. To put it very briefly the forward biased diode will not carry any current at all until the threshold is reached. This is about .2 volt for a germanium and .6 volt for a silicon transistor. Above this level the current increases very quickly and the effective resistance of the base of the transistor goes down very rapidly. If the voltage is increased to about 1 volt the current can be up to half an amp, which gives a forward resistance of about two ohms. This is of course far too much base current for the normal transistor. The point to realise is that the voltage input gives no indication of what is happening with the transistor. The only thing which matters is the base *CURRENT*. And the collector current is proportional to the base current over the working range of the transistor, but has no relation to the base voltage. This is why a transistor is known as a current operated device. Valves and FETs on the other hand are voltage operated devices and the output *current* is proportional to the input *voltage*.



Above: FIGURE 2

So far we have explained what the base input of the transistor looks like but this does not explain how the rest of the transistor actually works. To do this we need another picture. Fig. 3 shows a rough sketch which may give some idea of what goes on. Imagine a steep cliff with a lot of loose rocks on it. A boy comes along and starts to throw stones at the face of the cliff. Every time he throws a stone it dislodges a whole landslide of loose rocks which tumble down the cliff face. For every stone which hits the cliff face maybe ten or twenty or fifty rocks come tumbling down. An this is exactly what happens in the transistor. For every electron which flows into the base there are twenty, or fifty, or several hundred electrons which flow from the collector to the emitter. And this ratio is constant over the working range of the transistor and this is what is known as the Beta or current gain of the transistor.

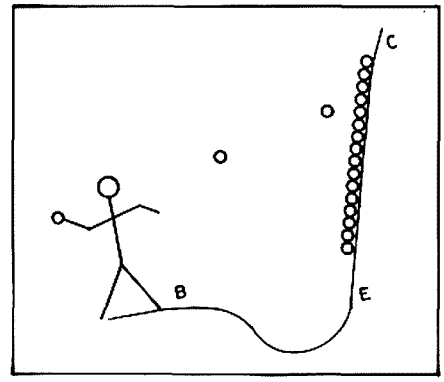


FIGURE 3

If we keep these two pictures in mind we will have a fair idea of the basic principles on which a transistor works. For checking with *an* ohm-meter *out of a* circuit it looks like a couple of diodes back to back, and for visualising how it works we have the picture of a boy throwing stones at a cliff and causing an avalanche of rocks to come tumbling down.

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TVI FILTERS — THE HIGH PASS TYPE

R. Champness VK3UG
31 Helms Court, Benalla 3672

In the excellent December 1977 issue I read an anonymous article entitled "An HF TVI Suppression Technique". The techniques described in this article are used increasingly in the war against TVI. Although the techniques are correct, except in one instance, the component values although possibly suitable in the author's case are not optimum in either filter.

When designing high pass filters for attachment to the front end of TV sets, it must be remembered that all frequencies above 45 MHz must pass virtually unattenuated, particularly in fringe areas where channel 0 is received.

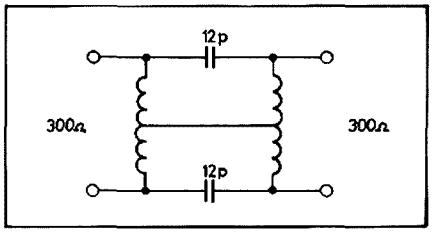


FIGURE 1A

In Fig. 1, L1 and L2 are 0.37 uH. The capacitors would probably be better to be a preferred value higher at 56 pF and 27 pF. In Fig. 2, L3 and L4 are 1.86 uH but should be 1.1 to 1.2 uH, preferably the latter. The capacitors should be 15 pF and not 12 pF. Particularly in the case of the 300 ohm filter a static leak resistor should be placed across each capacitor, otherwise high electrostatic voltages may be generated on aerials during electrical storms if no leakage path is provided from the aerial to earth. The capacitors could easily break down in these circumstances. The capacitors in all filters may be disc ceramic, preferably NPO, although N750 will do.

Whilst I agree with the author of the article regarding the use of the 1 : 1 RF transformers on 75 ohm lines, I believe from experience that this transformer is not required on the balanced 300 ohm line when the high pass filter is installed. The reason for this being that considerable opposition to the flow of HF currents is achieved by the series capacitors. There is no opposition to current flow on the braid of the coaxial cable and the transformer is needed in this case. The transformer should preferably be wound in a bifilar manner, for least losses. A static leak resistance should be connected between the primary and secondary of the transformer on the earthy end of each winding.

It is interesting to note that a well designed high pass filter attached to a television receiver has two functions (1) to prevent HF transmissions from overloading the front end of the television receiver and other vulnerable parts, and (2) to reduce or eliminate the radiation of line output stages harmonic energy that can be the bain of the life of a 160, 80 or 40 metre operator when receiving on these bands. The filter stops HF energy coming down to the set and prevents HF going out through the aerial. To fully overcome this problem a mains filter may also be necessary. A filter for 300 ohm use as shown in Fig. 1a is unsuitable for attenuation of this signal, the filters in Figs. 2a, 2b and 2c are suitable. All coaxial filters must have a 1 : 1 braid breaking transformer fitted.

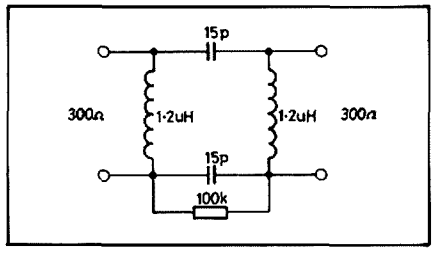


FIGURE 2A

One of the problems with filters such as shown in Fig. 2a is the fact that it has little attenuation in the frequency region 20 to 30 MHz where a television receiver is most sensitive. This filter in itself is quite adequate for filtering out HF transmissions up to 15 MHz but quite likely to be inadequate if an amateur runs high power on 28 MHz. At 28 MHz there is only about 14 dB of attenuation. The filter shown in Fig. 2b is much more effective in the region 15 to 30 MHz having not less than 36 dB over the whole range with a notch at approximately 28 MHz of 55 dB. The graph shows the relative attenuation of these two filters, and another simple filter, Fig. 2c, which may also prove useful. Many readers may not be aware that most solid state TV tuners have a composite filter fitted to the front end of them with traps tuned in the 30 to 40 MHz range for IF breakthrough protection, and an elementary high pass filter with 10 to 20 dB of attenuation below 30 MHz.

From experience it has not been found necessary to fit filters of a greater number of sections than that shown in Fig. 2b to television receivers. It is desirable to fit an extra section to the front end of masthead amplifiers as they are broad band devices with almost uniform response from 10 MHz to 1 GHz. The extra section brings the minimum attenuation below 30 MHz to at least 55 dB. It has also been found that the fittings of filters to the aerials of some sets produces no tangible improvement and interference patterning or complete

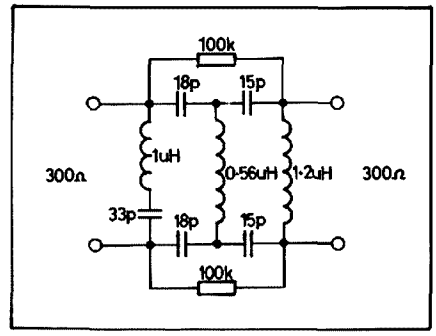


FIGURE 2B

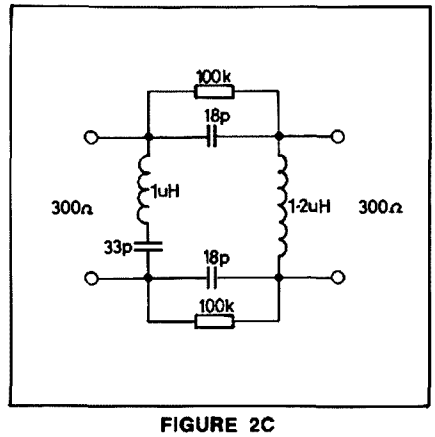


FIGURE 2C

blackout of the TV picture and sound can occur. One fairly popular colour set is quite prone to this trouble and a couple of black and white sets of around 5 years vintage are also troublesome. Research into the cure of these particular problems is being carried out, although results so far have been discouraging.

I have built a number of 300 ohm filters with good results, using commercially available inductors. They can be wound by hand, the formulae in the fundamental section of ARRL, "The Radio Amateur's Handbook", are accurate enough. Referring to the December 1977 article, if L1 and L2 are reduced by 1 turn and L3 and L4 are reduced by 4 turns and spread over the same winding length and with the capacitors as shown in this article, these filters should be quite satisfactory.

For further extremely good reading on interference I would suggest that you read chapter 17 of RSGB Edition 5 "Radio Communication Handbook", and "Radio Communication" March 1976 Technical Topics, page 207. The coaxial type high pass filters with the isolation transformer fitted are available from Onsite Antennas, 122 Wanda Street, Mulgrave, Victoria. To my knowledge these are the only commercially available filters with the transformer fitted as standard.

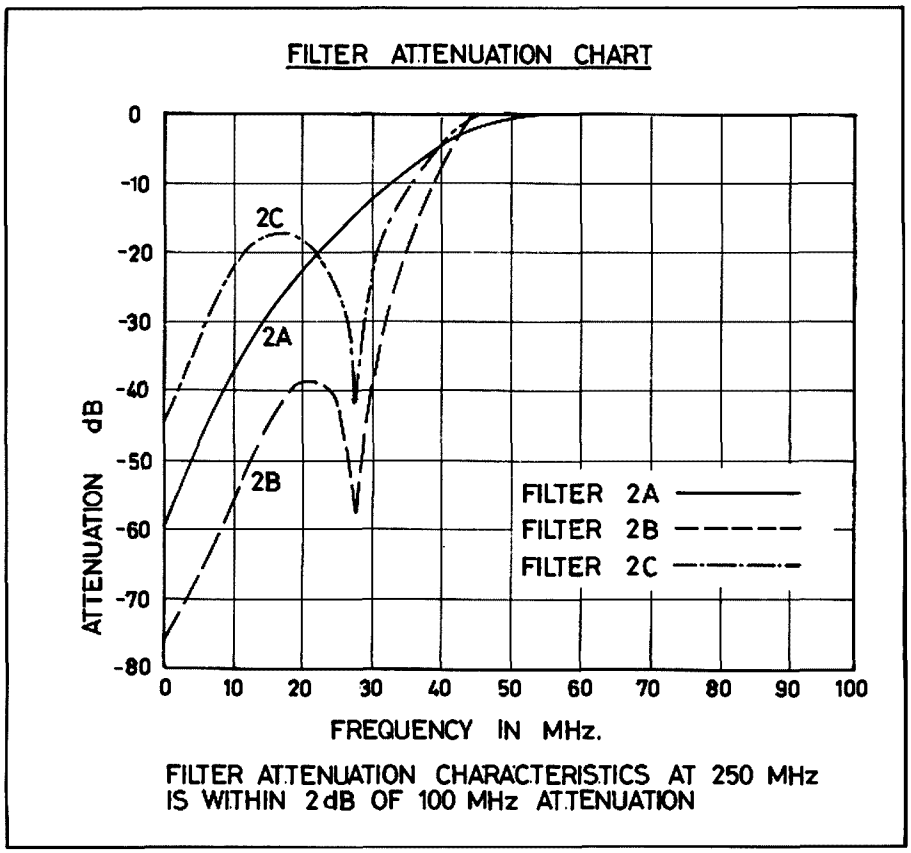


FIGURE 1B

With the use of a well designed low pass filter on your transmitter and well designed high pass filters fitted to good television receivers, operation on all HF bands with the legal limit and a beam should not cause interference. Do not back away from interference problems, it is a rare one that cannot be solved successfully.

Different choices of cut-off frequency and other filter constants will yield different component values. Rodney has made a different choice to that made by the other author. We agree that grounding is essential — for safety if tor no other reason.— Ed. ■

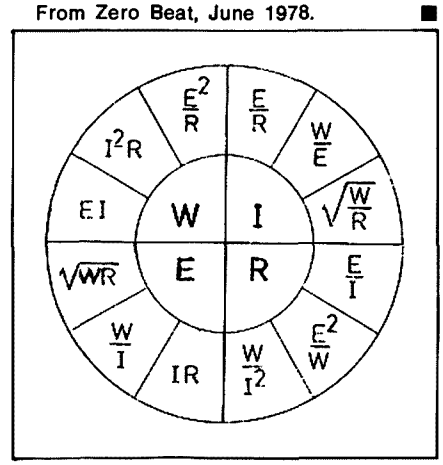
AMPS, OHMS AND VOLTS

Most of us have a fairly clear idea of what volts, ohms and amps are. We can get a good picture by thinking of them in terms of water. The electrical voltage is similar to water pressure which forces the water through pipes in the same way that the electrical pressure forces the electrons through a conductor. The constricted area of the pipes tends to slow down the flow of water and in the same way the resistance in an electrical circuit slows down the flow of electrons. Finally the amount of current flowing in the electrical circuit can be related to the amount of water in litres per minute flowing in the water pipe.

But where people often run into difficulty is when they try to make use of the formulae which connect these three things together. Most can remember that the current I equals the voltage V divided by the resistance R but after that we can get confused. And for those who are not used to algebra it is not an easy thing to transform one formula into another. A further complication comes when we are trying to consider the power in watts developed in the circuit. The basic idea of power can also be related to water. If we think a moment it is clear that the greater the flow of water the more power there will be — if the pressure remains the same. If the pressure also increases there will be still more power. So the total power is equal to the pressure and the flow multiplied together and exactly the same thing happens with the electrical circuit. The power in watts is equal to the current I multiplied by the pressure of voltage V.

In order to save the trouble of trying to remember all the combinations of these formulae we can refer to the chart below. Inside the inner circle is the parameter we want to get, and on the outside in the three minor segments are the three different combinations of current, power, voltage or resistance which will give the answer. There are a total of twelve relationships in all.

From Zero Beat, June 1978. ■



DESIGNATIONS OF AMATEUR BANDS WITHIN AUSTRALIA

160m	1800-1860 kHz
80m	3.5-3.7 MHz
40m	7.0-7.15 MHz
20m	14.0-14.35 MHz
15m	21.0-21.45 MHz
10m	28.0-29.7 MHz
6m	52-54 MHz
2m	144-148 MHz
70cm	420-450 MHz
23cm	1215-1300 MHz
12cm	2300-2450 MHz
9cm	3.3-3.5 GHz
5cm	5.65-58.85 GHz
3cm	10-10.5 GHz ■

Technical Articles Always Needed

RADIO AMATEURS OLD TIMERS' CLUB

Bob Cunningham VK3ML advises that the annual dinner for the RAOTC (Radio Amateurs Old Timers' Club) will be held in 1979 at the usual venue, Science House, Clunies Ross Building, Parkdale, Melbourne, on Thursday, 8 March. The guest speaker on this occasion will be Ray Naughton VK3ATN, who will speak on Radio Astronomy. Ray is well known, ot course, for his original work on Moon Bouncing techniques. It is expected that more than 100 members will attend that year.

Membership of the RAOTC is now some 250 from all States of Australia as well as overseas.

The qualification for membership of the Club, open to Amateurs world-wide, is to have held an Amateur licence (or equivalent) for at least 25 years. There is no subscription to the Club but a charge of $2 is made for the attractive certificate of membership, plus postage.

Application to join the Club can be made by writing to Harry Cliff VK3HC, PO Box 50, Point Lonsdale, Victoria 3225, accompanied by a SEA envelope. ■

A SIMPLE AND ECONOMICAL SSB 80 METRE RECEIVER

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

The following article will describe two modules which can be made up into a simple but surprisingly useful little receiver which is capable of receiving single sideband stations as well as Morse, and the normal amplitude modulated stations. It works on the principle of direct conversion, or zero beat.

INTRODUCTION

As you know, radio waves are individually identified because they are at a particular frequency. If these waves are modulated by speech or music there appear what are called sidebands, waves with frequencies slightly higher and lower than the centre carrier frequency. Now if we have a second carrier at exactly the same frequency as the first we find this carrier will beat with the sidebands and give an audible tone. If the two carriers are at a slightly different frequency they will also produce a beat note and this is the whistle — often called a heterodyne whistle — which you can hear sometimes when tuning in to a station.

The very old fashioned radios had a very typical whistle which was caused by this effect, and when they were tuned the whistle would start at a very high pitch and then get lower and lower gradually until it came down to nothing, that is, zero beat. Modern single sideband receivers do exactly the same thing.

So basically there are three parts to our receiver. There is the detector which detects the incoming signal and also the local frequency and beats them together. There is the local oscillator, which generates the beat frequency, and finally there is the audio amplifier section which amplifies the signal so that it can be heard through a loudspeaker.

AUDIO SECTION

The audio amplifier is constructed as a separate unit as it has many applications and can be a most useful little device to have around the shack. If you have never built anything before this is an ideal project to start on, and if you have not got one in your shack you are missing out on a most useful gadget.

What can an audio amplifier be used for? First of all it can be used as a signal tracer. If you have a radio or amplifier which is not working you can attach a probe to the input of your amplifier and touch on to various parts of the amplifier or receiver until you find a signal. This will enable you to locate where the trouble is.

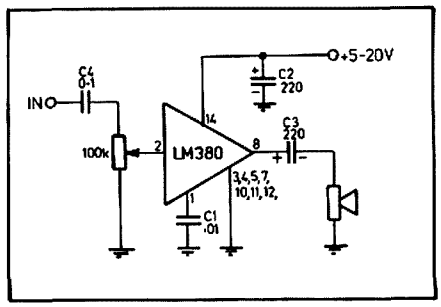


FIG. 4: Audio Circuit Diagram.

If for example the loudspeaker is burnt out you will get a signal through the signal tracer as soon as you touch the leads on to the output of the transformer, if there is one which feeds the speaker.

The if you put a diode in the input to the amplifier you will be able to check the radio frequency sections of a receiver. Then, with an audio oscillator you can use it as a Morse code practice set.

If you make a simple bridge you can use it as a detector for checking the value of capacitors and resistors and inductors.

A microphone on the input and you can use it as a lower power "public address" amplifier. If you put long leads on to the speaker it can act as an intercom or a baby alarm.

It is possible to make an amplifier using a couple of transistors and various components, but by far the simplest method nowadays is to use an integrated circuit. The National LM380 is an ideal device for this kind of job. It will work with a voltage of anything between about 5 and 20 volts and requires only about three external components to make it into a robust workable amplifier. Fig. 1 shows the circuit of the amplifier and you can see that it is very simple indeed.

Fig. 2 shows the layout of the copper side of the board and Fig. 3 shows the component layout. As long as you are careful not to put the integrated circuit or the electrolytic capacitors on the board back to front, or to connect the battery the wrong way there is nothing that can go wrong.

Be very careful to mount the LM380

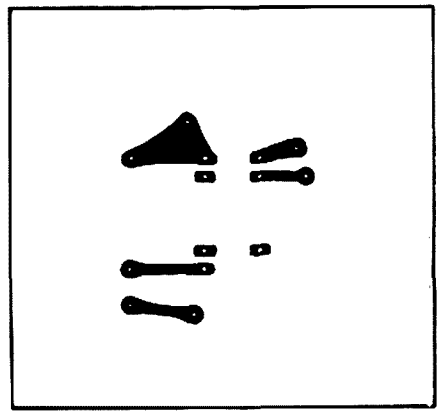


FIG. 2: Audio Board (exact size).

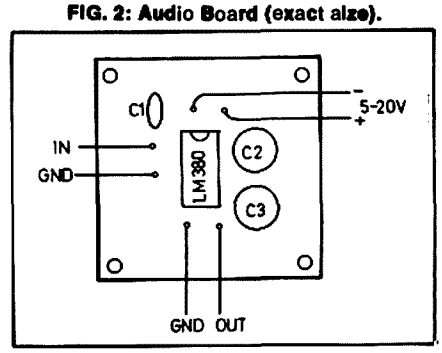


FIG. 3: LM380 mounting position and component layout.

with the nick or dot at the end as shown in Fig. 3.

You can use any small speaker with 8 or 16 ohm impedance or even a 3 ohm speaker will do if the LM380 is not driven too hard. The speaker, battery and circuit board should be mounted in a simple box so that it can be easily carried and will not be damaged.

For those who have already got a lot of goodies in their junk box, is the suggestion that an equally suitable audio amplifier could be made simply by taking the audio section of an old transistor radio and mounting it together with a battery and a speaker in a box. If you have any discarded transistor radios this method will give the same results without costing a cent.

3.5 MHz RECEIVER

The normal mode of transmission nowadays in the voice HF band is single sideband with suppressed carrier. Our receiver has an oscillator which beats with the received sideband and so creates the audio frequency signals. When it is picking up CW (Morse), the two carriers beat together and in the same way produce an audio frequency signal, so the receiver is good for Morse as well as for single sideband. The pitch of the note or whistle can be changed by varying the frequency of the local oscillator.

The circuit of the direct conversion receiver is shown in Fig. 4, and it can be seen that it is not very complicated. The oscillator uses a BC108 or similar transistor and almost any silicon NPN transistor can be used. This oscillator is designed to work from about 3.4 to 3.8 MHz. The Australian Amateur band is 3.5 to 3.7 MHz.

The tuned circuit of the oscillator is between base and ground and the feedback is supplied to the emitter to cause the Transistor to oscillate. The output is taken to one of the gates of a dual gate FET, a 3N210. If it is available, the older type MPF121 is quite suitable and should not require any alteration to the circuit.

The other gate of the dual gate FET is fed from the tuned circuit which picks up the signal, and thus the signal and oscillator frequencies are mixed, and the audio beat note appears in the drain or output of the FET. Here it goes into a small audio transformer, and the output of this audio transformer is taken to the audio amplifier described in the audio section above.

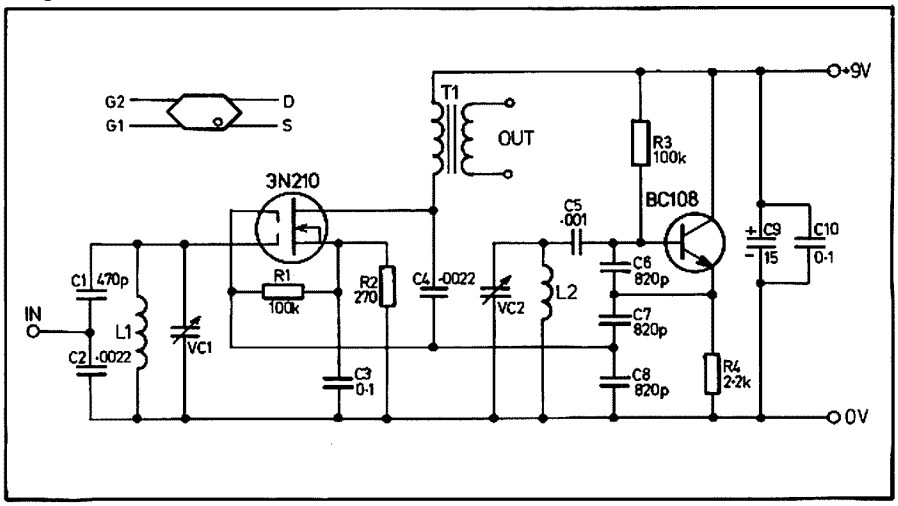


FIG. 4: 3.5 MHz Front End Circuit Diagram.

L1 & L2 — app. 30 turns on small Japanese type former or Neosid 722 former, F16 slug.

VC1 & VC2 — salvaged BC type 450 pF capacitors or similar.

Fig. 5 shows the component layout and Fig. 6 is a full size layout of the circuit board. It can be seen that the variable capacitors for tuning the signal and the oscillator are separate. It would have been possible to gang them together and have only one tuning control but this would create lining up difficulties. It is quite a simple matter in practice to tune the oscillator until a signal is heard, and then to peak it up by adjusting the signal tuning capacitor.

Considering the simplicity of the receiver it is quite sensitive, but it does need a good antenna, an 80 metre dipole is ideal, for the best results. The receiver also has a tendency to overloading when there is a very strong local signal, but as a means of getting started when you have not got anything which will resolve single sideband it is probably the best type of circuit available.

For those who intend using it as something more than a simple experimental project, it is suggested that the oscillator capacitor at least be removed from the rather limited space on the circuit board. It should be fitted with a large control knob which would make tuning less difficult. The tuning in of sideband stations can be quite critical and care is needed to make the signal readable.

Adapted from Zero Beat.

EDITOR'S NOTE:

This project is designed basically for self teaching purposes. The author has commented later that it is necessary for a well regulated 9V power supply to be used.

The audio section works well but some modifications have been made to the original design. It is hoped to publish the modifications at a later date.

In the meantime, due to the simplicity and economic viability of the receiver, we recommend to newcomers to have a go at it, and learn as your progress. ■

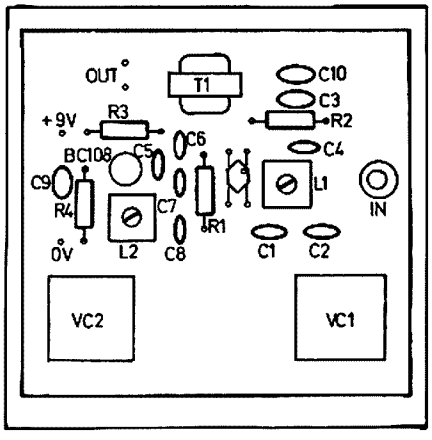


FIGURE 5:

Component layout (front end).

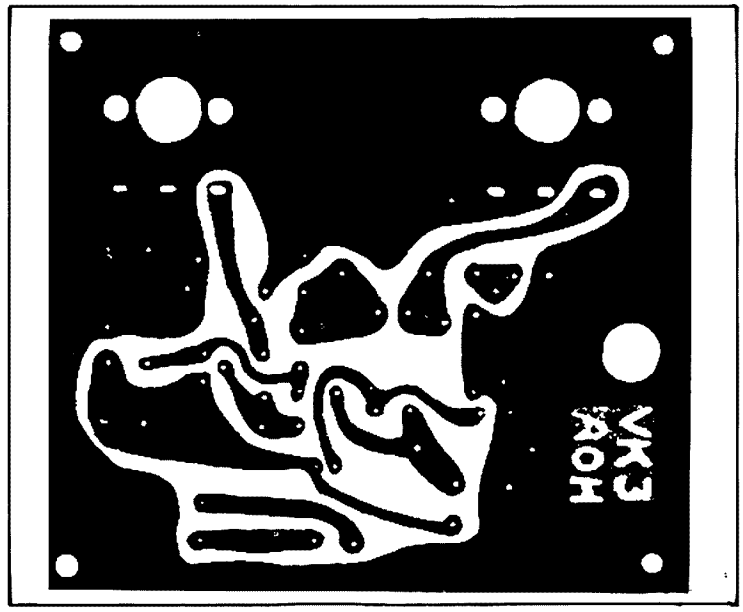


FIGURE 6:

Front End Board (exact size) Copper side.

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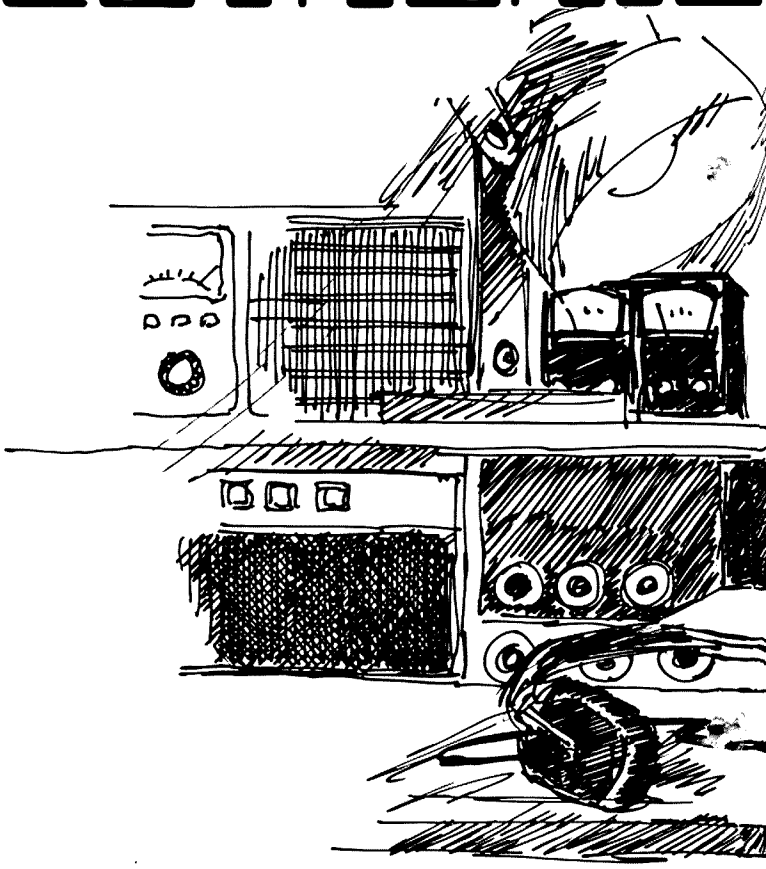

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GREG WHITER
VK3CA

AMATEUR RADIO ACTION

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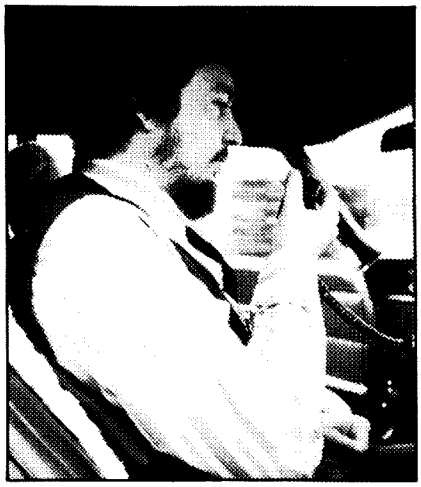

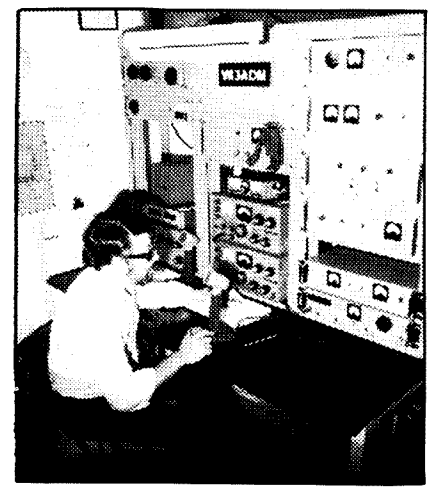

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VK/CB ACTIVITIES

Sam Voron VK2BVS

Instead of a dull, boring old AGM the members of the Amateur and Citizens Radio (VKCB) Club decided to put on a big display prior to and after its annual general meeting.

The AGM only lasted an hour and then it was back to showing the general public the fascinating worlds of radio.

Local articles in the press and announcements over radio attracted many of the folks from around Sydney who sat on the Club's AGM and participated in the Club's display, disposal table and information centres.

Photo No. 1: The dedication and work of Max Lowe in promoting CB and Amateur Radio in NSW recognised by Club members.

Max Lowe, Deputy Director of the NCRA in NSW and President of the four-wheel drive radio club, demonstrates the setting up of a portable field station. You will notice the tent, generator and portable rig, plus antenna, being assembled. Max was unanimously elected as the Club's Vice-President at the AGM. Max has been studying the morse, theory and regs., and signed himself up for the November Novice exam. He is quite confident he will get it, but until then he has taken up his new hobby of SWLing on 160 through to 10m.

The VKCB Club has been encouraging joint ventures with CB groups around the State as a means of promoting good CB usage as well as introducing the spirit and aims which encompass the hobby of amateur radio. Max and the four-wheel drive club members have been particularly enthusiastic in supporting the VKCB concept of promoting both CB and amateur activities since the Club was formed a year ago.

Photo No. 2: The promotion of WIA membership can only serve to strengthen Amateur Radio.

As in all the Club's activities, WIA publications, information sheets and membership forms are made available to the public on displays such as these.

Photo No. 3: Alan Cox VK2NYC, one of our newly licensed Club members in action. Whilst still studying for his licence, Alan assisted in the development of the Club right from the start, particularly as the Eastern Suburbs Co-ordinator and former Secretary of the Club. Alan's new position is that of Club magazine editor for "Amacit", denoting the two areas of involvement of the Club. Here you see Alan using his new FT7 transceiver.

PHOTO No. 1

PHOTO No. 2

PHOTO No. 3

PHOTO No. 4

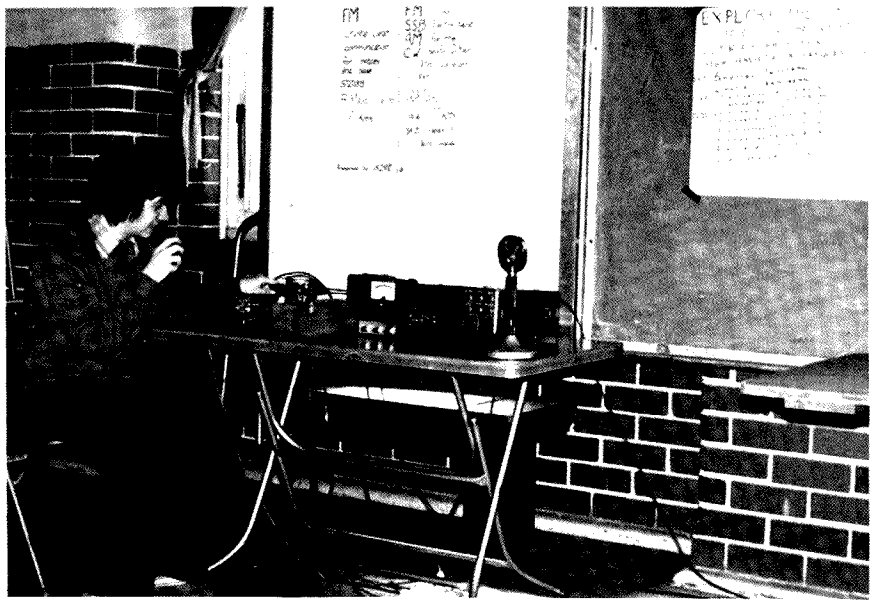
Photo No. 4: The medium and high frequency radio display.

A world map, field day photos, a chart of the bands and what happens on them and, of course, the gear make up quite a nice display.

Photo No. 5: Simeon Cran VK2YFZ/2NIC at the VHF, UHF, SHF display.

Another fellow who has been involved with the Club right from its formation a year ago is Simeon; he has been quite active in a variety of ways in encouraging and helping the newcomer. Pictured you see Simeon's 2m FM rig and his 6m FM, SSB, AM, CW transceiver. ■

PHOTO No. 5



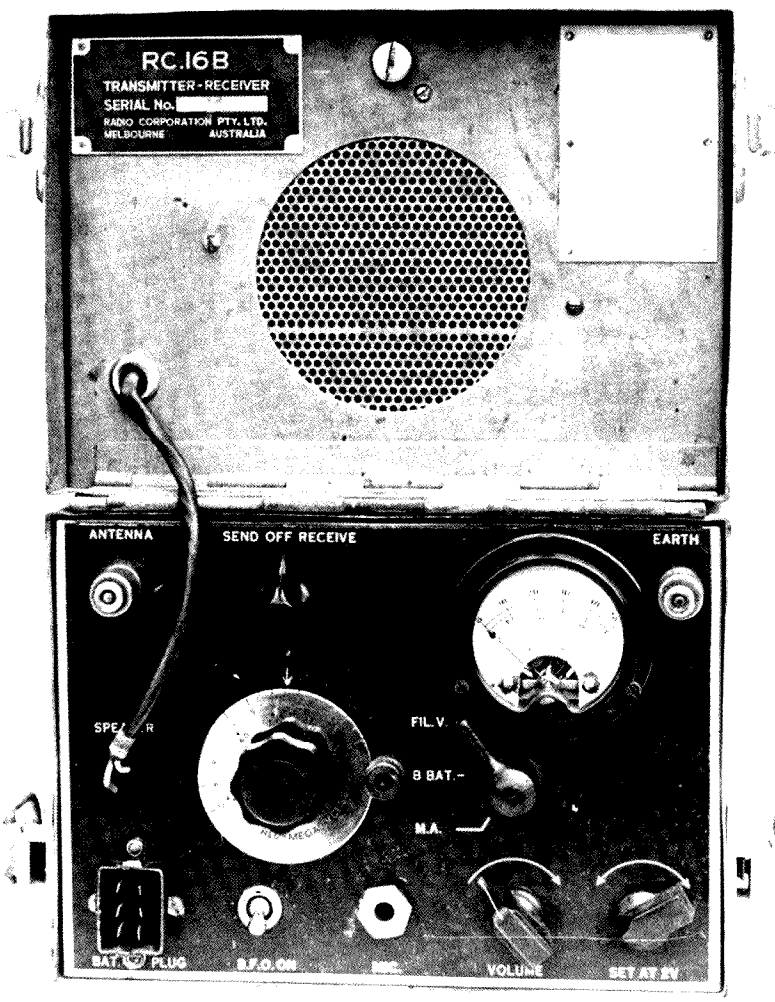
PORTABLE ARMY WIRELESS SETS OF WORLD WAR II

Compiled by R. Champness VK3UG

5. The Wireless Set No. 22T is a British designed and built portable AM/CW transceiver for the 2 to 8 MHz range, with both transmitter and receiver being VFO controlled. The transmitter is grid modulated in the AM mode. It has three EL32 valves in the final stage, the Australian version of the same set uses one 807. The output power on CW is estimated to be between 8 and 12 watts. The set operates from a single vibrator supply from a 12 volt accumulator.

A complete station, including the set, accumulator and aerial systems, could be packed on the backs of three men, certainly not a light load. These were one of the first sets to use semi-break-In keying on CW.

The English No. 22 set set the pattern for the Australian No. 22 yellow band series, which is similar in concept but uses the valves more commonly available in Australia at that time. Subsequently the yellow band set gave way to the Australian designed No. 22 and probably the ultimate in its class, the No. 122. The British set is not a particularly marvellous set in my opinion, and it was ultimately superseded by the No. 62 set, a robust and probably



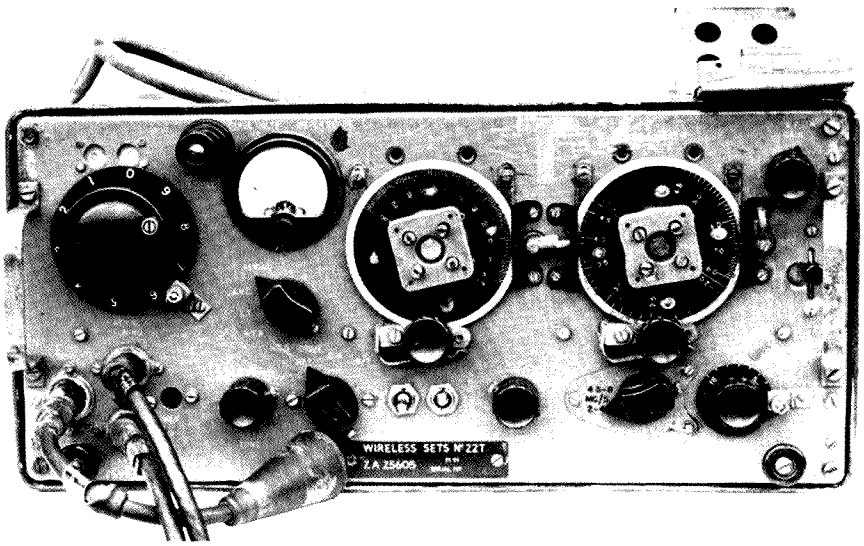


PHOTO 5 — Wireless Set No. 22T.

reliable set, although it, too, had many deficiencies.

6. The RC16B was known under several different titles, depending on whether it was being used by the army or air force. There are two versions of this transceiver, one having one xtal locked transmission frequency and the later model had two. The transmitter and receiver are both capable of operating on AM and CW. The receive is tuneable between 3 and 7 MHz. The set is designed to work off dry batteries, which have to supply 3 volts, 135 volts, 80 volts, and 4.5 and 7.5 volts of bias. The set uses 2 volt valves which were designed to use with 2 volt accumulators. The filament drain on receive is .58 amps and a whopping 0.78 amps on transmit. On the HT side the drain on receive is 16 mA and on transmit about 50 mA. The dry batteries to run such a set for any length of time would be monstrous in size and heavy. Not my idea of a portable set. This is one of the few sets where a loudspeaker is standard equipment.

The receiver performs quite well, is fairly sensitive and smooth to operate. The transmitter oscillator is not an eager starter and needs to be tuned carefully for reliable oscillation. The transmitter puts out between 2 and 2½ watts, and is plate modulated by a class B modulator, which is most unusual in a dry battery operated set. Radio Corporation used class B modulators to provide high level modulation in many of their sets. Many of these sets were used by the Forests Commission of Victoria until better sets became available. I don't think that amateurs would have used these sets because of the high current drain and low output power. Completely converted to 6 volt valves and run from 240 volts they could have done a reasonable job for amateurs. ■

NOVICE NOTES

MEASURING RF LOSS IN COAXIAL LINES

The efficiency of your coaxial lines may be determined by measuring the line loss at your operating frequency. You can do this by merely short circuiting the far end of your coaxial line and measuring the standing-wave ratio with your SWR meter. If there is no line loss whatsoever, the SWR reading will be infinite (full scale), indicating that the reflected wave is equal in amplitude (size) to the incident wave. In a real-life situation, of course, this is not the case, and the SWR reading under the test condition will be less than infinite, due to line loss.

In order to make this measurement, the antenna termination is removed from the far end of the transmission line and the outer shield is firmly shorted, a really short short, to the inner conductor of the line. A small amount of power at the required frequency is applied to the line through the SWR meter. The meter is adjusted for full scale reading on the "forward" position, and the meter switch is then thrown to the "reverse" position. The line loss may then be computed from the reverse reading and the chart in Fig. 1.

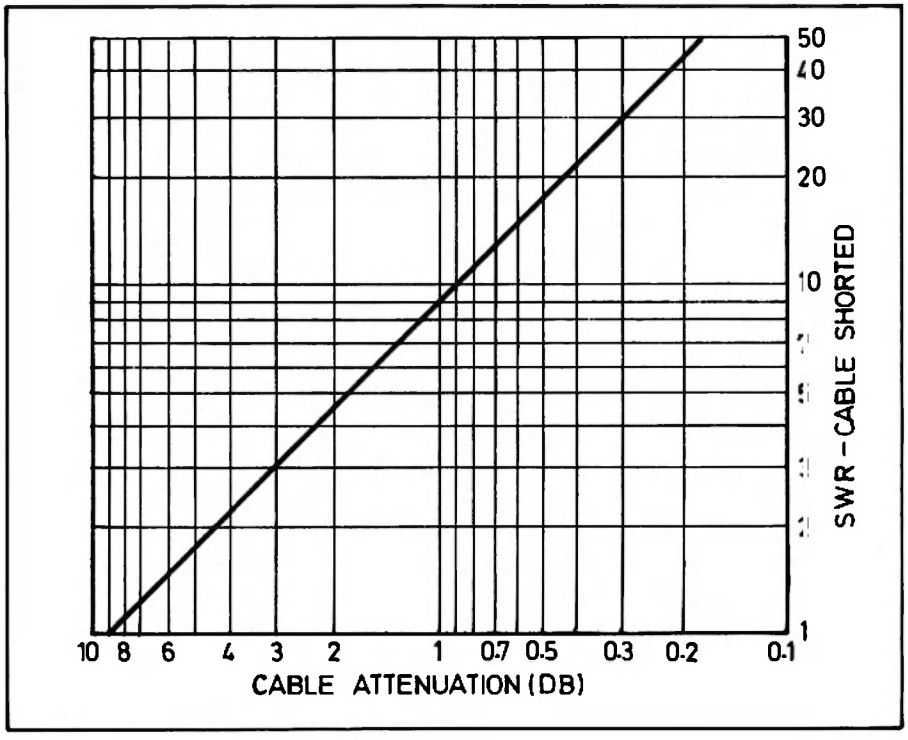


FIGURE 1

If, for example, the SWR turns out to be 4.5, the cable loss (attenuation) is 2 decibels. This means that your coaxial line is about 63 per cent efficient, and that 37 per cent of your transmitter output power is being lost in the line. If the SWR reading, on the other hand, is 9, then your line loss is only 1 decibel and your line is about 80 per cent efficient.

From "The Lyrebird", Winter 1978. ■

NOT SO YOUNG!!

Harry D. Alderson VK2NSR
P.O. Box 1084, Coffs Harbour, N.S.W. 2450

One tends to regard the Novice as a young man — often a schoolboy. So here Is a new breed of Novice operators appearing on the scene. The ex-serviceman now retired but an ex World War II operator making a comeback, often slow and painful.

Harry is in his 60s, an ex RAAF Wireless Telegraphist with over five years experience as an operator In aircraft, ship's operator, but mainly ground installations in the south-west Pacific area, and was discharged from the RAAF in 1946.

He resumed his peace time occupation as a steam and electric locomotive driver with the Victorian Railways for more than 30 years.

Equipment in use is a modified TS520S into a half wave dipole 50 feet high running north-east and south-west.

He became operational 23-7-78 on the 80 metre band, CW only, and has worked all Australian States, New Zealand and into Irianjayia (Java).

Harry qualified for the Novice licence in Melbourne, October 1977, and expresses thanks to the patient coaching from the WIA Novice class instructor, Miss Norma Boyle VK3AYL.

He would like to comment on the help given by full call amateurs who are always on hand to assist the newcomer.

Harry hopes to work 10 and 15 metre bands later this year — CW only. ■

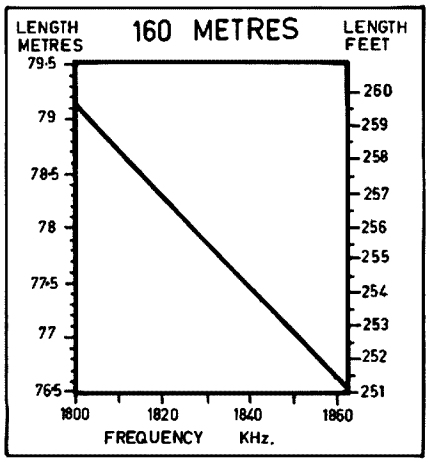
Harry Alderson VK2NSR.

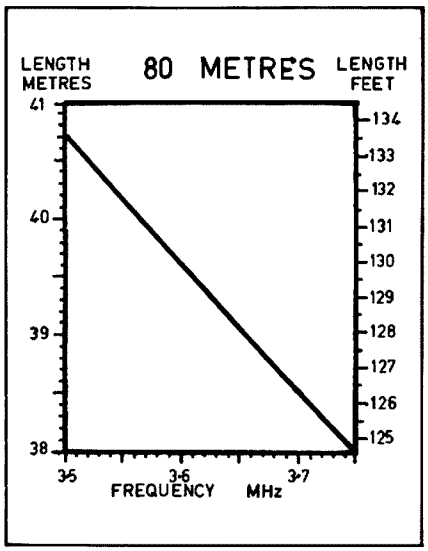
WIRE HALF WAVE DIPOLE AERIAL LENGTHS

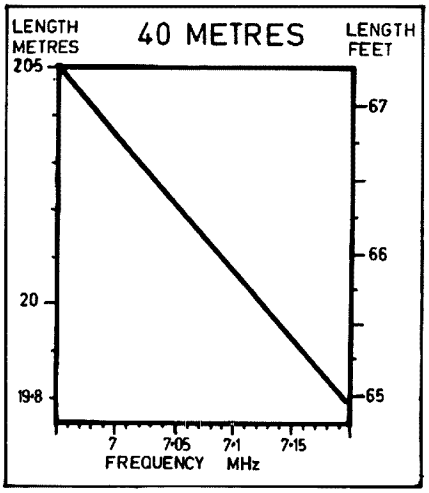
The following charts of half wave dipole lengths are based on the theoretical half wave length shortened by 5 per cent to allow for wire thickness and end effects. If the aerial is close to the ground or other objects some further pruning may be necessary. This will be the case if an inverted Vee or sloping dipole configuration is used or if the antenna is surrounded by trees.

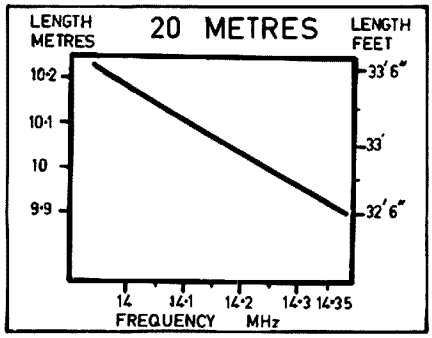
The wire size envisaged is between 16 gauge and 10 gauge and this would include the common copper earth wire type of 7/0.029.

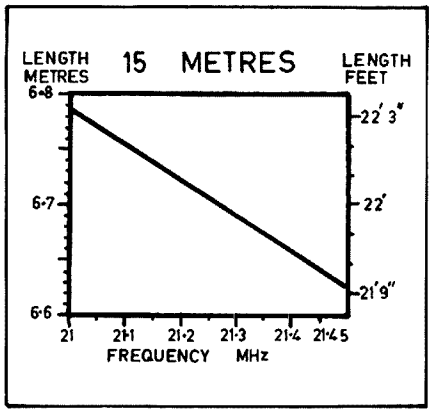
When erected the dipole should be checked for feed impedance or SWR in the band. The antenna length should then be adjusted to give a symmetrical SWR curve in the band. This SWR curve may be obtained by plotting SWR for various frequencies in the band. A similar result may be obtained by plotting feed impedance using a noise bridge or an antenna scope. The use of a noise bridge or an antenna scope will result in least interference to other band users as a signal does not have to be radiated and is preferred. ■

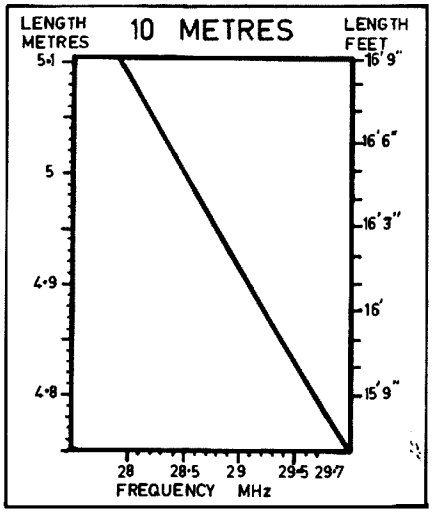












AUDIO BLANKER

Here is a circuit that will work well in receivers that do not have a narrow filter.

This simple audio-stage noise blanker will reject most repetitious, pulse-type interference, like radar and automobile ignition spikes, that often plagues AM receivers. The circuit is both less costly and far less complex than the radio-frequency stage blankers employed in some of the more sophisticated receivers, and though not as effective in eliminating interference, it outperforms the more commonly used noise-limiting audio-clipping circuits.

The blanker shown in the figure detects whether the amplitude of an offending pulse train at the output of the receiver's envelope detector exceeds a set threshold and then disables the output stage if necessary. Waveform diagrams are shown at several circuit points to help clarify operation of the blanker.

A typical amplitude-modulated signal might appear at the input of an AM receiver as shown in the upper left of the figure, where a 20-megahertz radio-frequency wave, modulated 30 per cent, is overridden by radar pulses 20 decibels greater in amplitude. A time-magnified portion of the AM detector output, after passing through an inverting operational-amplifier stage, would appear as shown, where the maximum amplitude of the pulse would be limited by the saturating level of the intermediate-frequency amplifier. Only two offending pulses are shown for clarity, but this detected signal contains a pulse train of sufficient amplitude and repetition rate to generate a substantial pulse noise and so impair the readability of the signal.

The interfering spikes increase the effective modulation percentage to well over 100 per cent. The blanker is triggered into operation when the modulation peak exceeds 140 per cent, whereupon Q_1 and Q_2 switch on and disable signal-gate Q_3 for the duration of each spike. The 140 per cent threshold has been experimentally determined as the point at which the interference caused by the blanking operation itself is still less than the interference generated by the offending pulse train. Note that to ensure that the blanking action occurs at the set modulation peak independently of signal-level changes, the receiver's automatic-gain-control signal is introduced at the threshold bias point at the emitter of Q_1.

Q_3 operates with no applied DC voltage so that no switching transients will be generated by the blanking action to impair circuit performance. Q_2, R_1, and C_1 have a fast-attack, slow-decay characteristic. Q_3 is thus gently turned on after a spike has passed so that the popping and clicking sounds that often accompany the operation of a blanking circuit that processes a randomly occurring train of spikes will be further suppressed.

The results of the blanking action are shown at the output of Q_3, where it is seen

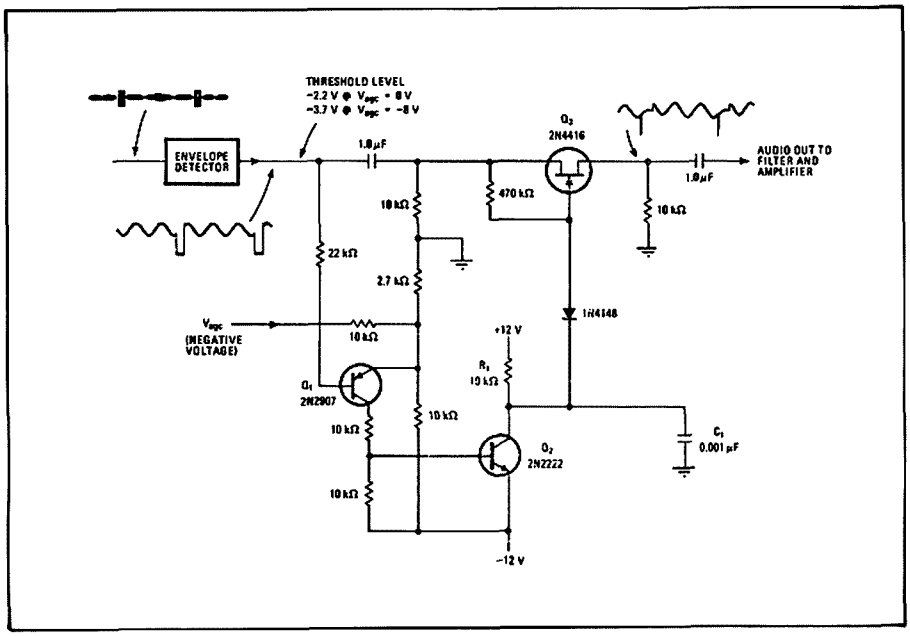


FIG. 1: Spike Eater. Audio-stage noise blanker, although not as effective at eliminating pulse-type interference as RF-stage blankers, out-performs noise limiter/clipper circuits.

that only brief transients appear. The signal is slightly distorted, but the distortion is barely audible. There is a great improvement in noise reduction, however.

Reproduced from Electronics, July 6th, 1978. ■

IS AMATEUR RADIO NECESSARY?

Remember the EEB a few years ago? The following item appeared in their February 1973 issue, and was reproduced in AR of April 1973.

We are reprinting the article again for the benefit of our newer members as the message contained therein is very relevant in today's climate.

Read this article twice, then take some action for your own hobby's sake.

A: Have another beer.
B: Don't mind if I do.
A: What are your thoughts on Repeaters?
B: All in favour of them. You fellows are squeezing into less and less space.
A: Well that's good isn't it? We're using the bands more efficiently.
B: Yes it certainly is good. There are a lot of other chaps who want that space, and it looks as though they ought to have it.
A: Oh?
B: You realise, say, that 80 metres is ideal for people doing work in the outback?
A: But why 80m? Why not 81m?
B: All right but they want 80m, and the equipment is already commercially available.
A: But we have already got plenty of amateurs on 80; just listen to the QRM any week-end.
B: But how dead is it during the week? And what is to prevent you from doing all your operating with VHF repeaters? You could get nearly as much DX from a chain of repeaters as you get from 80 metres.
A: But that's not fair! A lot of blokes prefer to build HF equipment which is less critical of components and adjustments than is VHF gear.
B: Oh yes, and how many people do build their own any more?
A: Plenty; the amateur magazines are full of constructional articles.
B: Do you build?
A: Well no, but that's a special case; I've just got too much to do for the wife and my job.
B: It's not so special; when more people were constructing they were just as busy. But let's return to the original point. You chaps have already lost a large slice of 80 to commercials who do in fact use it constructively. You can hardly assert that most of amateur operation is constructive nowadays. Furthermore repeaters show that you can operate on much less space than you have been given. Why, for instance, should you have 4 MHz on 2 metres when in fact you produce the most activity there from FM contacts using some 3 MHz largely unoccupied.
A: But the low end is certainly occupied very heavily by SSB, etc.
B: Sure, some 200-300 kHz worth; that's heavy?
A: We have to plan for the future; more amateurs will need more frequencies.
B: The present channel spacing could be reduced, and more amateurs could be put into each band segment.
A: This would turn amateur operation into one great net.
B: Isn't that the direction its going now?
A: How about Individualists who don't want to be crowded in with the others?
B: Let's keep our priorities in mind. The important thing is not what amateurs want but what societies need.
A: I suppose that society "needs" space in 40 and 80m while there is ample space available to them outside of our bands?
B: There is such space, but you must admit that the propaganda stations find a hand-picked audience already at hand in the amateur bands.
A: Amateurs are not interested in propaganda!
B: Then why don't more of them jam the broadcasts of the intruders? Only a tiny signal sitting one of their frequencies can cause havoc.
A: Amateurs have more important things to do. The fact remains that the intruders have no business being there; are you supporting their propaganda activity?
B: Certainly not. Arguments have in fact been advanced in favour of your having more space in 40m, but this was opposed by the government of Infrabovia — with whom we are presumably on friendly terms. What more can be done?
A: At least we shouldn't lose the frequencies to which we are entitled.
B: Are you entitled to them?
A: Yes, we were given these frequencies by international agreement.
B: Modern tendencies toward band-sharing show that this agreement is no longer as valid.
A: But that's not fair!
B: So? What have amateurs done in recent times to justify their use of the bands?
A: Training new technical talent?
B: That's taken care of nicely by commercial and military training programmes.
A: Civil defence?
B: This is already handled very competently by governmental agencies.
A: Message handling?

B: Not significantly outside of North America, and look at the mess it has become over there. They are even phone patching commercial transactions now!

A: At least amateur radio provides a healthy hobby for a large number of people.

B: Have you listened to the bands recently?

A: Of course.

B: Do you call "healthy" the kind of discourtesy, bad operating and incompetent operating heard there?

A: That's only a noisy minority.

B: You can't convince the public of that.

A: (Smugly) Most of our operation is on SSB and the public can't receive that, so they don't matter.

B: The commercials can, and they do matter. And they want your frequencies. You have shown that with the aid of repeaters you can do with far smaller bands. You have shown by scanty use you need far fewer bands. And you have shown by incompetence and poor operating that you are jolly lucky to have any frequencies at all.

A: If you destroy radio you'll be destroying a large commercial enterprise.

B: Who's destroying radio? Only amateur radio; there is much commercial and service opportunity in other directions. Already component manufacturers are recognising this by largely ignoring amateur complaints about component scarcity. The big production goes where the big money is: in the entertainment and commercial communications markets.

A: (Gasp) I need another beer.

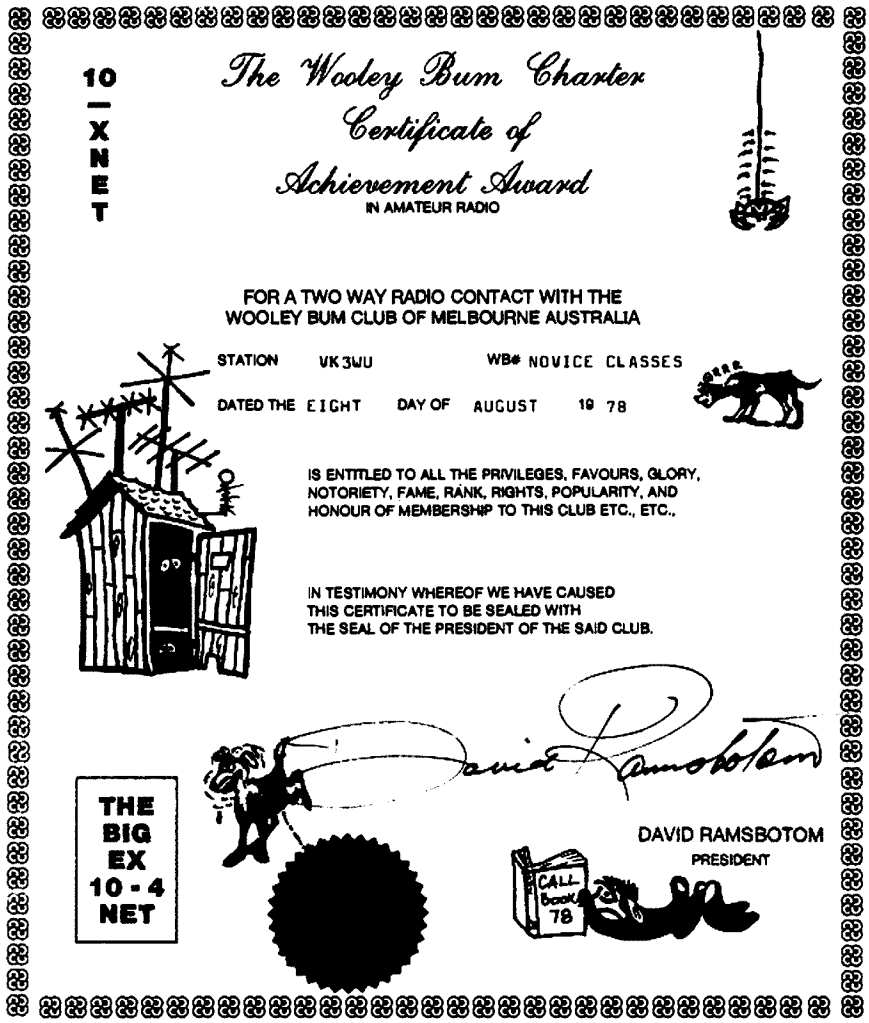
B: Me too. May I make a suggestion I hope you'll pass on to your mates. You'll have a better chance of keeping the bands if the intelligent majority accepts some responsibility for pulling the Clods back into line. This requires the individual responsibility, and that means you and your friends. **If you do nothing, you'll get nothing.** ■

WOOLEY BUM CERTIFICATE OF ACHIEVEMENT AWARD

Alan Greening VK3WU has advised us of the formation of the "Wooley Bum" Club.

The Club consists of ex 27 MHz "Bootleg" operators who approached Alan for information on upgrading to amateur radio.

Alan has conducted Novice courses for these people and to date over 90 ex pirates have obtained their Novice licences and settled down to enjoy the benefits of amateur radio operation.



Alan is to be congratulated on his efforts and we trust that only good can come from the acquisition of these Novices.

The Club conducts their rag chew net each Sunday on 28.570 MHz ± QRM at 10.00 hrs. EAST (2400Z and 0100Z during local daylight saving time).

To gain membership to the Club, 10 points are required to qualify. Points are obtained as follows:—

QSOs with cert. holder No. 1, 10 points; QSOs with cert. holders Nos. 2-49, 3 points; QSOs with cert. holders Nos. 50-99, 2 points; QSOs with cert. holders Nos. 100 up, 1 point.

Send details of your QSOs to:—

Awards Manager,
David Ramsbotom,
PO Box 212,
Prahran, Vic 3181.

Plus membership certificate issuing fee of A$3.00 (to cover printing costs and airmail world-wide).

Further information may be obtained from —

Alan Greening VK3WU,
PO Box 180,
Glenroy, Vic. 3046
Ph. (03) 42 1616 (bus. hrs.).

EDITOR'S NOTE:
Whilst some of our members may have some reservations regarding the activities, and particularly the "name" of the above Club, we nevertheless recognise that any attempt to educate CBers in upgrading to amateur radio through the normal legal processes deserves credit.

We therefore make no apologies for the publication of this item and look forward to further contributions/articles in this area. ■

Please avoid late Subscription Payments

WIA MEMBERSHIP

As you know the WIA is made up of seven Divisions plus the Federal body.

Only the seven Divisions are members of the Federal WIA, nobody else.

Individual persons are members of a Division — normally the WIA Division of the State in which they live.

The Federal WIA keeps central EDP records on behalf of the Divisions. The Federal body also collects and processes individuals' subscriptions on behalf of Divisions. The Federal organisation has an office in Toorak, Victoria, but is not a part of the Victorian Division any more than it is a part of any other Division. The Federal body publishes AR on behalf of the WIA as a whole, it represents amateur radio both nationally and internationally and carries out some other services on behalf of members (e.g. Magpubs).

But you, as a member, in general look to your Division for your requirements. The Division appoints members, is responsible for membership gradings and deals with enquiries from its members. The Division also handles all local (i.e. State) affairs, representations to State Radio Branches, dealings with local WIA (and other) Clubs and Zones, QSL bureau and many other functions.

It serves no purpose writing to the Federal WIA about any of these things because your enquiry will only be sent forward to your Division and delays can occur. As a general practice the Divisions do not have the services of paid staff. Divisional work is done by the volunteers you have appointed to your Divisional Council.

Each Division is a separately registered company under the Companies Act and has its own constitution. The Federal WIA is also a separate company with its own Memorandum and Articles of Association. Since the whole is the WIA, there is an enormous amount of liaison between the separate organisations. This is exemplified, for example, in the annual Federal Convention.

These brief explanations are designed to show you how the WIA operates and why you have to take up with your Division any membership and other questions which arise.

For very practical reasons, however, corners have to be cut so that work is not delayed for unimportant reasons. As one example, if you were a student last year, but not this year, and hence pay to Federal office the full subscription rate for this year, instead of the previous concessional rate, you will be re-graded upwards (upwards in terms of subscription rate) automatically. But if any re-grading would necessitate payment of a lower rate, the Federal office cannot re-grade you. This has to go back to the Division.

Again, each Division has its own definition of what a pensioner is, or what criteria qualifies a person to be a student. The same principle applies when Divisions appoint honorary life members, although there is a common denomination — service to the Division.

At the 1978 Federal Convention the Queensland Division brought forward an Agenda Item to obtain agreement on the qualifications which appeared desirable before any member could be appointed an honorary life member of the Division. In the event the Agenda Item was withdrawn after considerable discussion.

It is interesting, however, that Divisional Councils do make a very careful value judgement before appointing anyone to life membership. This is a step not taken lightly, if for no other reason than financial. The Division has to pay for its life members — for example, the Federal element of annual subscriptions, for a start.

How then, you could be forgiven for asking, does the Institute honour anybody who puts in outstanding work in the Federal sphere — as an outstanding member of the Executive or one of the specialist Executive Sub-Committees. This is achieved only by agreement between the Executive and the Division concerned, because only the Division has the power to appoint or re-grade its members. When agreement is reached, all the costs of such a life member are borne by the Executive. As such a person worked hard for the WIA as a whole, the WIA as a whole (i.e. the Federal body, namely the Executive) pays for him.

For services in the Federal sphere we find a number of well known amateurs are life members of the Division, but paid for by the Executive:—

Horrie Young VK3AYH (now VK2), Bill Gronow VK3WG, George Hannan ———, Ron Higginbotham VK3RN, Max Howden VK3BQ, Max Hull VK3ZS, Ray Jones VK3RJ, Michael Owen VK3KI, Ken Pincott VK3AFJ.

There is one life member in the ACT Division taken over from VK2:—

Arch Cox VK1GU.

The NSW Division has honoured 12 to life membership:—

Ces Bardwell VK2IR, Major Collett VK2RU, Dave Duff VK2EO, Alan Fairhall VK2KB, Bill Hall VK2XT, Pearce Healy VK2APQ, Keith Howard VK2AKX, Mrs. McKenzie ———, Bill Moore VK2HZ, Bill Otty VK2ZL, R. H. F. Power ———, Lionel Swain VK2CS.

In the Victorian Division there are seven

Bob Anderson VK3WY, Reg Busch VK3LS, John Lancaster VK3JL, Cliff Pickering VK3ATP, Herb Stevens VK3JO, Jim Stewart VK3AS, Peter Williams VK3IZ.

The Queensland Division have four:—

Peter Brown VK4PJ, L. J. Feenaghty ———, Arthur Walz VK4AW, Norm Wilson VK4NP.

There are five in South Australia:—

Brian Austin VK5CA, V. R. P. Cook VK5AC, George Luxon VK5RX, Geoff Taylor VK5TY.

Western Australia also has five:—

Ron Hugo VK6KW, George Moss VK6GM, John Park VK6BB, Neil Penfold VK6NE, Jim Rumble VK6RU.

Tasmania has honoured five:—

Tom Allen VK7AL, Jack Batchler VK7JB, Joe Brown VK7BJ, Terry Connor VK7CT, Snowy Harrison VK7CH.

A grand total of 47 on the records. Unfortunately space does not permit listing all those who have passed on, although there were many. All these worthy amateurs, many of whom still work voluntarily for the Institute, have done their share towards making amateur radio what it is today. The amateur radio of tomorrow is what we make of it today. ■

QSP

SWLing

The June 1978 copy (No. 53) of DX Posl, pul out by the Southern Cross DX Club, GPO Box 336, Adelaide, SA, 5001, contains a very great amount ol information useful lo short wave listeners. Lists of stations heard, notes on receivers and some articles of general interest. This club is a member of the WIA South Australian Division. The newsletter also contains references to other DX clubs including the Down Under DX Circle of Melbourne.

AMATEUR EXAMINATIONS — UK

The following is an extract from a short report In Short Wave Magazine for April '78 and will be of interest lo Instructors —

"From 1979 the Radio Amateur's Examination will be In the form ol objective tests containing multiple-choice questions, and anyone preparing alone for his or her amateur licence and living In the London area, may be able to assist the City and Guilds of London Institute.

"In preparation for this change the Institute is to pretest objective questions, trying them out on candidates who have reached examination standard. Pretetsts are intended to test the performance of individual questions and syllabus coverage. Information is obtained which assists the Institute's reviewing panels In judging whether each individual question should be included In the question bank for use In future examinations."

USA BAN ON LINEARS

Ham Radio April '78 reports the banning by FCC of the commercial manufacture, distribution and sale of any RF power amplifier covering the 24 to 35 MHz range. Amplifier sales between individual amateurs are still permitted to build their own 10-metre linears. Also there will be a set ol type acceptance requirements on amateur amplifiers below 144 MHz. All these are to become effective, subject lo challenges, from dates to be specified. ■

YAESU

bail

ADVANCED AMATEUR COMMUNICATION EQUIPMENT

FROM A WORLD LEADER —

YAESU

YAESU

FT-901 De-Luxe HF transceiver

FT-901DM DE-LUXE SSB, CW, AM, FSK, FM, HF TRANSCEIVER, 160-10m, P.A. 2X6146B, Dig. readout, freq. memory, elect. keyer, rejection tuning, variable IF, audio peak filter, automatic tune-up timer, AC-DC operation, etc. etc. A host of new advanced features including, of course, Yaesu's up-to-date modular construction utilising plug-in circuit boards to minimise service time. See review in "Amateur Radio" Oct. '78. This symbol of technical excellence is real value for money at **$1595.**
(Mic., English Language Inst. Book, Connectors, and Pwr. Cables are included).
FT-901D, less keyer, memory, DC-DC, **$1375.**
FT-901DE, less FM, memory, DC-DC, **$1348.**
FV-901DM Synthesised scanning external VFO, 40 memory storage, electronic tuning, etc. **$475.**
FC-901 Antenna coupler, 500w, inc. SWR and PWR meters, ant. switch and connectors, **$272.**
YO-901 Multiscope. This is a CRO, TX monitorscope with two-tone generator, and receiver panascope! **$TBA.**
SP-901 External speaker **$56.**
SP-901P. External phone patch/speaker. **$135.**
FTV-901 VHF/UHF/OSCAR. Transverter for 50, 144 and 430 MHZ. **$TBA.**
CW and AM Filters, $63 each. Elect. keyer unit **$48.** Memory **$172.** DC-DC unit **$86.** FM **$58.**

Whether you are looking for a first class singer/entertainer or first class communications equipment, you must be as discerning as we were. Pictured is popular Melbourne soprano, Margaret Smith of Mount Waverley with the top of the range from Yaesu.

FT-101E TRANSCEIVER: 160-10 Mx, SSB, AM, CW, PA two x 6JS6C, 260W PEP input SSB. 240V AC BUILT-IN RF SPEECH PROCESSOR. Solid state except for TX. PA and driver. IF noise blanker, FET Rx RF amplifier, clarifier, built-in speaker. Mic., English Language inst. Book, connectors and Pwr. cable inc. **$889.**
FT-101E W/DC FACTORY INSTALLED. **$945.** (FT-101E's imported by B.E.S. now inc. a more effective, adjustable N.B.)
101E DC-DC CONVERTER KIT $60.
FV-101B EXT. VFO $169.
SP-101B EXT. SPEAKER 8ohm **$49.**
SP-101PB EXT. PHONE PATCH/SPKR $135.
YO-101 Monitorscope, inc. built-in two-tone. **$399.**
YC-601B DIGITAL READOUT ADAPTOR for **FT-101E**, with built-in AC PS. Includes frequency counter to 30 MHz. **$318.**
M-101 MOBILE MOUNT for FT-101E. **$38.**
CRYSTAL FILTERS for CW and AM. **$63 each.**
FL-2100B LINEAR AMPLIFIER: 80-10Mx, uses 2 x 572B triodes in G.G. twin fan cooled, styled to match FT-101E. Equally suitable for other rigs. **$585.**
L **FT-301 160-10mx.** Fully solid state Tcvr, built in RF Speech Processor, 200W PEP Input. **$898.**
L **FT-301D DELUXE DIGITAL Tcvr.** Similar to **FT-301, $999.**
• *L* **FP-301 MATCHING POWER SUPPLY,** 20 Amp 12V suit all 301 Transceivers. **$195.**
YO-301 MATCHING MONITORSCOPE for FT-301 Series. **$399.**
FC-301 ANTENNA COUPLER 500W, inc. SWR & Pwr meters, ant. switch and connectors. **$258.**
R-301 RELAY BOX for FT-301 to FL-2001B. **$23.**
FT-7 TRANSCEIVER, 80-10m, for novice and mobile. 20W all solid-state. **$565.**
FT-7B TRANSCEIVER, as FT-7 but with full coverage of 10M Band (28.5-29 installed), 100W peak input, and other additional features. **$685.**
FL-110 SOLID STATE LINEAR AMPLIFIER. 10-15W drive, 200W PEP Input, 160-10mx. **$259.**
I **FL-101 TRANSMITTER:** Solid state 160-10m, PA two 6JS6C, all facilities. Companion unit to FR-101. **$895.**
I **FL-101 SPEECH PROCESSOR:** For installation in FL-101 **$95.**
I **FR-101D RECEIVER:** All solid state, 23 bands incl. all amateur bands 160-10m plus 6 and 2m, FM, CW, etc., etc. **$1245.**
I **FR-101D DIGITAL:** Has all the options of the FR-101D as well as DIGITAL READOUT. **$1455.**
(FR-101 requires 8 ohm speaker)
FRG-7 WADLEY LOOP RECEIVER: All solid state, 0.5-29.9 MHz in thirty 1MHz bands. Electronic band selection. **$389.**
BATTERY HOLDER FOR FRG-7, holds 8 size "D" cells for internal battery operation. **$10.00.**
FRG-7000 WADLEY LOOP RECEIVER: Improved version of FRG-7, extended freq. coverage, digital readout, digital clock etc. **$695.**

FT-625 and **FT-225** VHF Transceivers. Feature all mode of operation — SSB/FM/CW/AM — with repeater offset capability, using advanced phase-locked loop circuitry. AC and DC operation. Similar styling to FT-901.
(FT-225, 144-148 MHz., FT-625, 50-54 MHz)
R model, analog dial. **$895.**
I **RD,** analog & digital. **$995.**
I **RDM.** Analog, digital & memory. **$1175.**
I, Indent order. *L*, Limited stocks.

I **FTV-650B SIX METRE TRANSCEIVER:** Converts 28 MHz. SSB to VHF, and includes receiving converter. 50W PEP. Primarily designed for coupling with Yaesu transmitters **$290.**
I **FTV-250 TWO METRE TRANSVERTER:** Similar FTV-650B. 10W-15W output, but all solid state and built-in AC PS. **$348.**
L **FT-227R** 2mx, 10W FM Tcvr, 800 Ch, with Dig. Readout, memory, rev. etc. **$365.**
L **FT-227RA,** Similar FT-227R but with four memory channels and PLL scanner with control from microphone. **$399.**
L **CPU-2500R** 2M, 25W FM Transceiver with PLL synthesis in 5 KHz steps, controlled by a central processing unit. Four memory chans., with scanning.
CPU-2500R, with standard mic. with up/down scanner controls. **$545.**
CPU-2500R, with keyboard mic., allowing remote input of dial or memory chans., programming of repeater splits, scanner control, and tone pad. **$585.**
I **YC-500E 500MHz FREQ. COUNTER:** Accurate to .02ppm. **$656.**
I **YC-500S 500MHz FREQ. COUNTER:** Accurate to 1ppm. **$499.**
I **YC-500J 500MHz FREQ. COUNTER:** Accurate to 10ppm. **$368.**
YP-150 DUMMY LOAD/POWER METER: For use over the frequency range 1.8-200 MHz. Three power ranges, 0-6W, 0-30W, 0-150W with built-in cooling fan. **$112**
FF-501DX 3-SECTION L.P. FILTER for TVI reduction. Includes two PL-259 co-ax plugs. **$39.**
F-101 FAN. $38.
YD-844 DESK MICROPHONE: Yaesu De Luxe PTT Dynamic type with stand, spring and lock PTT switches. PTT also actuated when lifted from deck. Dual imp. 600/50K. Inc. connector. **$49.**
YD-148 DESK MICROPHONE: Flexible Goose Neck type. 600/50K. Inc. connector. **$49.**
HAND MICS. FOR YAESU, YD-846 etc. with connector. **$21.50**
YH-55 YAESU HEADPHONES: 8 ohm. **$19.00.**
SERVICE MAINTENANCE MANUALS: FT-101 $27. FT-221. $19.
RS SERIES HF GUTTER MOUNT MOBILE ANTENNAS: RS Base and Mast (doubles as ¼ wave on 2m), complete, inc. co-ax lead attached RSE-M2. **$29.90.** Coil and Tip Rods: **RSL-3.5. $22, RSL-7 $21, RSL-14 $20, RSL-21 $19, RSL-28 $19,** RSL-145 (5/8 2M) **$24.**

Special, $ Reduced! Limited stocks only.

STANDARD VHF and UHF TRANSCEIVERS

SR-C146A. 2m hand held 5 chan. 2W transceiver, inc. carrying case and 3 chns.	**$199.00**
SR-C432A, 70cm hand held 6 chan. 2W transceiver, inc. carrying case and 1 chn (435 MHz)	**$225.00**
STANDARD ACCESSORIES	
CMP08 Hand mic. for SR-C146A and SR-C432	**$25.00**
CAT08 Rubber antenna (helical) for SR-C146A	**$10.00**
Heavy Duty Carrying Case for hand held units	**$16.50**
AC Adapter and charger for hand held units	**$35.00**
Mobile Adapter for hand held units	**$14.50**
AC Charger only	**$11.00**
Ni-CAD Penlight Cells, type AA	**$2.90**

ANTENNA ACCESSORIES

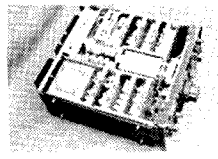
LA-1, Lightning Arrestor, for installation in standard 52 or 72 co-axial feedline, designed to Mil. specs.	**$76.00**
LA-2, smaller size co-ax arrestor	**$4.95**
BN-86 Hy-gain ferrite Balun, 2 kW, 1:1	**$30.00**
VS-BN Hidaka ferrite Balun 2 kW 1:1	**$26.00**
VS-BN4 Hidaka similar VS-BN, 300 ohms	**$26.00**
BA-1 Western ferrite Balun 2 kW 1:1, light weight	**$22.00**
HN31 Dummy Load Cantenna Kit 1 kW oil cooled (oil not included)	**$45.00**
FF-501DX Low Pass Filter, 3 Section, 1 kW	**$39.00**
LP-7 TVI Filter low power	**$9.00**
KW Electronics L.P. Filter, 5 Section, 1 kW	**$59.90**
TV-42 Drake L.P. Filter, 3 Section, 300 W	**$19.00**
TV-476 Hy-Gain L.P. Filter, 150 W	**$15.00**
TV-75 Drake High-pass filter 50MHz UP	**$15.00**
Porcelain Egg insulators	**50 cents**

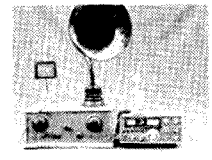
WIDE RANGE of Co-axial cable and connectors in stock.

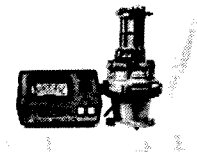
Multi-band dipole traps centre insulator, 80-10m bands per pair, complete with insulator, KW Western	**$38.00**
590G B & W co-ax. switch, 5 posn., rear entry	**$35.00**
TWS-120 2 position co-ax switch	**$39.90**
ASW-1, Western 5 position co-ax. switch, side entry	**$18.00**
RS-107 Transceiver tester	**$33.00**
RS-501 Ant. Impedance bridge, inc. 1 osc.	**$68.00**
Extra Osc. for RS-501	**$72.00**
	$16.00

SCALAR MOBILE WHIPS

M-22T ¼ wave 2m whip top	**$6.50**
M-25 5/8 wave 2m whip top	**$16.50**
M-40T 4.5 dB Gain, 435 MHz	**$19.80**
M.B. Standard base	**$4.70**
M.B. UHF base	**$5.80**
MAGBASE inc. 12ft. of RG-58/AU	**$49.00**







SWR AND POWER METERS

SWR-40, REACE single meter type, combined SWR and FS meter, 50 ohms, inc. FS pick-up whip, size 5" x 2" x 2¼". 3-150 MHz, UHF connectors **$19.00**

FSI-5, REACE — dual meters, 50 ohms. Simultaneous reading of forward and reflected power, 5" x 2" x 2¼". 3-150 MHz, UHF connectors. Very sensitive, ideal low power use. **$29.00**

RS-101 Small size SWR meter, with brackets to mount under dash for mobile **$7.50**

ME-11X, ASAHI dual meter **$22.00**

SWR-200 Osker-Block large dual meters, switched 50-75 ohms, with calibration chart for direct power readings to 2 kW in three ranges. A very elegant instrument. 75/8" x 2¾" x 3¾" **$75.00**

FS-600A Hansen Peak Reading Wattmeter SWR meter 20, 200, 500 and 1000 watts 230 VAC operation. 3.5-30 MHz, ... **$78.00**

ANTENNA COUPLERS

HC-75 Tokyo Hy-power labs. Trans-match 75w PEP **$77.00**

HC-250 Tokyo Hy-power labs. 250w **$95.00**

HC-500A Tokyo Hy-power labs, inc. 160m x 500w PEP **$159.00**

HC-2500 Tokyo Hy-power. Trans-match 2.5 kw PEP Limited stocks only at old price **$256.00**

VHF ANTENNAS

VS-2GH 2m 5/8 wave ground-plane **$49.00**

VS-6D 4-element 6m Beam **$68.00**

VS-6GH 6 metre 5/8 wave G.P. **$59.00**

VS-07GH 430 MHz 5/8 G.P. **$45.00**

ARX-450, 435 MHz three half wave 6dB Ringo **$45.00**

432-15H 15-element 430-440 MHz Beam **$65.00**

VS-2GL 7 element 2m Beam **$48.00**

VS-2IL 9 element 2m Beam **$66.00**

ROTATORS

Emotator:

103LBX Medium duty, disc brake **$179.00**

502CXX Heavy duty, disc brake **$259.00**

1102MXX Heavy duty, mechanical brake **$389.00**

1211 Mast clamp for 103LBX **$18.00**

1213 Mast clamp for 502CXX **$29.50**

300 Mast Stay bearing **$32.00**

301 Tower top bearing **$32.00**

High quality tough PVE insulated cable especially for external use with rotators

VCTF-7, 7 core cable (for 1100 series) .... **$1.40** per m

VCTF-6, 6 core (for 103 & 502) .... **$1.25** per m

1103MXX Extra Heavy Duty, high turning torque **$410.00**

1215 Mast clamp for 1102/3 .... **$45.00**

Flexible coupler 451 (for 1102/3 & 502) **$32.00**

Flexible coupler 450 (for 103) **$16.00**

VHF MOBILE ANTENNAS

AS-2HRF 5/8-wave cowl mount type **$39.00**

VS-07MG 70cm Mag Mount ¼ wave **$19.00**

HOPE-2R 2 metre gutter mounted helical, only 22 cms long, incl. co-ax connector **$26.00**

VS-TOWN 2 metre flexible helical on PL-259 .... **$19.50**

VS-MM, magnet mount for VS-TOWN, incl. co-ax **$20.00**

HU-2HR Hidaka 2 metre 5/8 wave 6m ¼ wave gutter mount incl. co-ax and connector **$39.00**

DENSO 430 anti-corrosive compound for jointing antenna and beam elements (as used by electrical authorities). Per tube **$2.90.**

ANTENNAS AND ANTENNA ACCESSORIES

HF MONOBANDERS

VS-20CL 3 elem. W.S. 20m beam, inc. Balun **$199.00**

VS-11CM 3 element 10/11m inc. Balun **$95.00**

VS-15CM, 3 element 15m. inc. Balun **$128.00**

HF DUO BAND....

VS-22 Hidaka 3 element 15-11/10m, inc. Balun **$179.00**

HF TRIBAND BEAMS

TH6DXX, 6-element trap Beam **$339.00**

TH3Jr, 3-element trap Beam **$195.00**

HY-QUAD 2-element Quad Beam **$237.00**

VS-33 Hidaka (Equiv. TH3Mk3), inc. Balun **$265.00**

DX-33 Western (UK) similar TA-33 .... **$240.00**

HF MULTIBAND TRAP DIPOLE

TD-1 Western (UK), 10 THRU 80m. Approx. 110 ft. (34m), ready made with traps, insulators and HD copper wire. Use co-ax or low imp. twin line feeder (not supplied) **$68.00**

FITTINGS: (Suit all makes with 3/8" x 24 thread)

BPR, bumper mount **$22.00**

BDYF, heavy duty adjustable body mount **$24.00**

VS-BM Ball Mount & Medium Duty Spring **$20.00**

VS-BPM Bumper Mount **$18.00**

VS-LBM Ballmount & H.D. Spring **$25.00**

H.D. Spring **$18.00**

AS-GM Guttermount **$18.00**

VS-NGM Guttermount inc. M ring and Co-ax. **$24.00**

HF VERTICALS....

VS41/80KR Hidaka 10m thru 80m, ... **$129.00**

VS-RG Radial Kit for VS-41/80 KR **$35.00**

VS-TR, loaded rod radial kit, 10-80m **$69.00**

18V 10m thru 80m base loaded, exc. portable ant. **$45.00**

Million V1 10/11 metre ½ wave 3.75 dB Ringo **$29.90**

HF MOBILE WHIPS AND FITTINGS

AS-303 HF Mobile antenna set, centre loaded, incl. heavy duty ball mount and spring **$139.00**

AS-NK matching SS Bumper Mount for AS-303 .... **$20.00**

OTHER ACCESSORIES

EKM-1A Audio Morse CP Osc with speaker, one transistor, and tone control, requires one UM3 cell, in metal case 3-5/8" x 2½" x 1-1/8" **$16.90**

TC-701 Morse Practice Osc. with built-in key and spkr. Inc. battery and auxiliary earpiece. Copy of morse code on case. Two can be wired together to form a practice communication set **$19.50**

MORSE KEYS, by KATSUMI & HI-MOUND

EK-150S Single Paddle Electronic Keyer **$149.00**

EK-150D Double paddle electronic keyer **$149.00**

MK-1024 Programmable Keyer, 1024 bit memory **$265.00**

HI-MOUND

HK-808 De luxe heavy duty morse key. Heavy base A beautifully constructed and finished unit. Fitted with a dust cover, standard knob and knob plate. Ball bearing shaft. Precise, firm adjustments. This is a really superb "professional" key and a delight to use. Worth every cent of **$85.00**

HK-70 Heavy duty, lower cost version of 808 .... **$47.00**

HK-706 Operators key **$25.00**

HK-707 Standard key **$19.50**

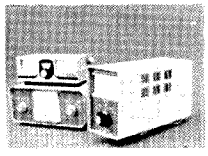
HK-708 Economy, with flat knob **$17.00**

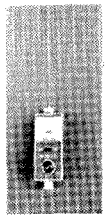
HK-707, with dust cover and standard knob. On standard base **$19.50**

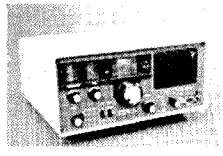
MK-701 Side Swiper key to actuate an Electronic keyer **$39.00**

BK-100 (BUG) Semi-automatic bug key, fully adjustable **$49.00**

VALVES for Yaesu equipment, 572 B **$59.00,** 6KD6 **$12.50,** 6JS6 **$11.00,** 6JM6 **$12.00,** S2001 **$13.50,** 12GB7 **$10.00,** 7360 **$22.00,** 6GK6 **$6.50.** 6146B **$16.00,** 12BB14 **$10.50.**







QTR-24

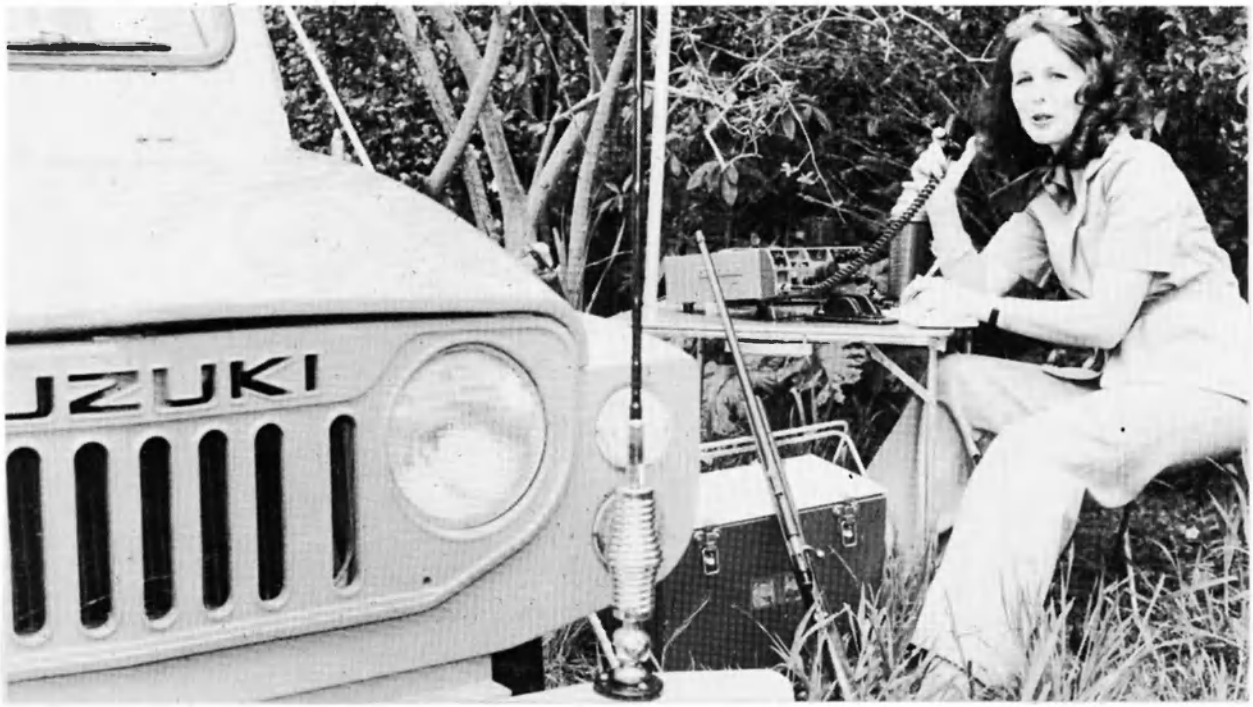
24 hour World Clock **$35**

QTR-24

Now an addition to YAESU'S range of measuring instruments . . .

Yaesu has now made an addition to their already well known range of measuring instruments, it is the QTR-24, a 24 hour World Clock. With a glance the time in any principal city or time-zone can be simultaneously co-ordinated with local time on a 24 Hour basis. The QTR-24 is powered by a 1.5V dry cell, which has a normal life of approximately one year. No amateur or SWL station could be complete without one.

Also shown in the photograph is the YO-101 monitorscope. FT-101E transceiver. YC-601B digital readout adapter and YP-150 dummy load-power meter.



*Power Supply Price applies only with purchase of matching transceiver.

As the authorised Yaesu agent and factory representative for Australia since 1963, we provide after-sales services, spares availability, and 90-day warranty except power valves and semi-conductors.

Quote type of set, serial number, date of purchase, and inv. no. when ordering spares. All prices include sales tax Freight is extra. Prices and specifications subject to change without notice. Allow 50c per $100 for insurance. Availability depends on stock position at time of ordering. Send 50c postage for latest Yaesu catalogue.

bail **ELECTRONIC SERVICES**

FRED BAIL VK3YS
JIM BAIL VK3ABA

60 Shannon St., Box Hill North, Vic., 3129.
Ph. (03) 89 2213

Yaesu Agents in Australia since 1963

Radio amateur equipment from B.E.S. also sold by —

W.A.	Radio Communication Services, H. R. PRIDE, 26 Lockhart St., Como, 6152	Ph. 450 4379
	WILLIS TRADING CO., 429 Murray Street, Perth 6000	Ph. 21 7609
S.A.	FARMERS RADIO PTY. LTD., 20 Stanley St., Plympton 5038	Ph. 293 2155
TAS.	G. T. ELECTRONICS, 131 Westbury Rd., Sth. Launceston 7200	Ph. 44 4773
	PRINS RADIO, 123 Argyle Street, Hobart 7000	Ph. 34 6912
	J. D. ELECTRONICS, 64 Wentworth St., Launceston 7250	Ph. 44 5000
N.S.W.	Aviation Tooling, STEPHEN KUHL, 104 Robey St., Mascot 2020	Ph. 667 1650
	Amateur & Novice Comm. Supplies, W. E. BRODIE, 23 Dalray St., Seven Hills 2147	Ph. 624 2691
	DIGITRONICS, 186 Parry St., Newcastle West 2302	Ph. 69 2040
	RIVERCOM, Sid Ward, 9 Copland St., Wagga Wagga 2650	Ph. 21 2125
QLD.	H. C. BARLOW, 92 Charles St., Aitkenvale, Townsville 4814	Ph. 79 8179
	MITCHELL RADIO CO., 59 Albion Rd., Albion 4010	Ph. 57 6830
A.C.T.	QUICKTRONIC, Jim Bland, Shop 11, Altree Crt., Phillip 2606	Ph. 81 2824 82 2864

GROUND WIRES — HOW EFFECTIVE

S. R. Gregory VK3OT
P.O. Box 414, Hamilton 3300

Here is a plot of the effect of ground wires on signal strength, as used by station engineers planning new installations.

I am sure all the 160 metre buffs and those contemplating any vertical antenna will be interested in the effects of adding ground radial systems. The half-wave vertical shows a power gain of 1.5 dB over the quarter-wave, while with 3.1 dB over the quarter-wave a five-eighth antenna would be the most desirable for any DX work. Conversely, the shorter an antenna the more rapid is the drop off in field strength. The graph is based on a power of 2000 watts. The theoretical field is based on sinusoidal current distribution in the antenna.

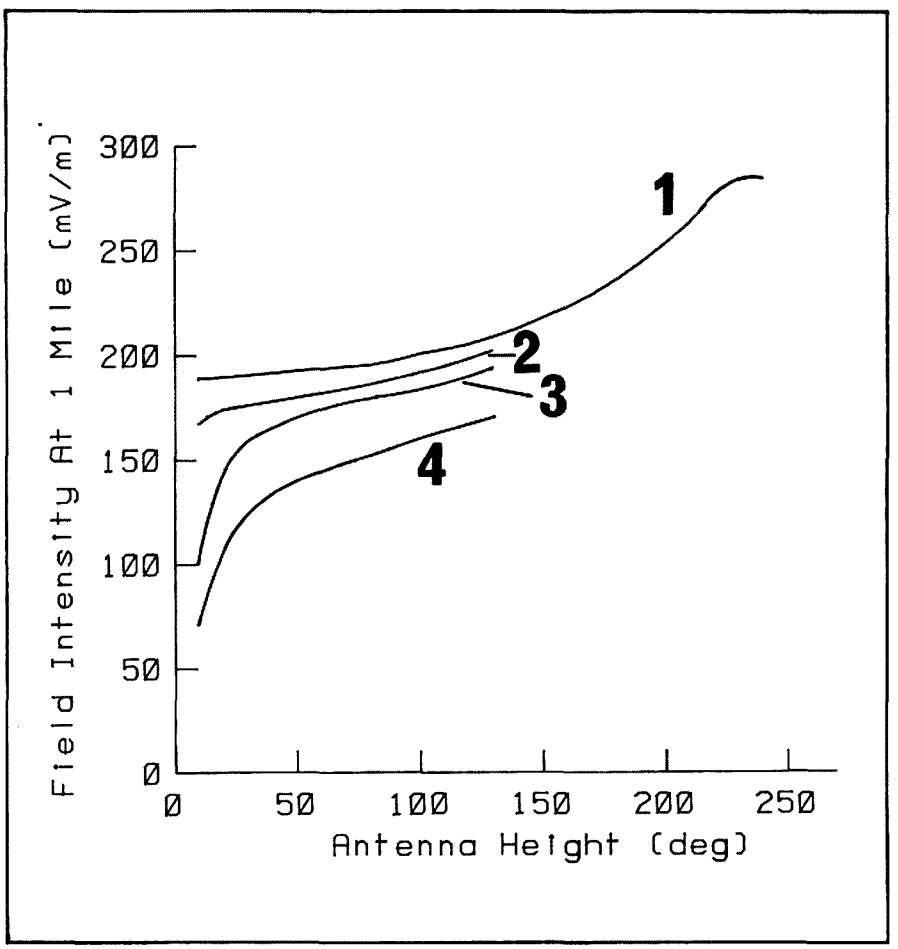
(The test frequency would be roughly 1 MHz.—Ed.)

The author would be glad to provide copies for the price of an s.a.s.e. to above. ■

FIG. 1: Effect of Ground Wires on Field Strength.

(1) Theoretical Field Intensity over Perfect Earth. (2) Measured Field Intensity 113 Radials 150° Long. (3) Measured Field Intensity 113 Radials 100° Long. (4) Measured Field Intensity 113 Radials 50° Long.

Note increased necessity for long ground wires when antenna is shorter than 30 degrees.



MURPHY'S LAW

Any one who is trying to design anything or build anything should be familiar with Murphy's Law. The basic law is very simple. It states, "If anything can possibly go wrong it will". It can be also stated in a mathematical form, 1 + 1 § = 2. The symbol § means "hardly ever". Here are some of the detailed applications of the law.

1. Any completed and checked circuit or drawing will be neither completed nor checked.

2. If a project requires "n" components, there will be "n-l" components available. The one missing will be the most important one with no possible substitute.

3. Interchangeable parts won't.

4. Circuits and handbooks will be lost or unavailable.

5. Any wire cut to the right length will be too short.

6. The probability of an error is directly proportional to the amount of trouble it will cause.

7. A dropped tool will land where it can do the most damage. (This is also known as the Law of Selective Gravitation.)

8. Components which must not and cannot be assembled wrongly will be.

9. A sensitive DC meter will always be overloaded and wired in backwards.

10. Any expensive transistor protected by a fast acting fuse will protect the fuse by blowing first.

11. The more tidily wired a circuit is the less likely it is to work.

12. The most delicate component will always drop off the bench.

13. A self starting oscillator won't.

14. Original circuits will be mangled by the copying machine.

15. The resistance which has a critical value is the one which will be missing.

16. Crystal locked oscillators never are.

17. Intermittent faults only reappear after the unit has been completely reassembled.

18. There will always be some bits left over when a unit is reassembled.

—Courtesy of Roy Hartkopf in "Zero Beat". ■

WARC 79 — NEXT YEAR

PORTABLE W4

Leo F. Powning VK5ALP/W4
1821 South Lakeshore Drive,
Chapel Hill, North Carolina, U.S.A. 27514

"W4RHE, this is VK5ALP. Do you copy, old man?" There was silence for a few seconds and I thought Chuck might have resented my interrupting his 40 metre DX QSO with another station.

Then he came back, "VK5ALP this is W4RHE. Holy smoke, I just picked myself up off the floor, you nearly blew my ears off! You've got the biggest signal I've ever heard from VK, how much power are you running?" I laughed so much at Chuck's response, it was my turn to pick myself up off the floor and after apologising for not adding the W4 suffix to my call sign to let Chuck know I was in North Carolina, only 400 miles north of his Florida QTH. We arrived here in June 1977 on a two year assignment with my computer company employer and you may be interested in a "down under's" view of the ham radio scene in the U.S.

First, the good news — 300,000 licensed amateur stations here. Now the bad news — whenever I try to operate on HF they all seem to be on. You work it out, 525 kHz on phone bandwidth on the combined 80, 40, 20 metre bands at 3 kHz per channel gives 175 phone channels at best. NSW add an amateur population 50 times larger than VK and you know why that W you were working last night had to end the QSO because of QRM. On many occasions I've found it impossible to get on HF here without coming up over another station. Linears add to the problem, many stations overdrive and the resultant splatter takes up more bandwidth. I run a Heath SB200 linear but only to compete with the guy down the street who has one, plus it helps me work back to VK through the QRM. Many of the guys here would be happy to see linears barred and legal power reduced. The high power allowed causes more problems than it cures.

From your end there are a few big signals that ride in over the noise, hail, rain or shine, but the prize (allow me to be chauvinistic, fellers) has to go to "Portly Bob" VK5PB with his 3 element 40 metre beam at around 70 or 80 feet. I copy Bob at about the same strength as my wife copies Radio Australia on her receiver!

Repeater enthusiasts would be happy here, we have 100 in North Carolina, which is roughly 100 x 300 miles. Any licensed amateur is allowed to set up a repeater; fortunately the owners co-operate and use frequencies allocated to them by an amateur co-ordinating committee. Soon after arriving here I traded my IC22A on a synthesized rig — had to, I'd have gone broke buying xtals just trying to cover the repeaters in this State.

Two metre mobile is a tremendous travelling aid; I rely heavily on it when trying to navigate my way through the big cities, particularly on the crowded city freeways where all the traffic seems to be moving like the world's going to end in two minutes and everyone wants to get off. A word of caution. In the southern States we call "Break" when we want to get into a repeater channel QSO; DON'T DO IT IN NEW YORK. I did so and the channel suddenly went quiet. I was wondering where everyone had suddenly disappeared to without a word. Then the channel slowly came to life again and I was politely told that Break is only called in an emergency in New York. Guess they have need of that facility.

Speaking of repeaters, amateurs have a tremendous communications bonus in the U.S. with their automatic phone patch facility. As shown in the photograph, my

Touchtone Pad on rear of Microphone gives access to Repeater "Auto-Patch" and Public Telephone Network. Tone IC in Mic. gets power from rig via simple modification to Mic. Socket.

Because of the service they provide to the community, many States issue Special Amateur Radio Car Licenced Plates

microphone is fitted with a push-button actuated tone generator which generates discrete tones within the audio range for each button pressed; the tones used are internationally known as Q23 series which Telecom are also using in Touchphone installations in VK.

To use the facility I call the repeater, viz., "WR4AGC this is VK5ALP/W4 accessing autopatch". FCC regulations require this procedure so they can audit traffic (all repeater traffic is recorded and held by the repeater owner for a set period); then, keeping the PTT switch down I press the * button. The repeater receiver recognises this tone as a command to connect to the telephone system and after releasing my PTT switch I hear the "brrr . . ." or "off-hook" tone in my receiver; I then dial my number and, hey presto, I have a mobile phone facility. Takes a few calls to get used to the half duplex nature of the phone conversation but no real problem. It's a real aid in reporting accidents or other emergency situations direct to police, ambulance, etc. Pressing the # button disconnects the repeater from the phone line. Police here actively seek our assistance in reporting accidents, suspicious characters, etc. A couple of months ago, one of our club members was driving past a bank when two guys ran out and drove off at high speed. He put two and two together and called police on the phone patch, giving their licence plate number. A few minutes later two bank robbers were sitting in the back of a police car wondering what went wrong! U.S. amateurs have been of such assistance in civil emergencies that many States even issue special amateur radio car registration plates. Thought I might have trouble getting one with a VK call, but no problem, as shown in the photograph.

Our local amateur radio club is very active and successful. Around 70 per cent of the members attend each monthly meeting and I think this is due to three major factors: (1) a family atmosphere, (2) the meeting itself is short, sharp and to the point without "waffling" or debate about nothing, (3) interesting and competent invited speakers. The meetings are held in a local fast service, low charge restaurant, which sets an area aside for our use. We and our wives start drifting in around 6.30 for dinner and the meeting is held in the same area at 7.15, with everyone still at their dinner tables. The business meeting is conducted fairly but tightly and always concludes by 7.45. Then we have an invited speaker.

The speakers are selected such that we have a mixture of technical and non-technical presentations. Speakers in my time here have ranged from the local school system superintendnet, who was formerly in the Secret Service and was one of President Kennedy's bodyguards. He told us of his experiences with JFK (fortunately for his peace of mind, he was not on duty in Dallas when Kennedy was assassinated). Another was a qualified tax agent, who advised us of how to pay the least income tax whilst staying within the law. Last month's speaker was a scientist from a local research institute, who made a presentation on commercial communications satellites. Interspersed amongst these were slow-scan, micro-processor and printed circuit board construction presentations (there was a good roll-up the night I gave a pitch on amateur radio in VK). The speakers finish by 8.45 at the latest, so you can see we pack a lot in the two hours. I think you can also see why the meetings are so popular.

I was involved with YRCS in Australia so make my contribution here by teaching Novice classes. Novice theory standard is well below that of VK (at least of the first few VK Novice exams which I feel were ridiculously high) and about 80 per cent of our students pass the licence exam. We conduct the CW test ourselves and supervise the theory exam which is sent to us by the FCC.

Up to 60 per cent of the Novice students are ex or current CBers; you only have to listen to the CB band for a few minutes to understand why they have become disenchanted with CB. Beats me how any CB sets are sold here; I've listened a few times and it's been complete chaos with stations all over one another; I understand it's going the same way down there. A group of CBers here decided to solve their problems by forming an association called "HF International". This body issued call signs and allocated frequencies OUTSIDE the CB band for their members! Needless to say, the Federal Communications Commission moved in very smartly, confiscated equipment and fined members.

Hope you can read this invitation by the world's largest mail order house. You certainly won't read the fine print advising that you will need also an Amateur Licence.

Take a look at the advertisement on this page which one of the largest retailers in the U.S. is running in their mail order catalogue. Notice the resemblance to the early days of CB sales in Australia. Only in the fine print is the prospect told he will need a licence to operate this 2 metre gear. I wonder if we've got another batch of pirates coming up; the big retailers don't go into a market unless they can make big sales. **If we don't succeed in containing illegal 2 metre operation here, you can be it will spread like a scourge to VK; should the WIA be moving now to seek legislation preventing sales of 2 metre gear to unlicensed buyers while there is still time? (The WIA has already sought such legislation for ALL amateur transmitting equipment—Ed.)**

If you are planning a trip to North America, your "full call" in Australia will qualify you for Extra Class privileges here. (But only for those with 14 w.p.m.—Ed.) This is a good deal since Extra Class licensees have additional space reserved for their use on the bands (to gain the Extra Class licence U.S. amateurs have to pass a code test at 20 w.p.m.). To apply for permission to operate you'll need to write to the FCC here for their form 610A. Complete the form and send it to them no later than three months before arriving in the U.S. or you might be carrying a useless piece of iron around with you during your visit. I have operated during business trips to Canada; reciprocal licensing is much faster there; I just walked into the Department of Communications office with my VK Certificate of Proficiency and Station Licence and came out five minutes later with approval to operate. Only catch was that I had to leave my 2 metre rig at the Toronto Airport customs counter until I could produce a D of C approval to operate. The trip to and from the Department of Communication cost me a $25 cab fare so maybe you should also line up a reciprocal licence with Canada ahead of your visit just in case you meet the same customs officer I did, mutter mutter.

If you make a trip over here you'll find the Australian/American bond as strong as ever and you will be made welcome just as we have, so seven Aussies in the South ask you to return Australian hospitality to any visiting U.S. amateurs. 73s and our QTH is as shown on this article if you are passing through North Carolina. ■

LOVE'S LABOR LOST

Alan Shawsmith VK4SS
35 Whynot Street, West End 4101

Fred's life was all dragons and disaster: his marriage was a mess and his job a salt mine. He yearned for two things — escape from Bessie, the YF and to do a Dx-pedition. The former would bring heavenly peace from the griping yakkiti-yak that started up every time he went on air: the latter would raise him from the ranks of the also-rans, to someone of "status" in the Dx world. The poet once said "Give me honour for an hour rather than a lifetime of non-entity" — and Fred, in his depressed and harrassed state, believed it.

Somewhere along the marital way he had lost the battle of the sexes. It was *he* who'd become the object and chattel. No longer did he dare to have a few beers with the boys, or a nibble on the nags at the week-end. He did, however, manage to sneak into the Radio Club meets on the nights he worked back. He gave the boys the same old spiel — "He was planning a DXpedition". After he'd gone, there were jokes all around; any DXpeditlon would be better off without Fred—he was a disaster area in himself, the world's most fumbling op. Anyway, they knew he'd never make it — not with Bessie around.

But fate fiddles in the fortunes of us all and one day it dealt Fred a blow that gave him a chance to change his dream into a practical scheme. The blow was in the form of a knock on the noggin by a length of lumber in the yard where he laboured. As he came to, a blinding flash of inspiration shot through his mind. Like someone who had suddenly seen a chance to fake death, yet live, Fred saw a way to escape his OG and do a DXpedition.

"I'm feelin' worse," he told the foreman, after he'd been lying moaning in the rest room for two hours. Actually he was only foxing: his injuries were superficial but his mind was alert and in a whirl with a sudden escape plan. The boss came in and told him they'd ring an ambulance to take him to the hospital.

"No," said Fred, "but, if it's OK with you, I'll take my holidays and sick pay now."

"But you're a month early and what'll I do for labour?"

"Yeah, but I've been overworked on overtime!" Fred was beginning to feel desperate: to put his plan into action, he'd need a full pay packet or ND. The boss toted up his sick, holiday and overtime pay and farewelled him with a slap on the back that was almost a push through the door. He realised that he'd been given the "dry wipe" and they didn't care if he returned or not.

He'd decided to shoot through to Hong Kong, so first he must check the delay on the issue of reciprocal licences. There were more exotic spots nearer home, CR8 or YJ, etc., but Hong Kong it had to be, for several reasons. It must be some place where he could buy a rig right off the rack; not taking his own along, Bessie would smell more than a rat.

To his surprise, the reciprocal licence was a breeze, brought about mainly by the fact that the bloke on the other side of the counter was a Ham who'd been to VS6 land and said he'd see the ticket through personally, thus proving the old adage that it's who you know that matters, rather than what.

Now for the last snag: to rid himself of the albatross around his neck — the OG. On the way home he bought from the first chemist shop a long white bandage, slipped into a public toilet and wrapped the top of his head in it, right down to his ears. Bessie was out. This gave him time to dig out an old doctor's certificate; he just might need it as a bluff.

Bessie found her OB lying on the sun-room sofa with his head swathed in cloth. Her greeting was one of suspicion rather than of concern. "What's up?"

"Got lumbered at work. The ambulance took me to the nearest Doc and then brought me home," he lied, "I've got two weeks sick leave but if I don't feel fit, I can make it three."

Anger rose in his OG's face. "I see, we starve while you sit for three weeks in there, at that — at that." She flung an arm in the direction of the shack.

"No," said Fred, trying to play it cool, "the Doc says I'm run down, so I'm going up to Frank's place." This was his brother and the only man Bessie would not face, so Fred felt safe.

Anger turned instantly to hate. Her gaze fixed intently on the OM's bandaged head. She smelled a rat, "Take it off!" she commanded. Uri Geller's stare bends spoons but Bessie's is more potent: it lays the mind bare, right to the grey matter. For the second time in one day, Fred grew desperate. Under the OG's penetrating gaze, the bandage on his head felt as if it was about to unwind itself. He played his last card — the bluff. Reaching into his pocket he produced his certificate. "Here," he said, "check this with the GP and see if I'm badly hurt or for Gawd's sake belt up!"

After a moment's hesitation, Bessie turned on her heel without a further word. He was free but could hardly believe it. Through the barrier and loose at last: it just wouldn't sink in. Like some Indian swami, he averted his swathed head and raised his arms in silent but ecstatic gratitude at the benevolence of the gods.

Early next morning, before sneakily boarding the plane for "The Pearl of the Orient", Fred fell to temptation: he put a call through to one of his Club mates. "Tell the boys I'll be QRV — 80 through 10 from VS6 — for the next three weeks . . . Yeah, that's right, VS6." He just had to brag a little, but as is so often the case, it was to be his undoing.

The fact that Fred VK2 had got loose from his bag of strife, the YF, was news — and before the morning was out, most of the local Hams and their YFs knew of the happening — and before the day was out, Bessie had picked up the gossip in the village market-place. With a frightful fuming fury, she knew her whelp of an OM had done a double cross.

At the same time as Bessie was getting into action in Down Under, Fred was serenely absorbing the new exotic sounds and smells of Hong Kong. His "digs", arranged for him by the Ham at the R.I. Office in Sydney, Australia, turned out to be a small but neat unit, on the top floor of a high-rise apartment block on Victoria Peak. The following morning Fred stood on the pocket-sized patio and gazed down and around and rubbed his hands in sweet anticipation. He was so high, that looking eastwards, he felt he must surely see the States. He fingered the iron balustrade — perfect; just right to mount an all-band vertical. Already the music of the bedlam of the pile-up was in his ears: his dream of so long was about to be realised. Three weeks of it — the thought made him feel just a little giddy with anticipation.

There was a knock on the door and the Chinese janitor nodded his way into the room. "Eve'thing OK, Mister Fred?"

"Oh yeah, sure — just great."

"You be busy man next few weeks?"

"You can say that again, Mac, I'll be a 'stayput' tenant!"

"Then maybe you like a little extra room service. Cook, make bed, clean up, eh?"

"Well I ———"

"OK, you talk with Yo Yee." He gave a little clicking sound and retired and there materialized in his place the sweetest little oriental bird Fred had ever set eyes on. She stood before him, all of 5 ft. nothing, as perfectly formed as the finest albabaster sculpture: a study in cream, black and red.

"I come at five, fix your dinner, supper, clean up, fix clothes," she paused and her gaze shifted to the bed. The tiny nostrils dilated for an instant "and then I go early — early, 5 a.m., because I work downtown in daytime. OK, eh?"

"Er — I, er, yes. In the morning — Oh year, sure baby!" When the proposition took hold, there was a sudden tingling. He could hardly believe his senses.

She was gone, leaving only a rich, scented fragrance. It was all so sudden. Fred wondered if she really had been standing there before him. Back on the patio, he gazed down on the Suzy Wong district and smiled. "Why do I need it: I got it all up here — well almost." The added anticipation made him giddier than ever.

Now that the janitor had so blithely put an oriental dish on his account, so to speak, he waited for him to re-appear, to tidy up the details. No one appeared. He was finally told it was the gentleman's day off and he never returned till late at night, so Fred took himself downtown and shopped around till he found a natty 5-band QRP Xceiver, complete with vertical. He nearly didn't buy it. If he went over big with Yo Yee, he might need the cash; but he made the deal, returned to the apartment and set it up, ready to go. He switched on and spun across the bands and chuckled with glee — DX was pouring in, from all over. He could hardly wait: tomorrow he expected a GPO clearance to transmit. Turning it off, he sat on the bed and rubbed his hands with pleasure. He couldn't decide which, or who enticed him the most — the rig or Yo Yee — DX or sex. Maybe she could cook too!

Right on 5 p.m. there was a knock on the door. Fred smoothed his hair and purred in his most let's get together voice, "Come on in, Honey." It was swung wide — and in walked his Honey of ten bitching years — Bessie! Fred's jaw hit his chest only to rebound back and his teeth chattered like a relay gone berserk. "Bess — s-s-s," was all he could muster.

"Yes," said his OG, surveying his pad, "so, this is Franks place. My, he has come on: does he own it — and who fixed your head? Some Hong Kong miracle quack!"

At that very moment, Yo Yee hove into view at that end of the corridor. Fred leapt for the doorway, making strange jerky waving motions with his arms. Yo Yee hesitated, just for a moment, before sizing up the situation and then continued on along the hall, past the unit and out of his life, before she ever had a chance to get into it.

"Who was that?" asked the OG, appearing from the balcony.

"Dunno," said her better half, "just one of the tenants, I suppose." He tottered to the nearest chair, feeling faint.

Bessie began to sniff the air. "Scent," she said, "a woman's?"

"It's incense," said Fred desperately. "They all burn it round here: or, it's my after shave lotion."

Her roving eye settled on the new QRPer. "Did Frank provide that, too?" Then, with a note of final triumph, she added, "I'll bet you're wondering how I found you!"

"No," lied Fred, "but you should join the CIA. They want Marta Haris real bad." He braced himself for what was to come — a "bash" that would go on late into the night.

It was 5 a.m. in The Pearl of the Orient. Fred hadn't slept a wink. Downtown, the early morning noises heralded a new day but the apartment was still all quiet. Without warning there was a firm knock on the door, followed by the janitor's sing song voice calling, "Missee Yo Yee, Missee Yo Yee, time you get out of bed. Time for work." Late home the previous night, he didn't know the situation and had goofed. Fred lay petrified: had Bessie heard? Suddenly, there was a roar from alongside him and the OG leapt from the bed. "You ——, so that's who that little love dove was who fluttered past here last night. Coming in to nest, was she? Incense, after shave, huh! Is this more of Frank's service?" With a single sweep of a sturdy arm she stripped the bedclothes off Fred. "Get up, you sneaky Don Juan — you crummy Casanova. We're taking the first plane back home." Bessie felt she'd been one-upped twice in 24 hours by her OM — and that was unthinkable. Fred opened his mouth to argue but thought the better of it and lay silent. Half his dream had already flipped into a nightmare but the rig was all set to go: he was still determined to see out the full vacation, even if Bessie screamed in his ear for the whole time.

As if sensing her OM's resistance, Bessie's eyes settled again on the small QRPer, up in the corner. With an enraged snatch she ripped it clear of its coax., flung wide the door and hurled it down the nearby trash chute in the hallway. From below came a splintering crash, as it and the last vestige of Joe's sweet dream disintegrated forever, without so much as a single CQ from VS6.

That all happened six months ago and Fred, a VK2, has never been on air since. When asked, Bessie gives a strained smile and says, "Oh, he's up at Frank's place, working ——." But his Club mates smirk and know better. Rumour has it that on returning to Down Under, he lost his glue, came unstuck, opted out and fled to the mountains to a secret hippie commune — and each night, when the raving voice of his exOG comes up to haunt and taunt him, he blows his mind on "pot". ■

TRY THIS

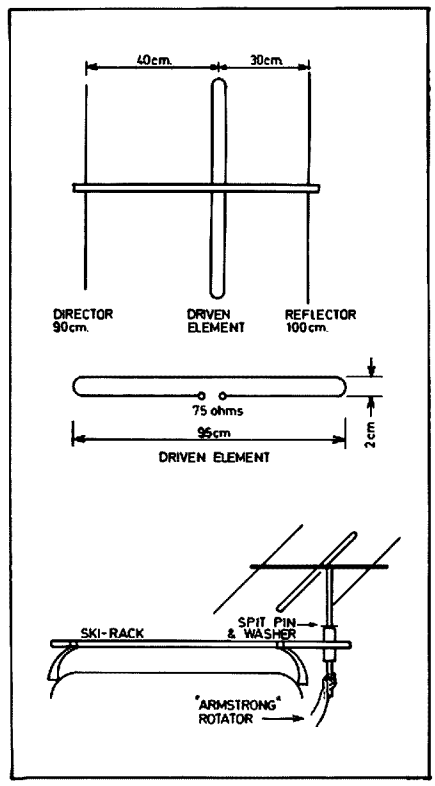
WITH THE TECHNICAL EDITORS

A 3-ELEMENT 146 MHz "MOBILE" BEAM

The following describes a simple beam which would be suitable for use in hidden transmitter events. It has reasonable front-to-back ratio and with the dimensions given the impedance at the centre of the folded dipole is about 70 ohms. A 1 : 1 balun should be used at the antenna feed point if coax. is used, but it does not seem to be very important. The boom could be made from aluminium tubing or dowelling and the elements could be made from aluminium wire. However construction details are left to the constructor.

Mounting the beam on the car becomes the next problem. Ski-bars appear to be about the simplest answer. A piece of tube welded at right angles on the end of the bar will serve as the bearing and support for the mast of the beam. A split pin and washer should prevent the mast sliding through. Leave enough protruding to allow the "Armstrong" rotator to get a good grip. Don't forget you will still want to get the door open.

From "Tuned-in" Nov. 1977. ■



HOW TO GET THE STUFF INTO THE HOUSE

Unless your home operates on the kind of budget that permits sable coat Christmas presents for the XYL, swimming pools for the kids, your own ski chalet, and casual week-end jetting to Acapulco or Majorca, chances are you are up against a problem that has faced nearly every ham since Marconi; How to get the stuff into the house unseen . . . or, alternatively, how do you avoid telling her how much it cost?

Over a period of some years of supporting several hobbies and during which aquisitions of new and used cameras, lenses, fly rods, table saws, shotguns, sports cars, etc., to say nothing of radio gear, had to be explained, rationalized, lobbied or even concealed, this practitioner has assembled a variety of ploys, some from personal experience and others from fellow-hobbyists, whose contributions I acknowledge with thanks and whose identities I had best keep to myself.

In the hope that some fellow-sufferer may find herein the solution to his particular problem, I have decided to compile and publish the best of these stratagems in what might be called **"Hamsmanship, or How to Build Your Amateur Radio Station Without Actually Shedding Blood".**

Old masters at the game — AM types and single-letter prefix gaffers — may find some of these tactics old hat. But they will realize that a whole new generation of amateurs has come along and, further, the problem of getting the stuff into the house without touching off domestic warfare has recalated astronomically in these days of nearly 100 per cent store-bought stations. Even the newest Novice, judging from the magazine photos, starts his career with an array of commercial gear that looks like the control panel of an Apollo moonship.

These new Hams need our help. Let us share with them our secrets and our methods. The future — possibly even the survival — of amateur radio may well be involved. One word of caution before we begin the lesson: Do not, repeat, do not leave this lying about the house for her to read. Commit these pages to memory and then rip them out and either burn them or put them in an envelope and mail to Box 88, Moscow. That way they'll never be heard of again.

Now, then:

1. This one calls for the breezy, off-hand treatment. You bring in the new scope, linear, keyer or whatever it is and before she can start with, "How much did that cost?", you cry happily, "Boy, you couldn't beat this for $15" (or whatever figure the traffic will bear). Remember, you didn't say you paid only $15 for it — just that you couldn't beat it for $15 — and that's the gospel truth.
2. The old-mule-trader ploy. You come gaily into the house with your latest treasure, a smug grin on your face, and emit something like "Wow! Look what I traded old Haywire Magee out of for my old rotator." Never mind mentioning that you also forked over $250 in addition to that old rotator to make the "trade".
3. A variation of No. 2: Your line is, "Can you imagine the dope letting this go for only $35?". You sure can't, OM. His rock-bottom price was $150 and that's what you coughed up. But you didn't say you paid $35.
4. Another variation: You take the old rig to your friendly local Ham dealer who sells used gear on consignments for a commission. A few weeks later you report happily "Some guy bought my old rig and I got enough for it to get this new one". Yeah, enough maybe for the down payment — but who needs to know you still owe the friendly local, etc., $398.80?
5. Become a home-brewer. Spend long hours in the basement workshop. Cut lots of scrap metal loudly. Drill lots of holes ditto. Bang chassis around. Let the smell of soldering and scorched insulation permeate the house. Study schematics at the dinner table. On the air, talk loudly about the linear you're building. After two or three weeks of this, come proudly upstairs with the new rig, or whatever. Stripped of nameplate, of course, or even without front panel. Some time later you can "acquire" a cabinet or front panel for it and . . . "Look, Honey, this old Collins (or Heath or Swan or . . .) panel I picked up just fits the rig. Looks real commercial, doesn't it?"
6. You need a garage or workshop where you can cache the parts of a beam for this one. Then you make a big show of going into the shop with an armload of old aluminium tubing, busted TV antennas, etc. Emerge some days later, after the usual drilling and sawing noises, with the elements of your new tri-band beauty and, "See what I lashed up. Amazing what you can do with a bunch of old aluminium."
7. Your XYL has been bugging you about getting a new colour TV. So you agree to buy one if you can have the old one for parts. Show her those great articles about how you can build a five-band KW receiver with the parts scrounged from old TVs. You'll be surprised, and you hope she will be, too, at the nifty new (frequency counter, oscilloscope or whatever it is you dream of) you were able to build with those old TV parts (plus a few odds and ends from Heathkit, maybe).

Many other suggestions for inclusion in this article were considered and discarded for such reasons as requiring outright lying, being too impractical or far-fetched, or too susceptible of detection. Others simply were variations of one or more of the above, such as disassembling a Whizzbanger 2000 at a friend's shack and then bringing it home piece-by-piece in pocket-sized components; or installing a new KWM2 in your old Viking 1 cabinet.

None of those so far mentioned, however, can top the one reported by a Ham who of necessity shall remain unidentified here. At the time the first colour TV was acquired for the family, he convinced the XYL that only a 60-foot tower and super-duper king-size antenna would bring in the colour picture in their location. To this day she thinks that three-element trapped Lightningbird Tribander is what makes Doris Day pretty.

From "The Lyrebird" Winter 1978 — ex 73 Magazine. ■

CHIRNSIDE ELECTRONICS

YAESU AT CHIRNSIDE WE'VE GOT IT ALL!!!! ICOM. KENWOOD

NEW !

KENWOOD

TS-120 MOBILE TRANSCEIVER

FULL 10 M.Coverage and Digital Display.

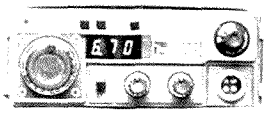
AVAILABLE EX-STOCK. - $565

KENWOOD

TS-520S HF Transceiver ac only	$729.
TS-820S HF Digital Transceiver ac only	$1099.
SP-520 Matching speaker for TS-520S	$37.50
SP-820 Matching speaker for TS-820S inc.filters	$62.
VFO-820 Matching VFO for TS-820S	$165.
VFO-520 Matching VFO for TS-520S	$147.
SM-220 Monitor Scope Kenwood series	$319.
DG-5 Digital Display for TS-520S	$194.
DS-1A DC Converter TS-520-820	$74.
DS-5 Pan Adapter for TS-520S	$66.
DS-8 Pan Adapter for TS-820S	$60.
AT-200 Matching Antenna Tuner Power meter	$174.
Optional crystal filters	$54.
MC-35S Hand Mike HI 2	$20.
MC-50 Base Mike HI and LO Z	$52.
TS-120 80-10M Mobile Digital Display 30W PEP	$565

All Equipment pre-sales checked and wired for 240v ac operation!!!!!

NEW IC 280 NOW AVAILABLE.



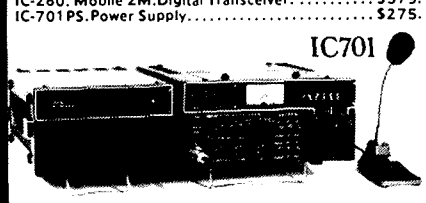
2 M.10 W Transceiver ALL Digital spacing 144.148 3 memories YES 3 Remote Computer Controlable

OUR PRICE ONLY $379.

ICOM

IC-701. HF 160-10M Transceiver.	$1299.
IC-202E. SSB Portable Transceiver.	$219.
IC-22S. FM 10 Watts 2M Mobile Transceiver.	$289.
IC-211. ALL Mode 2M.Transceiver.	$730.
IC-280. Mobile 2M.Digital Transceiver.	$379.
IC-701PS.Power Supply.	$275.

IC701



The fabulous state of the art ICOM IC701 solid state transceiver.

IC701 $1299

IC701PS $275.00

- All Solid State, even the finals
- 100W Continuous Duty
- All Bands 3.8 - 30MHz
- USB LSB CW AM Narrow RTTY
- Double Balanced Schottky Diode Mixer used in both receive/transmit
- Dual built-in individual Digital VFO's offer split frequency operation
- ICOM's unique Pass Band Tune
- VOX, Semi-break-in CW, RIT, AGC, Noise Blanker
- Built in Speech Processor
- Full Metering
- Extremely compact
- Digital readout and all filters built in
- Built in DC power supply
- Optional AC power supply/speaker
- Full line of accessories to come

ICOM

All prices include Sales Tax. Freight and Insurance extra.
Prices and specifications are subject to change without notice.

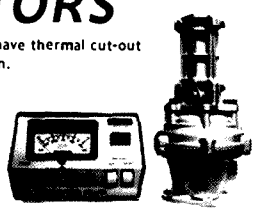
MORSE KEYS

HI MOUND.

HK-707. On standard base with dust cover and knob.	$25.
HK-710. De Luxe heavy duty morse key.	$49.
TC-701. Practice keyer with built in Osc.	$21.
EKM-1A. Morse Practice Osc.	$16.
HK-706. Operators key with dust cover.	$24.
HK-708. Operators key.	$23.

ROTATORS

EMOTATOR Rotators have thermal cut-out for overload protection.



Emoto model	(kg./cm.) Torque
103 LBX	1,500
502 CXX	4,000
1102 MXX	10,000

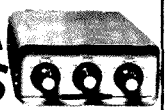
EMOTATOR

103LBX. Medium Duty.	$169.
502CXX. Heavy Duty.	$243.
1102MXX.Extra Heavy Duty.	$369.
1103MXX.Extra Extra Heavy Duty.	$395.
502 Mast Clamp.	$32.
103 Mast Clamp.	$22.
VCTF-7. 7 Core Cable.per Metre.	$1.20
VCTF-6. 6 Core Cable.per Metre.	$1.00.

DIAWA

DR-7500S. Medium Duty.	$180.
DR-7600D. Heavy Duty.	$248.

ANTENNA COUPLERS



HC-75. Tokyo Hy-Power Labs.Transmatch 75W PEP.	$79.
HC-250. Tokyo Hy-Power Labs.Transmatch 250W PEP.	$100.
HC-500A. Tokyo Hy-Power Labs.Transmatch 500W PEP.inc.160M.	$132.
HC-2500. Tokyo Hy-Power Labs.Transmatch 2.5Kw. PEP.	$199.
AT-200. Kenwood. 200 Watts.	$174.
FC-301. Yaesu.500W Inc.SWR and PWR Meters.	$239.
FC-901. Yaesu.500W Inc.SWR and PWR Meters.	$269.

DIAWA.

Mic. Compressors and RF Speech Processors.
Ideal for low power transceivers.
Get that extra talk power.
Ideal for Novices.

MISCELLANEOUS ACCESSORIES.

SWR-200. Large dual meter SWR.	$78.
590G. 5 position coax switch.	$39.
Diawa 2 Pos. Coax Switch.	$25.
LP-42. Drake Low Pass Filter.200W.	$25.
TWS-120. 2 Position slide coax switch.	$18.
M330. Diawa Mic. compressor.	$70.
5D-fb. Foam filled coax double shielded 2.02 dB loss per 100 feet.	$1.20 per metre.
RG-58U. Thin coax. per metre	50 c.
PL-259.	75 c.
PL-259 to suit 5D-FB.	$1.50
FF-501DX. Low Pass Filter.	$41.
Bumper Mounts 3-8x 24 Thread.	$10.
Wide Range of Coax Cable and Connectors in stock.	
MC-440. RF Speech Processor.	$135
Porcelain Egg Insulators.	50 c.

ANTENNAS

hy-gain

18-AVT 80-10 M Vertical	$129.
TH-3 Mk.3 20-15-10 M Beam	$255.
TH-3 Jr. 20-15-10 M Beam	$198.
TH-6 DXX 20-15-10 M 6 EL.	$329.
HI-QUAD 3 El.Quad 20-15-10 M	$285.
BN-86 1-1 Matching Balun	$24.

HIDAKA

VS-33. 3el.Triband Beam 20-15-10M.Inc.Balun.	$259.
VS-22. 3el.Duoband Beam 15-10M Inc. Balun	$173.
VS-41-80KR. 80-10M Trapped Vertical.	$129.
VS-RG. Radial Kit for VS-41-KR.	$35.

Mobile Antennas.

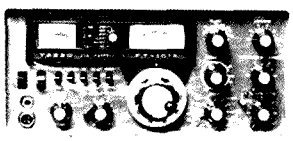
80M Helical.	$35.
40M Helical.	$35.
20M Helical.	$35.
15M Helical.	$35.
10M Helical.	$35.

ALL Adjustable Tip Rod for easy SWR

Yaesu Mobile Set.RSL Base and Mast plus 80.15.10M Whips. Complete. $79.
BPM. Bumper Mount (Adjustable) to suit Helicals. $10

AMTENNEA

AM3-3 Beam 20-15-10 M.	$219.
AM4-2 Beam 15-10 M.	$159.
AM5-B Trapped Vertical 80-40-20-15-10 M.	$109.



YAESU

FT-101E $919

YAESU

FT-901DM.160-10M Transceiver.	$1595.
FT-901DE.160-10M Transceiver.	$1375.
FV-901. External VFO for FT-901. 40 memories	$429.
FC-901. Antenna coupler incl SWR and PWR.	$269.
YO-901. Monitorscope for FT-901. inc.pan adap.	STBA.
TV-901. Transverter for FT-901.6M,2M,70cM.	STBA.
SP-901. External Speaker for FT-901.	$53.
FT-101E. 160-10M Transceiver.	$919.
FT-7. 80-10M Transceiver.	$529.
FP-4. Matching Power Supply.	$78.
FRG-7. General Coverage Receiver.	$369.
FRG-7000. Digital General Coverage Receiver.	$675.
FT-227R. 2m. Mobile Transceiver.	$369.
FT-225RDM. 2M. ALL Mode Transceiver.	$995.
FL-2100B. 1200 Watt Linear Amplifier.	$519.
FL-110. 200 Watt DC input Linear Amplifier.	$245.
YO-101. Monitorscope for FT-101E.	$379.
YP-150. Dummy Load-Watt Meter.	$112.
YD-844. Desk Mic.	$52.
YD-148. Dynamic Desk Mic.	$49.
QTR-24. 24 hr.World Clock.	$33.
FV-101B. Matching VFO for FT-101E.	$155.
YC-500S. 500 Mhz. Frequency Counter.	$510.
YC-500J. 500 Mhz. Frequency Counter.	$359.
FTV-250. 2M.Transverter.	$329.
SP-101B. Matching External Speaker for FT-101E	$53.
YC-601. Digital readout Adaptor for FT-101E	$279.
FC-301. Antenna Tuning unit inc. SWR,Pwr meter.	$239
YO-301. Monitorscope.	$379.
Optional Crystal Filters.	$59.
FF-501. DX 2kW.low pass filter.	$41.

VALVES.

6JS6C	$12.50
6KD6	$13.00.
572B	$58.00.
6146B	$13.50.

CHIRNSIDE ELECTRONICS. 26 Edwards Road, Lilydale, 3140. Phone (03) 726 7353

HF

The *KENWOOD TS-120V* HF Mobile Transceiver, packed with all the features for the Novice and Unrestricted Amateur — Check these features.

★ Full band coverage 80m to 10m includes all crystals)
★ 30 Watts P.E.P.
★ SSB-CW
★ W.W.V.
★ Digital Readout
★ 25 kHz calibrator
★ Noise Blanker
★ 13.8V DC @ 4 Amp
★ Rx sensitivity better than .25UV S+N/N 10 dB
★ Size 241 mm wide x 94 mm high x 235 mm deep.

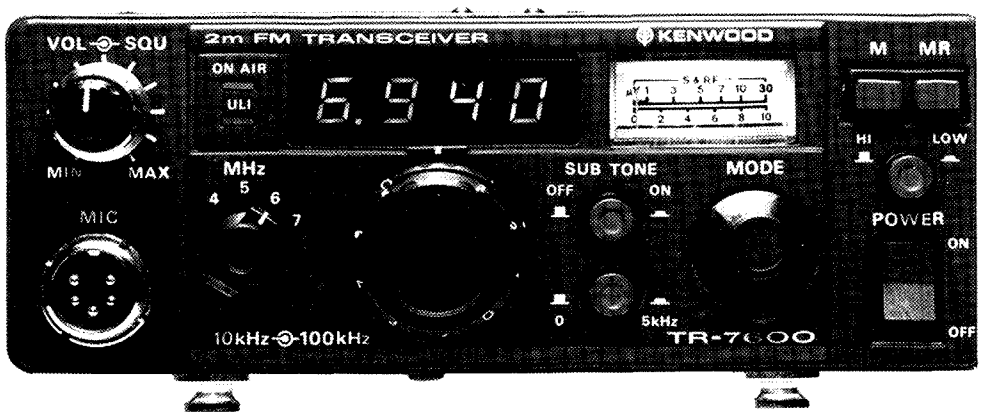
Plus full range of accessories — VFO — Filters, etc.

KENWOOD
. . . pacesetter in amateur radio

TWO NEW MODELS FOR 1979

VHF

KENWOOD TR-7600
VHF Mobile
Transceiver.
10 Watts O/P
800 CH capacity
144-148 MHz.



Features a Full 4 MHz coverage in 5 kHz steps

★ Power 10W or 1 Watt
★ Memory
★ Digital Readout
★ Simplex and Repeater offset operation ±600 Hz
★ Remote frequency control (available option)
★ Size 60 mm Height x 160 mm Wide x 220 mm Deep
★ Rx sensitivity better than .25 UV for 20 dB.

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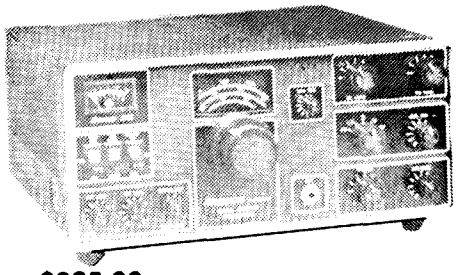

NEW 350B AND 350D

$685.00

FULL 300 PEP INPUT ON SINGLE SIDEBAND SELECTABLE 80 OR 100HZ CW AUDIO FILTER. BUILT IN AC POWER SUPPLY. BUILT IN 25 KHZ CRYSTAL CALIBRATOR FOR MODEL 350B.

WE TRADE IN AND AUCTION EQUIPMENT

COME TO SWAN FIRST!!!
FOR YEARS SWAN HAS CONSISTENTLY PRODUCED THE FINSET HAM EQUIPMENT FOR YOUR TRANSMITTING AND LISTENING PLEASURE. TO ACCOMPLISH THIS, WE HAVE COUPLED VALUE ENGINEERING WITH CUSTOMER SERVICE. VALUE ENGINEERING HAS SAVED YOU MONEY BY ELIMINATING UNNECESSARY COMPONENTS WITHOUT EFFECTING PERFORMANCE. OUR CUSTOMER SERVICE POLICY KEEP YOU ON AIR BY LETTING US HELP TO SOLVE YOUR PROBLEMS WHETHER IT'S THE 700S, 350B OR 350D, YOU CAN DEPEND ON THESE CHAMPIONS FOR TROUBLE-FREE PERFORMANCE — EVERYTIME!!!!

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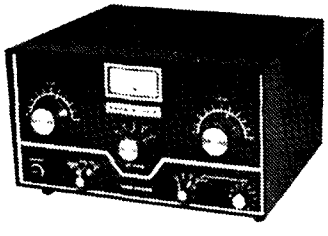
PRODUCT TRAINING & ADVICE

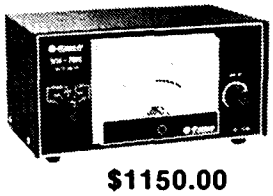
SWAN ELECTRONICS

444 DESK MICROPHONE $77.00



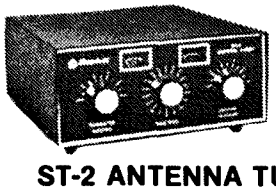
PEAK READING SWR WATTMETER

WM200A $140



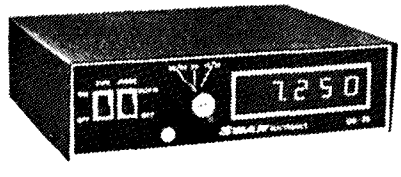
MARK II 2000 WATT LINEAR AMPLIFIER
PROVIDES FULL POWERFUL SIGNAL WITH 100 WATTS OF POWER. EVERYTHING IS INCLUDED, AN ATTRACTIVE RF DECK, SEPARATE MATCHING POWER SUPPLY AND A 4.5 FT. OF CONNECTING CABLE.

$1150.00



A QUALITY ENGINEERED PRODUCT BUILT FOR RELIABILITY AT A REASONABLE PRICE

ST-2 ANTENNA TUNER $355



DD-76 $285.00

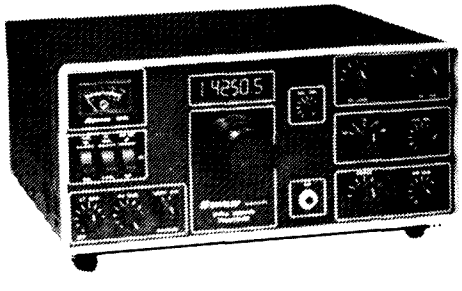
PRESENTS DIGITAL DISPLAY OF FREQUENCY IN BOTH TRANSMIT AND RECEIVE RESOLUTION TO 1KHZ BUILT-IN 240V POWER SUPPLY.

RITTY
MODEL 15 PAGE PRINTER
TAPE SENDERS, TAPE RE-PERFORATORS CUST. COM. DT-600
DE-MOCULATORS BUILT UP OR IN KIT FORM

SPECIAL FEATURE
FREQUENT HAM AUCTIONS
PRODUCT NIGHTS
FULLY EQUIPPED "DO IT YOURSELF" WORKSHOP

LEVEL METERS, OSCILLATORS, V.T.V.M., MORSE KEY, ELECTRONIC KEYERS, MATCHING NETWORKS, HF AND VHF ANTENNAES

MAIL ORDER SERVICE
COUNTRY ENQUIRIES WELCOME
ALL LETTERS ANSWERED



MODEL 350D HAS THE SAME SPECIFICATIONS AND CHARACTERISTICS AS THE 350B EXCEPT THE UNIT COMES WITH A BUILT-IN DIGITAL FREQUENCY DISPLAY WITH READOUT TO 100HZ.

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WE ARE SEEKING LOCAL AND INTERSTATE DISTRIBUTORS.

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SS56	6 m 5el Beam Antenna	122.00
V4Jr	Trap Vertical 40-10m, 5.2m High, No guys required	99.00
V5Jr	Trap Vertical 80-10m, 6.7m High, No guys required.	139.00
	RAK ANTENNAS:	
RAK	Midv VN 80-10m Trap Horizontal Dipole	103.00
RAK	Midv AL48DXN 40-80m Trap Horizontal Dipole	62.00
RAK	Midv AL24DXN 20-40m Trap Horizontal Dipole	60.00
	HUSTLER MOBILE ANTENNAS:	
BM-1	Deluxe Universal Bumper Mount incl. Ball Socket	25.00
MO-2	Fold-over Mast (reqd. for all resonators)	29.00
RM20, RM15, RM10.	20m, 15m, 10. Resonators	20.00
RM40	40m Resonator	22.00
RM80	80m Resonator	24.00
RSS-2	Medium Duty Spring	12.00
	DISCONE ANTENNA:	
GDX-1	80-480MHz Commercial Discone	79.00
	RINGO ANTENNA:	
ARX-2	Ringo Ranger Gain Omni-Directional for 2 m.	49.00
	JAYBEAM ANTENNAS:	
	88/70cm 88el, 70cm, 18.5dBd Gain	99.00
	48/70cm 48el, 70cm, 15.7dBd Gain	76.00
	PBM18/70cm, 18el, 70cm, 14.9dBd Gain	69.00
	D8/70cm, twin 8el, 70cm, 12.3dBd Gain	59.00
	10XY/2M 2m Crossed Yagi, 10el, 11.3dBd Gain in each plan	89.00
	8Y/2M 8el Beam, 9.5dBd Gain	45.00
	10Y/2M 10el, 2m Beam, 11.4dBd Gain	77.00
	PMH/2C Phasing Harness	17.00
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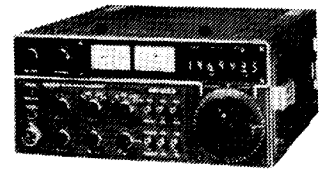
HY-QUAD	10/15/20m, 2 elements	349.00
204Ba	4el Monobander for 20m	279.00
205Ba	5el Monobander for 20m	210.00
14AVQ/WB	40-10m Trap Vertical	109.00
18AVT/WB	80-10m Trap Vertical	155.00
TH3MK3	10/15/20m 3 el Beam	299.00
TH5Jr	10/15/20m 5el Beam	229.00
TH6DXX	6el Tribander Beam	399.00
LONG HOHN	5el Wide-spaced 27, MHz Beam	180.00
	MISC. ANTENNAS & ACCESSORIES:	
LINDENOW	5/8ths 2m Mobile, Heavy Fibreglass	35.00
BELLING-LEE	Base for above	4.00
KLAMG	Magnetic Bases	19.00
AS-KDA	Spring Mount (Base)	20.50
	COAXIAL CABLE (MIL SPEC):	
RG58AU	1,000 ft. Reels	50c/m
RG58AU	500 ft. Reels	50c/m
	BALUNS:	
AS-BL	For Beams	31.00
BL50A	50 ohm 4Kw for Dipoles	25.00
BL70A	70 ohm 4Kw for Dipoles	26.00
	ANTENNA COUPLERS:	
CNW-217	Incl. swr/pwr Direct Reading, 200w pep max	179.00
CNW-417	Incl. swr/pwr Direct Reading, 500w pep max	219.00
	ANTENNA CHANGE—OVER RELAYS (DAIWA):	
CX-2L	1.8 thru 170MHz, 100w pep max	45.00
CX-2H	1.8 thru 450MHz, 200w pep max	59.00
	COAXIAL SWITCHES (DAIWA):	
CS201	2 Position, high pwr, up to 500MHz, Commercial Qual.	24.00
CS401	4 Position, high pwr, up to 500MHz, Commercial Qual.	49.90
	SWR/PWR METERS:	
VC2	Twin Meters, 3-150MHz with Calibration Chart	34.00
OSKERBLOCK	SWR200, 3-200 MHz, 2/20/200/2000w	75.00
SW410A	UHF 140-500MHz Direct Reading	105.00
SW210A	1.8 thru 150MHz 20/120w Direct Reading, Professional	85.00
SWX777	Professional 1.8 thru 30MHz Direct Reading	131.00

ICOM

MODEL	DESCRIPTION	PRICE
IC701	HF Solid-State 160-10 m Transceiver	1,380.00
IC701PS	Matching Power Supply/ Speaker for above	245.00
IC202E	2 m SSB Portable, 3 watts	219.00
IC502	6 m SSB Portablem 3 watts	219.00
IC22S	2 m fm Synthesised Tranceiver	299.00
IC211	2m All-Mode Transceiver, AC/DC	785.00
IC245	2 m fm Digital Mobile Transceiver	465.00
	-SSB Attachment for above	142.00
IC402	70 cm SSB Portable Tranceiver	
RM2/3	Remote Controller for IC701/211/245	169.00
	Crystals for IC215/22 Series (Pair)	10.00
	Crystals for Oscar (IC202E) (Each)	7.50
BC20	Nicad Pack & Charger for Portables	59.00
ICSM2	Condenser—Electret Desk Microphone for ICOM Rigs	56.00
	Brackets for IC22S Series	17.50
	Brackets for Portables	18.00



IC211

RTTY EQUIPMENT

WE CARRY RECONDITIONED PAGE PRINTERS, TAPE PERFORATORS, TAPE DISTRIBUTORS, DEMODULATORS, LOOP SUPPLIES, ETC.

15	Page Printer 110V	150.00
14	Tape Reperforator 110V	150.00
14	Tape Distributors 2 Heads 110V	150.00
DT-600	Demodulatro fully build up 170Hz-850Hz	270.00
DT-600	Demodulator Kit Inclusive 12V Power Supply, Meter, all Plugs & Connections	150.00
AFSK	Oscillator, Fully built up Kit includes 6V Power Supply X-Tals for 170 and 850 Hz	60.00 40.00
	SLOW SCAN T.V.	
OM-7M	Ham Vision Monitor 4 inch Monitor Screen	1400.00
OM-7C	Ham-Vision Camera	
	LOW PASS FILTERS (DAIWA):	
FD50M	52MHz Fc, 1Kw, 5 stages, good qual.	35.00
FD50LS	52MHz Fc, 1Kw, 3 stages, good qual.	20.00
	OMEGA NOISE BRIDGE:	
TE7-01	Up to 100MHz	44.00
	POLAMAR PRODUCTS:	
	IC Keyer	149.00
	VLF Converter	89.00
	Receiver Noise Bridge	79.00
	QM70 PRODUCTS:	
	432/144MHz Converters	59.00
	432/28MHz Converters	59.00
	144/28MHz Converters	59.00
	1296/28MHz Converters	70.00
	28/144 "SCORPION" high power Transverter	225.00
	2m Linear amp 70w max pep	129.00
	2m/432MHz Transverters	125.00
	COMPRESSORS & PROCESSORS (DAIWA):	
RF440	Speech Processor, phasing type, 6dB Gain	125.00
RF550	Speech Processor, Crystal Filter Type, 6dB Gain	165.00
	MORSE KEYS (HI-MOUND):	
HK702	Delux Key with Marble Base	38.00
HK708	Economy Key	21.00
HK706	Operator's Key	25.00
MK701	Manipulator (Side-swiper)	45.00
EK103Z	Electronic Keyer	165.00
	MICROPHONES:	
VM-1	Noise-cancelling, Dynamic, Low Z	9.50
VM-2	Desk Mike with Pre-amp, Dynamic, Low Z	29.80

VK VISITS JA

Fred Herron VK2BHE
President, Summerland Amateur Radio Club

As I sat back and relaxed, I was thankful for the warm plush interior of the limousine. The driving snow beat mercilessly against the exterior of the vehicle, and I pitied the driver as the wipers shuddered against the rapidly accumulating snow on the windscreen while he fought to control the vehicle as it jolted through the heavy snowdrifts and over the dangerously icy surface of the road. Hey! Wait a minute! What has this all got to do with Amateur Radio? It sounds more like a scene from a Russian spy movie. In fact it was the last leg of my journey, as a guest of the Yaesu Musen Company in Japan, to visit the Yaesu Musen assembly line at Sukagawa, near Fukushima, about 240 km north of Tokyo.

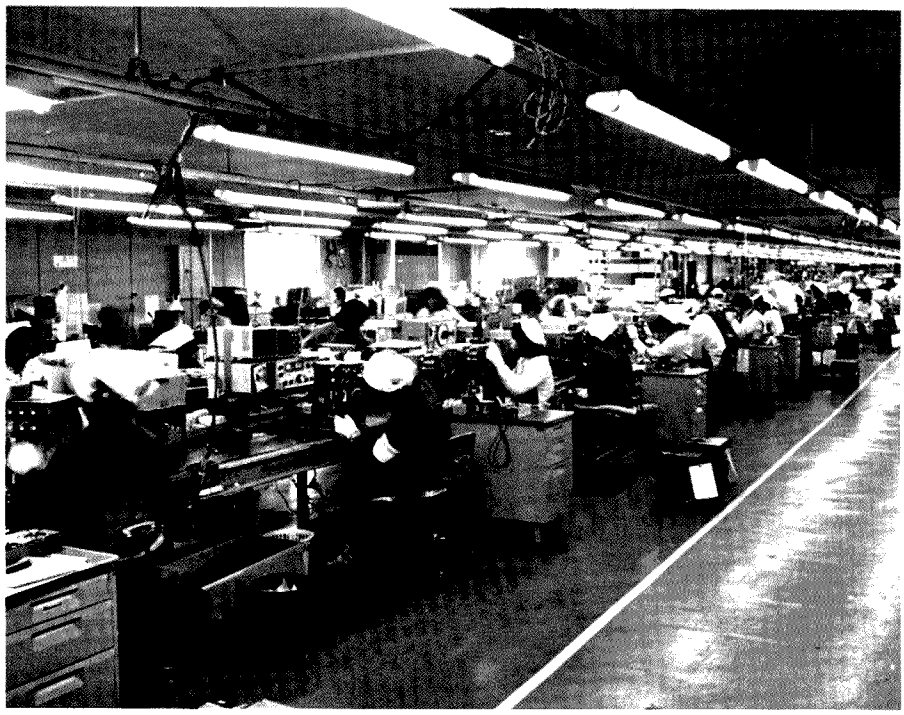
I was in Japan, as leader of a group of 18 Australians, on an exchange visit between my home city of Lismore, NSW (the headquarters of the Summerland Amateur Radio Club), and the Japanese city of Yamato Takada. These two cities have a "Sister City" relationship extending back to 1963, which involves an exchange of citizens between the two cities about each two years, with the object of fostering friendly relations and better understanding between our two countries. The concept originated in Lismore and has since spread throughout Australia and Japan.

During the course of numerous JA QSOs throughout the months preceding the tour, I had received many invitations to "eyeball" QSOs with individual JA amateurs and amateur groups and organizations, including a very warmly worded invitation from Mr. S. Hasegawa, the President of the Yaesu Musen Company. The story of the overwhelming hospitality extended to me by individual JA amateurs and groups would fill a book in itself, and because of limitations on space I will have to confine this narrative to my visit to Yaesu Musen.

Mr. Hasegawa had deputised a member of his administration, Mr. Chip Margelli K7JA, to be my guide and mentor for the visit to the Yaesu Musen Company facilities, and from the moment he met me at my Tokyo hotel that morning he proved to be a most knowledgeable and efficient young man who was obviously convinced that he was a part of the world's greatest amateur product organization. After a short cab ride to Tokyo station, followed by some mysterious dealings at ticket windows and platform barriers, we boarded an impeccably clean express train and settled comfortably into a typical carriage of what must be one of the finest railway systems in the world.

As we travelled the long journey north to Fukushima, Chip told me about the interesting history and current operations of the Yaesu Musen Company, as well as about his work. He has been in Japan about 18 months, and is mainly involved in the production of English manuals for Yaesu equipment, which involves close co-operation with Company engineers in the research and development laboratory in Tokyo. He is also involved in liaison with overseas dealers and marketing outlets. From time to time I noticed through the train window that the weather outside appeared to be rather bleak, and as we climbed into higher altitudes snow began to fall. By the time we reached Fukushima we had a fully fledged snow storm on our hands, and I began to yearn for sunny Summerland. It was a thankfully short dash from the station, across icy pavements, to a nearby heated restaurant, where we were fortified by a delicious hot meal and a thimblefull or two of hot saki (they don't serve it in middies). Then began a nerve-wracking car ride, through driving snow, to the Sukagawa facility of Yaesu Musen, which brings me back to the opening paragraph of this story.

On our arrival at Sukagawa we visited the first of the three assembly plants located in the area. The three plants were very similar in appearance, layout and operation, so a general description here will be sufficient to cover them all. The overall impression is of cleanliness, order, and intense activity and concentration on the work at hand. An overpowering smell of burning resin prevails throughout the buildings. The photograph accompanying this article shows the standard production line configuration. Although Japan is a male orientated society, this is one area in which the females dominate. Apart from management staff, and a very small number of males in quality control sections, the production line staff are exclusively female. They made a pretty picture that day, with their white caps and white gloves, as they worked intently on the job at hand with an occasional quick shy smile at the strange foreigner who walked down the line. We saw the rigs grow from the bare bones of the basic chasis frame and a single PC board, to the finished packaged product ready for shipment.
a particular point in each production line it was rather unnerving to see delicate little Japanese women thumping, banging, crunching, and bashing gear which we would normally handle with kid gloves, just for the purpose of revealing possible hidden faults. Predominant among the rigs we saw coming off the lines that day were the FT-221R, FT-227R, and of course the perennial FT-101E/EE. However, pride of place went to the revolutionary new FT-901DM, which all at Yaesu believe to be the pace setter for the future. Testing and quality control procedures were obviously carried out meticulously, and I was left in no doubt that it would be the rare fault indeed which slipped through.



Sukagawa assembly line of Yaesu Mussn Co. Ltd.

Apart from the obvious quality of the production facilities, general staff amenities were excellent and morale was high. It was refreshing to see a dedication to the production of high quality and high output which is rarely seen these days. Loyalty to the product and the Company was evident throughout the organization. For the statistical minded, the Company employs about 650 people in three assembly plants, plus administration offices and a research and development laboratory. Approximately 100 rigs come off the lines each day.

Our departure from Sukagawa was marked by the minor drama of the driver using a millet broom to sweep the snow off the bonnet and windscreen of the vehicle which took us back to Fukushima station. After returning to Tokyo, I spent the next day browsing through the Akihabara District, world renowned as the Meçca for electronic enthusiasts, with more electronic stores to the square mile than you can possibly imagine—but that is another story.

My visit to the Yaesu Musen Company, a truly remarkable organization, will long be remembered as a most memorable and exsiting experience.

SAYONARA! ■

SETI
(SEARCH FOR EXTRA-TERRESTRIAL INTELLIGENCE)

Once in a while something unusual turns up which seems worth sharing with members. In 1976 at the request of a great number of ITU Member Countries, the CCIR adopted Question 17/2 on "Radiocommunications Requirements for Systems to Search for Extra-terrestrial life".

AR readers will be familiar with the abbreviations ITU and CCIR in particular relation to WARC 79. The ITU have issued a series of papers relating to itself and its technical committees for the 10th World Telecommunication Day, 17th May 1978 and the articles now to follow are printed with due acknowledgement to the ITU.

1.1 **BACKGROUND**

Many scientists believe that life is common in our galaxy and that it could develop into civilizations. Civilizations with similiar technical achievements to ours could communicate with each other by radio waves up to distances of 100 light years.

The possibility of receiving communications from an extra-terrestrial intelligence (ETI) was first pointed out in 1959, and a search was proposed for possible signals (Cocconi and Morrison, 1959). Independently, Drake and others attempted to detect signals from possible civilizations on nearby stars. Similar attempts have since been made at other observatories (Sagan and Drake, 1975). The first "aimed" signal was transmitted into space from the Arecibo Observatory In November 1974 (NAIO, (1975).

Using present technology it is feasible to detect radio signals arriving at the Earth from other civilizations in the galaxy. Such a programme is called SETI (Search for Extra-Terrestrial Intelligence).

There are at present several SETI programmes in progress (Sagan and Drake, 1975). These include the following:

1.1.1 Bridle and Feldman, at Algonquin Radio Observatory in Canada, are searching nearby stars at 22.2 GHz, near the H_2O line.

1.1.2 Dixon and Cole, at Ohio State University Radio Observatory, are making an all-sky survey near the 1.4 GHz hydrogen line (Dixon and Cole, 1977). This survey has been in progress continuously for three years.

1.1.3 Drake and Sagan, using the Arecibo Observatory in Puerto Rico, are observing several nearby galaxies at 1420, 1653, and 2380 MHz (Ponnamperuma and Cameron, 1974).

1.1.4 The Soviet Union SETI programme (USSR, 1974; USSR, 1975).

1.1.5 Kardashev, using the Eurasian Network, in the USSR, is searching for pulsed signals, with hemispherical coverage (Kardashev, 1976).

1.1.6 Troitsky, using the Eurasian Network, is searching for pulsed signals in an all-sky survey at 1.9, 1.0 and 0.6 GHz (Troitsky *et al.*, 1974).

1.1.7 Zuckerman and Palmer, using the NRAO Observatory in Greenbank, are searching nearby F, G, and K type stars near 1420 MHz (Palmer and Zuckerman, 1972).

1.1.8 The United States National Aeronautics and Space Agency is currently conducting a search near 1.5 GHz (Tarter *et al.*, 1977).

1.2 **Average distance between civilizations in space**

The average distance between civilizations must be inversely proportional to the cube root of the space density of the civilizations, which is also proportional to their average life.

For the existence of civilized life within 100 light years of the Earth to have a high probability, one must assume an average life of at least 107 years.

1.3 **Other civilizations**

Based on the following argument some experimenters may assume that the other civilization would be more advanced than ours. We have only been able to communicate with an equivalent civilization by radio waves during the last 30 years. Consequently, if they can communicate, but are nevertheless behind us, the state of development of the other civilization cannot be more than 30 years behind ours. As 30 years is an extremely short time compared with the time scale of evolution of life, the probability that this would be the case is very small. Similar logic shows that they are unlikely to be only slightly ahead of us. In the previous section it is stated that an average life of communicating civilizations would be of the order of 107 years. It is concluded therefore, that the other civilizations are probably considerably more advanced than ours.

Such civilizations may have formed a community through radiocommunications and may have been continuously sending signals to suggest that we join the community.

1.4 **Consequences of success**

Interstellar communication is merely hypothetical before the first contact is made. However, as soon as a contact Is established, practical implications to us may be significant. The large-capacity communication following the first contact may contain information far superior to our knowledge.

1.5 **Types of stars to be sought**

Stars which are similar to the Sun may have planets suitable for life similar to that on the Earth. Such stars have surface temperatures of 4500 to 6500 K and luminosity of 0.3 to 3 of the Sun, and are known as main sequence stars with spectral types of F, G and K (Sagan, 1973).

The following paper on this subject is one in a series of feature articles prepared by the ITU Public Information Service on the occasion of 10th World Telecommunication Day.

2. **RADIO MESSAGES FROM OTHER CIVILIZATIONS**

Assuming that other intelligent beings might broadcast messages to the planet Earth, what would a radio message from another civilization be like To start with, it might be extremely long, taking many years to complete. Any assertion about the frequency an extra-terrestrial communicator would use, the nature of his civilization, his reasons for communicating with us, indeed his very existence can be little more than speculation. Even when informed by our scientific knowledge, the obvious speculativeness of these assertions only serves to demonstrate that our scientific

knowledge is terracentric — that is, restricted to what we can learn from a point of observation on the third planet circling a sun in a remote spiral arm of the Milky Way, one galaxy of billions in the universe. In short, we know very little. When we raise the question of intelligent life elsewhere, we should recall that we still do not understand how life emerged on earth.

Although not the slightest encouraging sign was found for many years, interest in the possibility of such an event as picking up artificial signals from outer space has grown steadily. Finally in 1965, the ITU Centenary year, Soviet scientists announced that they had observed regular radiation fluctuations of a distant star. A galactic radio source — called CTA 102 — seemed to be fluctuating in its effective radiated power in such a way as to suggest a deliberate form of modulation. Some scientists were sceptical, however, not because they did not believe in the possibility of other civilizations in the universe, but simply because the particular object seen by the Soviets was a quasar, one of the biggest emitters of radio waves and light yet found. For any intelligence to make it pulsate, a super-super race would indeed have been necessary. But since this radio source was over several thousand light years distant, there was no chance of such a direct verification of the matter as an interrogation of the star by a terrestrial radio station (a light-year is the distance which light travels in one year, namely 9 461 000 000 000 km or 299 792.5 km per second). We realise that the most difficult of all obstacles to contacting people on other planets is the astronomical distance between possible radio sources and the planet Earth. The signals picked up from CTA 102 consequently were emitted many thousands of years ago.

The radio astronomers of ITU Member countries use the largest and most sophisticated modern radio telescopes to listen for radio messages from deep space. But the astronomers have not heard anything yet. This may mean that either nobody is out there or that perhaps the astronomers are listening on the wrong frequency. An extra-terrestrial could be using any one of an infinite number of possible radio frequencies. There are of course many frequencies which are subject to interference from natural radio sources in outer space. These include radio emissions from speeding electrons caught in galactic magnetic fields, the low temperature background noise probably left over from the big bang which created the universe, and possible radio emissions caused by changes in the rotational and vibrational motion of molecules in our own atmosphere. Only part of the microwave spectrum — roughly the range between 1 and 30 GHz — is only minimally affected by this interference. Here a cosmic window was readymade for use by our astronomers and hypothetical extra-terrestrial broadcasters.

The Geneva 1963 Extraordinary Administrative Radio Conference, reserved worldwide the frequency 1420 MGz or 21 cm wave length, for radio astronomy. It is a natural frequency of emission of the hydrogen atoms in space and was discovered in 1959. The discoverers, two astronomers, Giuseppe Cocconi and Philip Morrison, argued that even very different species, once they had reached our level of technological development, would recognize hydrogen as a kind of cosmic common denominator and use its frequency for inter-stellar communication.

Unfortunately, the very abundance of hydrogen, in the form of vast gas clouds in inter-stellar space, means that there will be considerable noise on this frequency. Thus, astronomers found themselves hypothesizing that the extra-terrestrial broadcaster would be transmitting signals, not on the hydrogen frequency, but on a band in its vicinity. Consideration of these factors establishes a preferred frequency band several hundred Megahertz wide, near 1.5 GHz. A narrow band of frequencies centred at the 4830 MHz formaldehyde line and other frequencies, especially these currently used by radio-astronomy, will also be observed to search for extra-terrestrial life.

A group of U.S. scientists under the leadership of Dr. Woodruff Sullivan of the University of Washington, Seattle, came to the conclusion that the 300 star systems nearest the Earth could detect the presence of intelligent life here from our television signals, if their inhabitants have at least the technical knowledge and curiosity of late twentieth-century man. These scientists found that the most intense radio emissions from Earth come from the United States and the USSR. These radar signals could be detected 250 light years away by an observer with our present technology who built an antenna system like the array of a thousand 100-metre dishes proposed for the United States project **Cyclops.** However, these extremely powerful radars are very few in number and their frequencies are constantly changing, so they would be unsuitable for long-term monitoring. The University of Washington scientists calculate that a strong five megawatt ultra high frequency (UHF) television station could be detected by a receiver of the **Cyclops** type up to 25 light years away. About 300 stars and their orbiting planets lie within that range. Although there are 15,000 television transmitting stations in the world, the American scientists say that the problem of detecting radio leakage from the Earth is equivalent to detecting the strongest single station alone. They show that it would pay an investigator to sweep the radio-spectrum with an extremely narrow bandwidth of 0.1 Hz looking for individual stations, rather than attempt to catch several transmitters at once with a much broader bandwidth, as all Earth-based searches to date have done.

Some astronomers point out that they have only been listening for intelligent signals for the last 17 years and have only been broadcasting for the last 50 years. Such time spans are infinitesimal on a galactic scale. Most extra-terrestrial broadcasters are probably going to have had much more experience with inter-stellar communication than we have. If their pattern of technological development is similar to ours, they are going to be much more advanced.

Many astronomers engaged in the search for extra-terrestrial intelligence argue that the exchange of scientific and technical information would be of inestimable benefit both to us and them. A few scientists have tried to attract the attention of extra-terrestrial broadcasters. And, in 1974, the first "aimed" signal, a complex message was transmitted from the Arecibo telescope in Puerto Rico, with its antenna 3000 metres in diameter. Proponents of the search for extra-terrestrial or humanoids argue that it has a sound scientific basis, pointing out that it is just as ridiculous to assume there is nothing out there as it is to state without proof, that the universe is teeming with life. They are simply trying to test scientifically whether such life exists outside our solar system.

But what would happen if we ever did receive a message or made contact in any other way with extra-terrestrials, with people on other planets? Should the news of radio contact with other civilizations ever be made public?

Responsible scientists who have investigated this question for their national space administration, think that this may not be advisable. And yet the influence of such discovery might have beneficial effects on international relations leading to greater unity of mankind on earth based on the age-old assumption that any stranger is threatening.

Would any really superior civilization wish to do us any harm? If we suddenly found ants wanted to talk to us by radio in a manner we could understand, would we therefore immediately exterminate them all, without listening to them and learning all we could?

A much more positive approach would be to consider the spiritual and philosophical benefits that would result from such an exchange of knowledge leading to new respect and humility if we found that man was not alone in the universe. ■

PREFERRED VALUES

Roy Hartkopf VK3AOH

Have you ever wondered why the values of components such as resistors, capacitors and even some inductances are given in what appear to be odd numbers such as 22, 47, 68 and so on? Actually the numbers are very carefully chosen, and are part of a system of what are called "preferred values."

In the early days of radio the values of components were given what might seem to be normal values, 10, 20, 30 and so on. But if we look at these values we see they are not very logical after all. If we look at the older series of values we see that the first two, 10 and 20 go up by 100 per cent. All resistors vary in actual value from their nominal value. The manufacturer builds to a tolerance, usually 5, 10 or 20 per cent. So with 20 per cent tolerance components there is a large gap — between 12 and 16 — where there is no value available. At the other end, 90 to 100, we find that a low value minus 20 per cent gives 80, while the 90 plus 20 per cent gives 108. So we have the silly situation where a low 100 value component can be lower than a 90 value component.

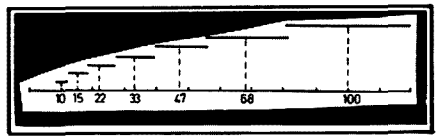


FIGURE 1: 20% preferred value series.

So the manufacturers of components decided to make a more logical system, where the next value began where the previous one stopped. With a 20 per cent tolerance the 10 value could vary from 8 to 12, so the next value was chosen as 15. The bottom value tolerance of this would be 12, which is the top tolerance of the 10 value. The top tolerance of the 15 value would be 18, so the next value chosen was 22, where the bottom tolerance would be 17.6 — very nearly the same as the top tolerance of the 15 value. And so the series goes on 10, 15, 22, 33, 47, 68, 100, and so continues always going up by the same ratios. If we want more accurate tolerances, say 10 per cent or 5 per cent then we have intermediate values based on the same principle.

The sketch above shows how the components with this new arrangement cover the full range without overlapping, and they all have the same 20 per cent tolerance. Apart from avoiding the situation that was mentioned above, where a 90 value high tolerance component could be higher than a 100 value low tolerance component, there is the big advantage that instead of needing nine different values to cover the range we now only need six. This is particularly helpful where a firm is dealing with stocks of many thousands of components.

At first only resistors were available with preferred values but now almost all components have gone over to this system. By the way, some of you may have been puzzled by a coding on capacitors which has come out recently. You will see something like this — 33^2. What the little 2 or 3 or whatever means is that the value is in picofarads and the number — in this case 33 — is followed by two zeros. So the value in this case is 3300 picofarads or .0033 microfarads. In the same way 47^4 would be 470000 picofarads or .47 microfarad. It is as well to remember this coding as it will be used a lot in the future.

From Zero Beat, Dec. 77 ■

COAXIAL CABLES AND CONNECTORS

Bert Grove
6 Trueman Ave., Salisbury East, SA 5109

The following article is reproduced from an old edition of the Westlakes Radio Club Monthly Newsletter. I have always found little facts like this interesting, and in some cases a knowledge of the significance of seemingly disjointed letters and numbers helps to fix them more firmly in the memory. I hope it will be of interest to readers.

HOW THEY GOT THEIR NAMES

Did you ever wonder why the coaxial cable that you specified was called "RG/U", or the connector that goes with it was called a "BNC"?

The "RG" designations came about through a United States Navy coding system designed to be compatible with a huge government parts stocking and numbering system. The letters don't mean anything themselves. "RG/U" always indicates a cable; and the corresponding "UG" a coaxial connector. The number in the designation refers only to the order in which cables were developed and then approved by the military. They have no relationship to the cable diameter or electrical characteristics.

Connector type designations have a more interesting story behind them. The UHF connector referred to its "ultra high frequency" operation. In the days of World War II, 200 MHz was ultra high frequency. But not for long. As engineers developed higher frequency systems the need for coaxial connectors with better performance arose.

Today's popular "N" type connector was developed by, and named after, a man in the Bell Laboratories named Neill. The "HN" type soon followed as a high voltage version of the "N".

The "C" type connector was named after its developer, Cal Concelman, an engineer at Amphenol RF Division and its predecessor companies.

As smaller cables into use, the "BNC" connector was developed jointly by Concelman and Neill. Hence the "N" and "C". The "B" comes from an old type "B" connector. No one knows what the "B" meant. The next logical step was to name the threaded version of the BNC the "TNC" and so on.

That was as far as the article went. I was particularly interested in the last paragraph. I have always (well ever since I first came across them) thought, since "T" meant threaded that the "B" stood for "bayonet". I wonder if any reader knows for sure? ■

PRACTICAL HINTS

When replacing a transistor in an awkward position the job will be much easier if the leads are cut to different lengths. This allows you to insert one lead at a time instead of trying to get all three leads through the three holes at once. The leads projecting from the back of the board can be trimmed level after the transistor is soldered in place.

★ ★ ★

A neat and simple way of making taps on a coil is to make a loop in the wire and twist it. Finish the coil and then cut the end of the loop, clean the leads and solder the twist.

★ ★ ★

If you are looking for a former for large coils try a short piece of PVC conduit, the type electricians use. This is obtainable from about ½ in. to 2 in. For small coils the ideal thing is to keep a set of knitting needles. Wind the coil on them and then slide it off. To make a neat job of a coil on a neosid or other ¼ in. former wind it on a knitting needle of a slightly smaller diameter and then ease it on to the coil former.

★ ★ ★

If a receiver is giving very noisy reception you can check it by removing the aerial. If the noise continues then it is in the receiver but if the noise level drops it is being picked up by the aerial.

★ ★ ★

If a dial cord becomes loose on the pointer a drop of nail polish on the knot or connecting loop will fix it.

★ ★ ★

Aluminium can be soldered quite easily. Put a drop of engine oil on the spot to be soldered and then clean the aluminium under the oil with a sharp knife. Without removing the oil, tin the aluminium in the usual way. Use a large iron as the aluminium conducts heat very rapidly and it is hard to get the joint really hot.

Mechanical hum in equipment is usually caused by the transformer laminations vibrating. By tightening the screws which hold the transformer together this can often be eliminated.

★ ★ ★

Dial lamps in awkward positions which cannot be reached by hand can be removed by forcing a piece of sleeving over the bulb and using this to unscrew the bulb.

★ ★ ★

If you have some wire which is kinked and you want to get it straight, tie one end round a post or put it in a vice and put the other end until you feel the wire stretching slightly. It will then be perfectly straight.

★ ★ ★

By wrapping several turns of solder or wire around the tip of one jaw of your long nose pliers you can strip insulation from wires without damage to the strands since the jaws cannot close completely and cut the wire. ■

WHO TAKES CARE OF THE WATCHKEEPER'S DAUGHTER?

A BRIEF HISTORY OF THE WIA INTRUDER WATCH

Allan Doble VK3AMU

Following the story of 21 years of Intruder watching by the RSGB in "AR" for October, and the Federal President's QSP in the same issue, it seems an appropriate time to outline the history of our own WIA Intruder Watch.

The decision to initiate intruder watch action was taken by the Federal Council in 1967 during the presidency of Max Hull VK3ZS.

David Wardlaw VK3ADW was appointed Federal Co-ordinator, and set out recruitting a series of State groups.

The hundreds of hours of voluntary work put In by individuals since then is, like QSL Bureaux and other aspects of WIA activities, another story.

It will suffice to pay tribute here to the people who have been, or are doing the job up to the present time.

Every month, the co-ordinated reports from all States are arranged in order of frequency, and delivered by hand to the Radio Frequency Management Division of the P. and T. in Melbourne for study and action.

A copy is also sent to the headquarters of the IARU Monitoring Service in England.

IN THE FEDERAL FIELD

Co-ordinator — 1967 to 1971, David Wardlaw VK3ADW; 1971 to now, Alfred Chandler VK3XB, assisted by Ivor Stafford VK3XB.

BY DIVISIONS

VK1: 1974 to now, Ted Pearce VK1AOP. VK2: 1970 to 1974, Bill Jenvey VK2ZO; 1974 to now, Les Weldon VK2AFG. VK3: 1968 to 1969, Morton Davis VK3ANG; 1969 to 1971, Alf Chandler VK3LC; 1971 to 1975, Albert Cash (SWL); 1975 to now, Ivord Stafford VK3XB. VK4: 1970 to now, Murray McGregor VK4KX. VK5: 1971 to 1972, Bill Franzi VK5FR; 1972 to now, Leith Cotton VK5LG. VK6: 1973 to 1975, Ross Greenaway VK6DA; 1976, Albert Cash (SWL); 1976 to now, David Couch VK6WT. VK7: 1971 to 1972, Ian Pearson VK7KB; 1972 to now, Max Ives VK7MX. VK8: 1975 to now, Henry Andersson VK8HA.

Note: From 1975 until now Alf Chandler VK3LC is also IARU Region 3 Co-ordinator.

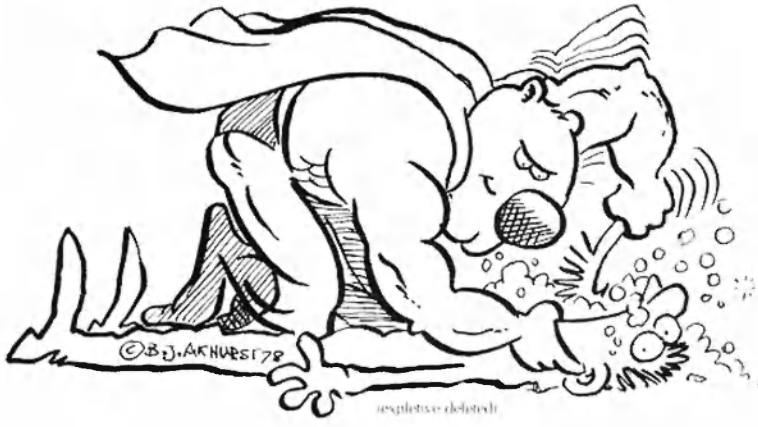
Weekly schedules are kept with both the USA, Bill Conklin K6KA, and the UK, Stan Cook GB2IW, as well as with the VK4 co-ordinator, VK4KX. ■

WIA PUBLICITY

The above 2 photos are copies of some of the WIA posters designed by Julie Scott, wife of Graeme VK3ZR.

These and other posters will be available for public displays by Divisions, etc.

HELP CLEAN UP OUR BANDS!!



Cartoons courtesy CB Australia.

RIGHT:

Meet Your Executive

Left to Right: Bruce Bathols (VK3UV) observer, Graeme Scott (VK3ZR), Peter Wolfenden (VK3ZPA), Peter Dodd (VK3CIF, Secretary), David Wardlaw (VK3ADW, President), Bill Roper (VK3ARZ), Ken Seddon (VK3ACS), Keith Roget (VK3YQ).

NIGHTOWLS MOPOKE CLUB

Bob Whitehead VK3NHA

We advise the formulation of a new club and associated awards for night owls.

Certificates are available for issuance at this time, bannerettes are currently being screen printed, and it is hoped that statuettes will be available shortly.

Costs have not been finalised but should not exceed a total of seven dollars.

There are four charter members at the moment, Bob VK3NHA, Trevor VK5NTB, Russel VK2NUN, and Garry VK7GM, with six more charter members being sought.

The current meeting place is novice 80m, any morning.

INTERIM MOPOKE CLUB RULES

1. The purpose of the club and award is to further the use of the bands in the wee small hours, to ensure continuing contact and conviviality among club members and to provide some impetus and reward for aspiring night owls.
2. Qualification for initial and continuing active membership is:—
   (a) thirty contact hours between 0100 and 0600 hours local time.
      (i) Contacts which have commenced *prior* to 0600 may continue to be counted up to 0700 local time.
      (ii) Where contact is between stations in differing time zones, the most advantageous 0600 to 0700 local time shall apply.
   (b) To include at least two continuous four hour working periods (between 0100-0600/0700) with any station, or series of stations.
   (c) Contact between 0100-0600 of at least one hour with a committee member.
   (d) Any band, any mode legally permissible.
   (e) For continuing active valid membership, a total of at least four hours per month between 0100-0600, subject to health or acceptable limitations.
3. Contacts are not limited to club members.
4. Membership is open to any country.
5. Net operation is permissible.
6. Neither QSL cards *nor* detailed logs are required, simply a list of contacts claimed showing date, duration in local time, band and mode.
7. Three contacts at random from the list supplied by the applicant will be checked in writing by a committee member.
8. The committee initially to consist of the ten charter members, thereafter the committee to be elected annually by simple majority of all members.
9. Club nets, competitions, awards and constitutional amendments to be decided upon by simple majority of members fulfilling the conditions of rule 2(e).
10. Other decisions affecting the club to be vested in the committe.
11. Contacts count as from 0100 local time July 1st, 1978.
12. Allocation of membership and awards may be effected by any one committee member after consultation with, and having the agreeance of, the simple majority of current committee members.
13. The decisions of the committee shall be final and binding on all club members.
14. The basic award shall consist of:— (a) Certificate, (b) Bannerette, (c) Mopoke statuette/key chain miniature.
15. Subsequent awards and/or endorsements as decided by consensus of members eligible under rule 2(e) to vote.
16. An inactive member may restore his or her voting rights at any time by fulfilling rule 2(e) for two consecutive months.
17. The club to be run on a non-profit basis, except that funds may be accrued against routine overheads and for such purposes as decided by the committee after seeking the views of all valid active members under rule 2(e).
18. Any funds at all times to be under the direct control of the committee.
19. A formal constitution to be adopted as soon as practicable.
    be final and binding on all club mem-

Further information is available from Robert Whitehead (VK3NHA), Mopoke No. 1, 7 Spensley Street, Rosebud, Victoria 3939, Australia. Tel. (03 059-86 4383 or (03) 509-88-6261. ■

AMATEUR SATELLITES

Bob Arnold VK3ZBB

OSCAR 8 PREDICTIONS

Thanks to Dick Smith Electronics for publishing the Orbital Data for OSCAR 8 as a supplement in the October edition of AR. This data will assist operators to track the satellite and no doubt improve many signals particularly on Mode J.

In the near future Dick will be publishing more basic data on OSCAR 7 and 8 which will fill in the gaps for newcomers. Keep your eyes on Dick's adverts.

OPERATIONS

Due to publication deadlines, little time has passed since my last report and news is therefore scarce. As at the middle of October there is some doubt on the status of OSCAR on Mode B. This mode generally appears as per the BBA schedule and is being worked by a few stations in VK and ZL.

Information received via the AMSAT Pacific Net indicates that there could be a partial battery failure which is not totally unexpected after almost four years of operation. From time to time restricted use of Mode B is requested but it is not possible to convey this information via these notes due to the obvious time span between writing the notes and their publication.

To keep up to date with the status of OSCAR 7, there are two methods —

(a) Listen to the CW messages on AO7 beacons on 29.502, 145.972 *or* 435.1 MHz.
(b) Listen to the AMSAT Pacific Net which is at 1100 GMT on Sundays on 14.280 MHz.

We all hope that OSCAR 7 is not following the same signs of failure that plagued AO6 prior to its demise. We will certainly miss the excellent communication facilities afforded by this satellite.

AMSAT OSCAR 7 AND 8 DATA CALENDAR

In co-operation with AMSAT, Skip Reymann W6PAJ, expects to have available by the end of November an AMSAT-OSCAR ORBITAL PREDICTIONS calendar containing all orbits of the AMSAT-OSCAR 7 and 8 satellites for 1979.

The orbital calendar will be available post paid for $5.00 US funds or 20 IRCs ($3.00 to AMSAT members, and free on request to AMSAT Life Members). Overseas orders will be airmailed.

From outside the US, payment may be made by international postal money order or by cheques made out in US funds, or by US currency. Send orders to AMSAT or to:

Skip Reymann W6PAJ,
PO Box 374, San Dimas,
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Orders may also be charged to VISA or Master Charge. (Be sure to provide your

account number and expiration date on your charge card.)

IMPORTANT: To speed up handling of your order, please include a gummed, self-addressed label. Proceeds from the orbital calendar benefit AMSAT.

PHASE 3 OSCAR

We understand from a report in "Ham Radio" that the following operational frequencies for Phase 3 OSCAR are now being determined —

Uplink 435.110 to 435.290 MHz
Downlink 145.810 to 145.990 MHz.

Beacons will operate on 145.805 and 145.995 MHz.

GREETINGS

To all OSCAR operators, present and past — Christmas Greeting and good operating in 1979.

ORBIT PREDICTIONS — JANUARY, 1879

	OSCAR 7			OSCAR 8		
Date	Orbit No.	EQX GMT	EQX °W	Orbit No.	EQX GMT	EQX °W
1	18120	0145	86	4203	0035	48
2	18132	0045	71	4217	0040	50
3	18145	0140	85	4231	0045	51
4	18157	0040	69	4245	0050	52
5	18170	0135	83	4259	0055	54
6	18182	0035	68	4273	0101	55
7	18195	0130	81	4287	0106	56
8	18207	0030	66	4301	0111	58
9	18220	0125	80	4315	0116	59
10	18232	0025	65	4329	0121	60
11	18245	0120	78	4343	0126	61
12	18257	0020	63	4357	0132	63
13	18270	0114	77	4371	0137	64
14	18282	0015	62	4385	0142	66
15	18295	0110	75	4398	0004	42
16	18307	0010	60	4412	0009	44
17	18320	0104	74	4426	0014	45
18	18332	0005	58	4440	0019	46
19	18345	0059	72	4454	0025	47
20	18358	0154	86	4468	0030	49
21	18370	0054	70	4482	0035	50
22	18383	0149	84	4496	0040	51
23	18895	0049	69	4510	0045	53
24	18908	0143	82	4524	0051	54
25	18920	0044	67	4538	0056	55
26	18933	0138	81	4552	0101	57
27	18945	0039	66	4566	0106	58
28	18958	0133	79	4580	0112	59
29	16970	0034	64	4594	0117	61
30	18983	0128	78	4608	0122	62
31	18995	0029	63	4622	0127	63

■

QSP

80/40 PETITION

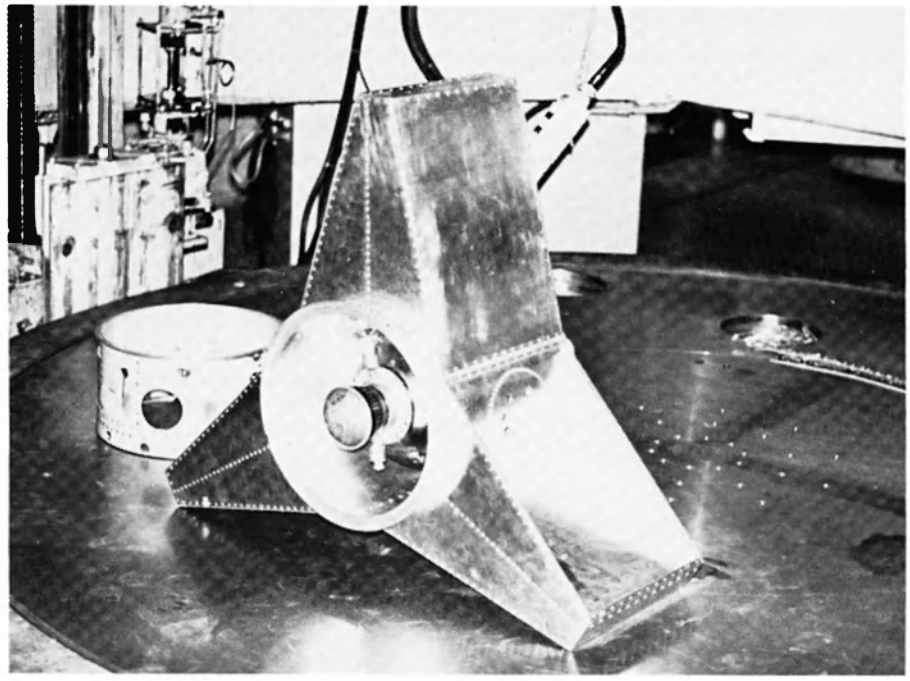
Some 415 amateurs signed the petition organised by Max Datson VK2GE for extensions to the 60 metre and 40 metre bands to 3.8 MHz and 7.3 MHz respectively. Having regard to the closeness of WARC 79 the signed papers were passed to the Chairman of the APG Committee 2, so that he may use this interest in whatever manner is possible.

ARRL VIDEOCASSETTES

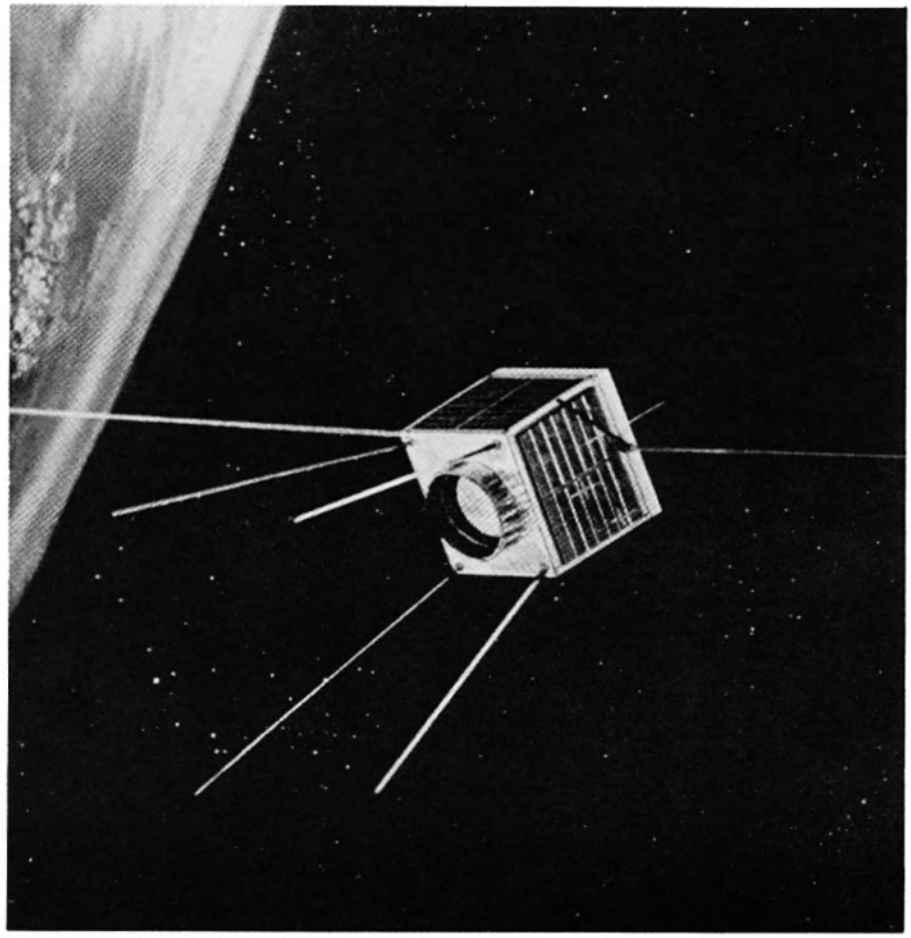
By now many amateurs in Australia will have viewed the ARRL films. It was interesting to read in Worldradio of August 1978 that the producer was Dave Bell W6AQ. Dave won an Emmy award in June as the executive producer of a documentary series on Science and Health, "Medix".

BC RADIO REPORTS

Sam Voron VK2BVS, reports that hourly amateur radio propagation reports are given over Radio 2GB, 870 kHz, following the weather report some four minutes past the hour. These begin after the midnight readings daily and is on a trial basis. Listeners' interest is sought via reports to the station to keep the reports going as an amateur PR function. ■



A prototype of Amsat Phase III satellite under test. The arms of the satellite carry the solar cells and in the centre is the "kick" rocket motor which will be used to send the satellite into elliptical orbit.—Acknowledgements to Amsat for this photo and descriptive article published in October AR.



An impression of Oscar 8 spacecraft in earth orbit by **WA6TUF** — Amsat picture.

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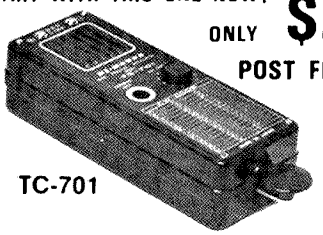

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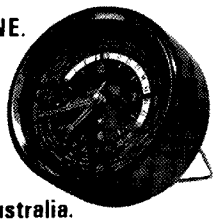

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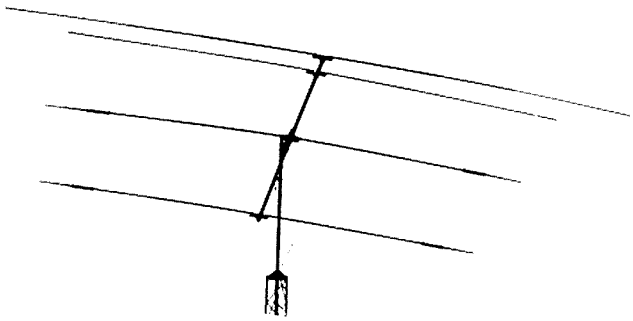

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SP-820	Speaker for 820
BS-8	Pan Display for TS820/820S
DS-1A	DC Converter for TS820/820S TS520S
YG-88C	Crystal Filter
R-820	Communications Receiver
YG-88A	AM Crystal Filter for R800
YG-445C	C.W. Crystal Filter for R820 (500 HZ)
YG-445CN	Narrow C.W. Crystal Filter for R820 (250 HZ)
TS-520S	H.F. Transceiver
VFO-520S	VFO for TS-520S
-520	Speaker for 520
YG-3395C	Crystal Filter
BS-5	Pan Display for TS520/TS520S
DG-5	Digital Display and Frequency Counter
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TS-700S	2 Metre all Mode Transceiver
TS-700SP	2 Metre all Mode Transceiver
VOX-3	VOX Unit for TS-700
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TR-2200A	2 Metre FM Portable
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MB1A	Mtg. Bracket for 2200
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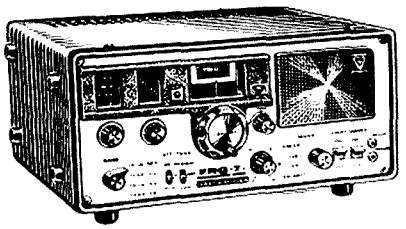

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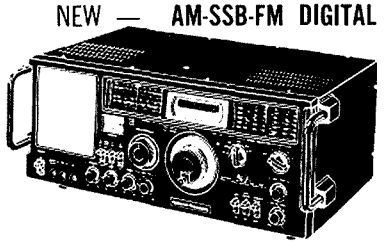

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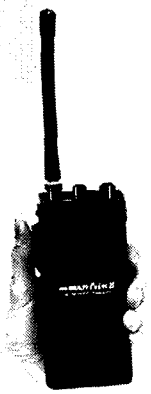

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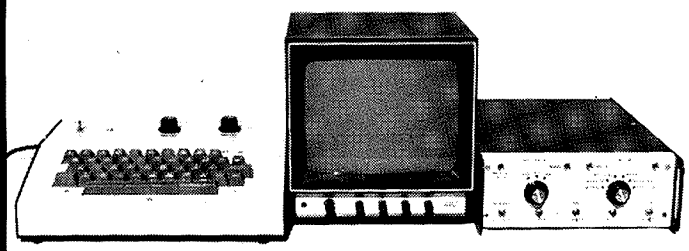

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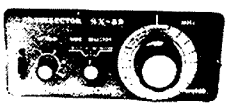

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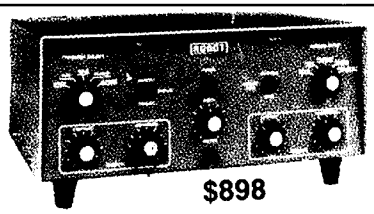

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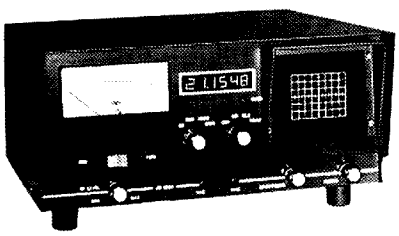

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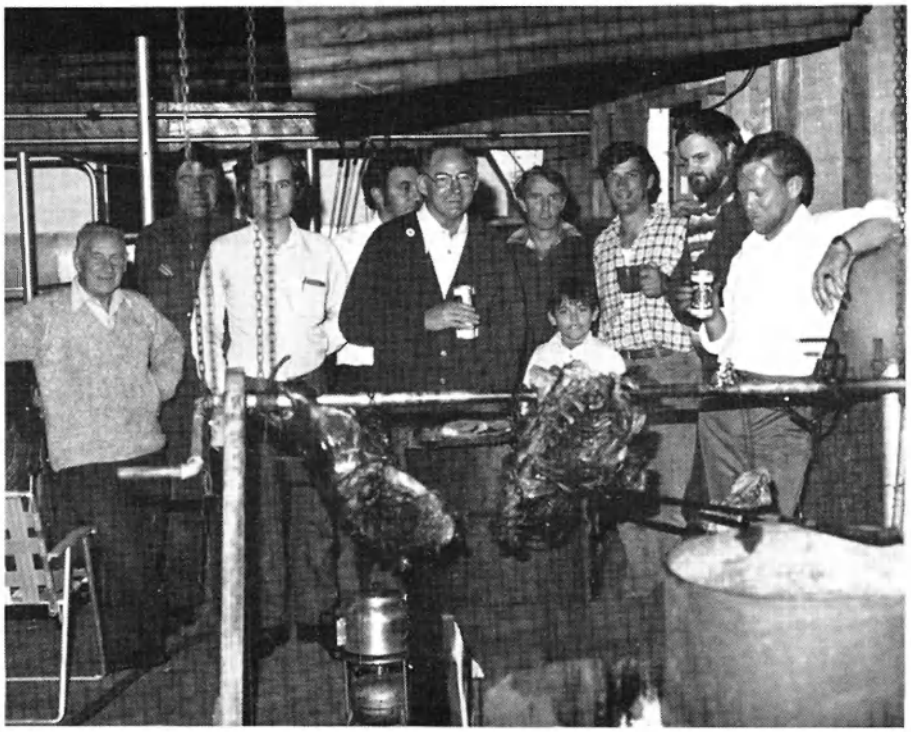
Wattmeter Ranges:	0-5, 0-50, 0-125, 0-250
Connector:	SO-239
Size:	4 in. x 7 in. x 8 in.
Shipping Weight:	2 lbs.

$122

B&W DUMMY LOADS-POWER METERS
Model 374 - 1500W - Oil Cooled **$199**
Model 334 - 1000W - Oil Cooled **$167**

EASTERN ZONE BARBECUE

The East Gippsland Group of the Victorian Eastern Zone held a barbecue supplied by Ian VK3BLF and his XYL, Glenys, on their property at Tambo Upper. Among the 50 attending were those pictured — left to right: an SWL, Ian Pattle VK3ZIS, Warren Wright VK3AVZ, VK3 NLM, Jim Watts VK3NFQ, VK3BBB, Graeme Brown VK3ZXG, Michael McDonald VK3ZQV and Ian Foster VK3BLF (photo courtesy Gavin Kuch VK3ZNC/VK3NIC). The 100 lb. pig disappeared rather smartly as the second photo shows Graeme Brown and mine host, Ian Foster, dismantling the carcase.



INDEX TO VOLUME 46

JAN. TO DEC. 1978

VHF-UHF
AN EXPANDING WORLD

Eric Jamieson, VK5LP
Forreston. 5233

AMATEUR BAND BEACONS

VK0	VKOMA, Mawson *	53.100
VK1	VK1HTA, Canberra	144.475
VK2	VK2WI, Sydney	52.450
	VK2WI, Sydney	144.010
	VK2RHR, Mittagong	144.120
VK3	VK3RTG, Vermont	144.700
VK4	VK4RTL, Townsville	52.440
	VK3RTT, Mt. Mowbullan	144.400
	VK4RBB, Brisbane	432.400
VK5	VK5VF, Mount Lolly	53.00
	VK5VF, Mount Lolly	144.800
VK6	VK6RTV, Perth	52.300
	VK6RTU, Kalgoorlie	52.350
	VK6RTW, Albany	52.950
	VK6RTW, Albany	144.500
	VK6RTV, Perth	145.000
VK7	VK7RNT, Launceston	52.400
	VK7RTX, Ulverstone	144.900
	VK7RTW, Ulverstone	432.475
VK8	VK8VF, Darwin	52.200
JA	JA2IGY, Nagoya	52.500
KG6	KG8JDX, Guam	50.110
KH8	KH6EQI, Hawaii	50.104
TI	TI2NA, Coste Rica	50.080
W	WA6JRA, Los Angeles, USA	50.091
ZL1	ZL1VHF, Auckland	145.100
	ZL1VHW, Waikato	145.150
ZL2	ZL2VHP, Palmaraton North	52.500
	ZL2VHF, Wellington	145.200
	ZL2VHP, Palmerston North	145.250
ZL3	ZL3VHF, Christchurch	145.300
ZL4	ZL4VHF, Dunedin	145.400

* Denotes re-inclusion in list.

Well, it shows it is possible to get action and confirmation. Last August I removed the VK0 beacon from listing as no confirmation existed at the time as to whether it was operating. I have now received a letter from Keith Gooley VK2BGZ of the Ionospheric Prediction Service stating the Mawson beacon is definitely operating with 80 watts output on MCW to a 3 element yagi horizontally polarised. The IPS asks for reports and should be sent to the current operator, Mr. Graham Sefton, Ionospheric Prediction Service, PO Box 702, Darlinghurst, NSW 2010. Graham will be returning to Sydney in February 1979. Thank you, Keith, for the information, there will be many people pleased to know the beacon is still running, and hope facilities exist for two way contacts if the beacon is heard.

Advice has also been received from the NSW VHF and TV Group to the effect that the Mittagong beacon VK2RHR on 2 metres has been discontinued as the site is now to be used for a repeater.

My thanks to David VK5KK for preparing the VHF notes for November issue due to my absence on leave in Western Australia. I haven't seen what he wrote, yet I know they will be interesting. For my part, I met Tony VK6BV in Kalgoorlie and spent an interesting evening with him. He has since moved to Northam, 6401, close to Perth, and his address is care of Box No. 430. At Albany I met Aub VK6XY, Wally VK6WG, Bernie VK6KJ and Bob VK6BE, all of Albany, and Doug VK6OI from Kalgoorlie. Talk, of course, was VHF orientated naturally, and whilst we did not come up with many new things, at least it was an interesting exchange of information, and gave me the chance to meet the guys at the other end of the 52, 144 and 432 MHz contacts I have had to Albany.

Took my FT221 and magnetic base roof mounted ¼ wave whip antenna with me, and had a number of contacts through various repeaters at different points on route. Most pleasing however was the opportunity presented on the day we left Albany to work Aub VK6XY, mobile while en route to the Stirling Range National Park, 90 km away, with contact on Channel 49 being maintained all the way! A sked was arranged whilst stationary in the Park for 1900 that night on 144.1 SSB. First call and there was Aub at S4-5 with slight QSB. Stronger signals would no doubt have resulted had Aub been able to get his horizontal beam around on to me, but the antenna had been damaged during the "big blow" just previously, so we had to be content with a tips-on contact.

Thanks, Aub, for your hospitality during the two days of my visit, and tor arranging an opportunity ot meet the other boys at your house. I left Albany with the news that I would be back again sometime, hopefully with a few more days to spend than were available this time.

Joe VK7JG writes enclosing a copy of a reply he sent to Electronics Australia regarding their editorial in September issue re Ch. 5A and I concur with his comments. His letter may be printed in the said publication in which case you will want to read it.

Joe goes on to say that activity in Launceston is increasing with Daniel VK7DA modifying an FL2100B for use on 6 metres. Kevin VK7ZAH now runs a 4CX350 on 2 metres, and 100 watts on 432. Joe is using a 4CX250B in grounded grid to give 150 watts output on 2 metres, and should by now be capable of using the legal limit on 6 metres to a pair of 5 over 5 yagis.

A letter is to hand from VS6FX in Hong Kong who advises working 162 JAs and 5 KH6s from beginning of May.. He uses a TS600 and a 120 watt amplifier with an 8 dB collinear vertical antenna 400 feet a.s.l. He is currently keeping an eye on 50.100 each Saturday and Sunday from 1000 to 1200Z. Thanks for writing, Klaus.

Bruce Beresford P29BB writes from Yonki, PNG, to say his QTH is in the Eastern Highlands Province of PNG, 25 km east of Kainantu, 200 km from Lae and 116 km from Goroke, and 1400 metres a.s.l. He is using a QQEO6/40 linear on 6 metres to a 5 el. yagi. He has an 8 element on 2 metres and a linear on the way. A log periodic antenna for 60 to 250 MHz is used to keep an eye on TV DX.

On 10-9-78 he worked on 50.110 KA2MM, KG6JIH, KG6DX, KG6JIP, KG6JIO and JH4KAY. On 52.058 JR1MFD and 52.193 JH7HJM. The KH6EQI beacon was 579 0930 to 1100Z, with Ch. 0 TV from China as well! The band was full of JA stations but Bruce spent much time looking for VK contacts. However, following a solar flare the next night 11-9 he worked VK6ZFQ, VK8GB and VK4JH, with KH6EQI being heard all night 579, and Chinese TV again.

On 12-9 things really got moving. At 0630Z the VK4 beacon was 599. Ch. 3 from Townsville perfect copy, also Ch. 1, 5 and later Ch. 4. Ch. 3 lasted until 0807Z. VK4s were worked from Townsville to Bundaberg, plus several JAs, and KH6EQI available all night!

With such a commanding position it looks as though Bruce will be a station to keep in mind, particularly when he gets his 2 metre linear going. The North Queensland boys will be in a prime position, but later this year signals could possibly extend further south to other States. Thank you for writing, Bruce, and keep up the good work.

Bruce VK2FD sends information regarding contacts made on 2 metres recently which caused quite a stir in NSW. I quote "A rather remarkable breakthrough on 2 metres occurred during the evening of 10th September 1978, when Ian VK5IK at Eudunda, north of Adelaide, was heard loud and clear on repeater 2 at Orange.

"Bruce VK2FD Guyong, Ray VK2ZSX Sydney, Dave VK2ZDY Moree, Peter VK2TK Orange, Kim VK2ASY Orange, Warren VK2ASM Sydney, Peter VK2APP Young, Kerry VK2BXT Moree, Barry VK2ZAY Gunnedah, Bob VK1RC Canberra, Grant VK2AXB Sydney, Gordon VK2BGA Sydney, Nick VK2AOH Mittagong, Allan VK2WR Sydney, Warwick VK2ADZ Griffith and Tom VK2BTE Sydney all worked Ian via the repeater.

"VK5ZCP Andrew, south east of Adelaide, was also heard and worked by Peter VK2TK at Orange.

"At 1158Z Bruce, VK2FD at Guyong, east of Orange, worked VK5IK direc ton 146.000 MHz, good signals each way. Bruce was using an FT221R to a A147-20T up about 50 feet while Ian was on an IC22S to a 26 element collinear array."

Thanks for the news Bruce, apparently the 10th was a very outstanding night, note the signals heard by P29BB above. It's pleasing to note you tried and were successful with simplex operation.

David VK5KK has passed on the following information of VK5 happenings whilst I was in WA. (I'm always somewhere else when interesting things happen!) On 29-978 at 0903Z the KH6EQI beacon was copied at S9. The story runs like this: "Steve VK3OT was heard via meteor scatter at 0725Z at 5 x 8. At 0840Z nothing audible on 50 MHz. At 0845 VK5KK heard KH6EQI 5 x 8. At 0850 it was 5 x 9 and continued until 0918Z. Faded out at 0922, came back at 0928 5 x 5 for 2 minutes. Observed by VK5KK, VK5ZZZ, VK5NY, VK5ZMO and VK5ZBU. Roger VK5NY heard the beacon at 0900 5 x 7 using a vertical dipole! VK4ZWH heard KH6EQI for 2 hours 5 x 9 20 dB.

"Little doubt the solar flare caused the good conditions, some uncertainty as to mode, possibly doudble hop F, extended TEP or even Es as signal dropped out just like Es. The aurora was observed at 165 degrees at VK5KK. Also the same date the band opened to JA1 and JA6 at 1220Z tor 17 minutes, most signals were 5 x 9 via type 2 TEP. At 1308Z 144.1 opened to Kevin VK7ZAH 5 x ' SSB and later on 6 metres. Daniel VK7DA heard. 432 MHz tried but no signals. VKOT heard on 6 metres. Aurora still going at 1430Z.

"30-9: Opened to VK4 0800 to 1100Z. 1030 to 1100 VK3 to JA signals 5 x 5, being first JA opening from VK3 for a month. Previously all other States had worked JA.

"1-10: 6 metres to VK6 0300 to 0430Z. At 1035Z JA1VK worked 5 x 5 to 5 x 9. Norrie uses FT625RD. 8-10: VK5KK to JA1TGS 5 x 1 0425 to 0440Z on CW. Total JAs worked for month between 70 and 80". Thanks, David.

Whilst still dealing with messages, Mark VK5AVQ in a telephone conversation has asked me to advise all those wondering why the VK5 beacons were off the air for a while, tnat the motor driving the keyer failed, and a new motor had to be ordered. Opportunity was taken to overhaul the beacons which had been in service for 15 years, and to change the crystal in the 2 metre beacon, as the original one had become rather unstable with rises in temperature. We hope the beacons will now be to your satisfaction.

Ross VK4RO sent a copy of the latest SMIRK Newsletter and has added that 6 metre openings at time of writing (September) had been rather spasmodic in Ayr, in one day and out for five. Worked KH/KG6 and JA so far since 20-7. The SMIRK DX-pedition with JA operators to Saipan KG6RO had 240 contacts with JA/KG6 and HL9, and included only one good day for about 3 hours opening to JA.

DARWIN NEWS

Graham VK8GB continues to get amongst the DX and the following are extracts from his log which will be of interest to those keeping a watch on his exploits. "11-8: 1245Z 52.050 4D88UT. 12-8: 1135 KG6JIH, 1145 KG6DX on 52.050. 1232 144.110 JH6DVD, 1245 4D88UT 52.050, 1310 JH6PLQ 52.058. 13-8: 52.050 JH6TEW, KG6DX, KG6JIP, JR1AUW. 15-8: 52.050 JA2DDN, JH1WHS, JA1LZK and JR1 AUW.

"17-8: On 52.050 24 contacts between 1055 and 1257Z in JA2, JE3, JH6, JF3, JJ1, JI1, JE1, JE1, JR2, JH4, JG1, JR1, JA1, JA9, JF1 and KG6 call areas. 18-8: 1218 52.050 KG6JIH. 19-8: 1200 52.050 KG6DX. 20-8: 1130 to 1313Z 11 contacts to JF3, JR1, JA2, JA9, JA5, JE1, JH1, JJ1 areas. 25-8: 1114 to 1155Z 52.050 JA9SSW, KG6IL, KG6JIH and JH6TEW. 26-8: 1215 to 1235Z 52.050 JA5FBX, JA2DDN, JA2BZY and JA6SBW. 28-8: 1055 to 1242Z 29 contacts in JA3, JR4, JH4, JI1, JF3, JG1, JF1, KG6, JE1, JH1, JJ1, JA2, JE3, JR1, JK1, JE2, JA4, JH6 areas.

"30-8: 1145 to 1258Z 20 contacts 52.050, JR1, JH6, JI1, JH1, JR3, JE1, JA1, JJ1, JR2, JG3, JE2, JH3, JF3, JA8, JA4 areas. 31-8: 1108 to 1208Z 52.050 12 contacts JE2, JR3, KG6, JA6, JH4, JH1, JF3 and JA2. 3-9: 1100 to 1209Z 6 contacts 52.050 JA3, JH2, JR6, JR1, KG6. 4-9: 1143 to 1215Z JA6SBW, JA5EBY, JA4MBM and JA4ZPN.

"7-9: 1105 to 1350Z 38 contacts 52.050 JA4, JH6, JR1, JA1, JI1, JF3, JA2, JR6, JH4, JL1, JE1, JA7, JH5, JA5, JK1, JJ1, JH2, JH3, JR3, JA4, and on 144.120 at 1144Z JH6TEW. 9-9: 1110 to 1300Z 16 contacts 52.050 to JA4, JH4, JH7, JH2, JE1, JE3, JA7, JH6, JA9, JK1, JA9, JK1, JH6, JA2, JA8 and JF3. This looks like a good day

with only JA5 and JA0 areas missing. 10-9: 1140 to 1333 30 contacts on 52.050 VK8ZCV, JR1, JJ1, JF1, KG6, JA7, JH0, JA5, JH4, JH6, JK1, JH7, JE2, JA3, JR6, JG1, JE3, JF3, JH2, JH1, JA1. 11-9: 1043 to 1238 16 contacts 52.050 JR6, JA5, JE3, JH6, JA5, JA9, JA1, JR2, JH4, JA0, JA7, KG6, JF3, P29BB and KG6RO on Saipan. On 144.110, 1118 to 1135Z JH4XTN, JA6ABG, JR6FEY, JR4AJW, JH4RSP and JH6TEW.

"12-9: 1140 JA4HI and JR6AGZ both on 144.110. 13-9: 1300Z 52.050 JA2HMO. 14-9: 1104 to 1248Z 52.050 KG6, JH8, JA2, JK1, JR2, JA1, JF3, JA3, JH1, JE2 for 13 contacts. On 144.110 1118 JH8TEW, 1123 JH4JPO. 15-9: 1055 to 1255Z 19 contacts 52.050 KG6, JH6, JH6, JA2, HL9WI, JH2, JE2, JR3, JF3, JJ1, JA3, JH4, JE3. On 144.110 1102 to 1119Z JH6TEW, JR6KUZ, JA6AFU and JH6CTY. 16-9: 1057 to 1217Z 18 contacts JA2, JH4, JH5, JF3, JH2, JE3, JE1, JR2, JG3, JA4, JA3/5, JA6, JH7, JA9 JH6. 1105 to 1138Z 144.110 JH4JPO, 144.291 JA6VUT, JR6AWT, JR6HRE, JR6ADD, 144.306 JH6TGD, JR6NNO, 144.150 JR6BEN, JA8QFH. 17-9: 1140 to 1159 52.050 VK8ZCU, JH4EVU, JA2DDN, JH6TEW. 144.110 JA6LDD at 1202Z. 18-9: 1050 144.110 JA6QFH, 1102 JH4JPO, 1106 144.170 JH6LRL. 1117 to 1217Z, 52.050 23 contacts JF3, JR7, JA6, JA4, JR6, JR2, JG1, JE3, JA5, JE6, JA9, JA0, JE2, JH2, JF3, JH6, KG6, P29BB. 19-9: 1256 to 1346Z 8 contacts 52.050, JH3, JH1, JK1, JF3, JE1, JF1, JH1 and JG1.

"As you can see, six metres is very good and two metres has been open to JA every day since 7-9 although I haven't worked stations every day. So far JAs have worked all VK States except VK7 on a number of occasions, some openings evening TEP extended by Es.

"KG6RO (Saipan) is on six regularly. The SMIRK DX-pedition left their gear behind and the lincesee Ryo runs a keyer on 50.110 on an extended basis. His beam is fixed on JA and he has only a little English understanding.

"FO8DR Rene in Tahiti is back on air. He worked JA1 on 16-9 0430Z on 50.110, and runs a keyer on an attended basis on that frequency. 5B4CY is a beacon on Cyprus on 50.500. They have not got any permission to have any six metre contacts though (HL9WI info.). ZB2VHF is a beacon on 50.003 on Gibraltar. ZS6PW beacon is on 50.030. ZS6HVB beacon is on 50.100. These three items from SMIRK newsletter.

"Following is a summary of known active stations on six metres in the Pacific area, and all should be workable from Australia. I have 12 countries worked and 10 confirmed. HL9WI works WA6JRA on 28.525 2200 to 2300Z on Sautrdays and Sundays.

"1. JA.
2. JD1 Minami Torishima.
3. JD1 Ogasawarg.
4. KG6 Guam.
5. KG6RO Saipan.
6. KC6ST Eastern Caroline Is.
7. KH6 Hawaii.
8. VK9ZM Willis Island.
9. YJ8KM New Hebrides.
10. 3D2CM Fiji.
11. K9PNT/DU2 WB5LBJ/DU6 Philippines.
12. P29.
13. VS6FX Hong Kong.
14. CR9AJ Macao.
15. ZL.
16. VK9NI Norfolk Island (?)
17. FK8AB New Caledonia.
18. FO8DR Tahiti.

So there you have the good news. Add to this the 48 MHz peak shown in the IPS Charts for October compared with 34 MHz last year and that means six metre DX.

Bill VK9ZM on Willis Island will be leaving about 8-12-78, but it is probable you will have worked him prior to these notes. He knows to listen on 52.050 and 144.110, runs 25 watts to a 5 element yagi on six and 100 watts to a pair of vertical yagis on two metres, plus a 10 element yagi. Apparently he has already had contacts with amateurs in Townsville and Ingham on FM and SSB. Before leaving it is anticipated he will be operational on 432 MHz as well. A good contact looming up- Graham VK8GB in a late note says Bill VK9ZM worked KG6JIH on 20-9 and 21-9 for first 6 metre contact, so that should set Bill into the right mood!

December, of course, normally sees the start of the Ross Hull Contest, and I would expect it to be on again this year. However it is to be hoped a more equitable set of rules can be used than has been the case for the past three years, rules which gave no incentive to work more than one band. There seems little doubt the contest helps to bring stations on the air but it is difficult to obtain a reasonable return of logs for the Contest Manager. Some operators are probably scared off by the huge scores a few stations make, but awards can be incorporated in the contest for workings by stations in other ways in addition to highest score etc. Above all, let's try and keep the contest going, and please send in a log, several hundred stations annually enter the contest and give numbers, but only a handful enter logs.

December is also Christmas month, and I would like to pass on the compliments of the season to everyone, and may we hope for a happier year in 1979, and at least some decent treatment from WARC 79. May another New Year wish be that we obtain the use of 50 to 52 MHz. If you have any comments in regard to my article on the six metre band, just published, please write.

I now enter my tenth year as your scribe for this section, I hope I have been able to give you something worth reading from time to time. The task is not easy, but thanks to the support I receive from my various letter writers the task is that much easier. Again my special thanks to Graham VK8GB for the large amount of time he spends sending me such a complete cover of information from Darwin.

Closing with the thought for the month: "Too many people work themselves into a lather with soft-soap."

73, The Voice in the Hills. ■

FROM THE OVERSEAS ADS.

An occasional AR feature

Palomar PTR130K — New miniature HF transceiver. Digital readout with push button frequency selection and tuning. Covers all HF bands and has a synthesiser with 100 Hertz steps.

One major Japanese manufacturer, NEC, has an interesting line of gear which is little seen in Australia. They have a digital readout transceiver, the CQ110, which has been on limited sale. As a companion unit they have the CQ301 linear amplifier, which covers 160-10 metres and uses a pair of 3-500Z grounded grid triodes.

Yaesu have the FTV901, a three band 50, 144, 432 MHz transverter, as a new accessory for their FT901 transceiver.

Datong in the USA have released their FL1 frequency agile audio filter. This filter can scan the audio spectrum and then lock on to a heterodyne and either peak or reject it. ■

EDITOR'S HEADACHE

EDITOR'S HEADACHE
Getting out a magazine is no picnic.
If we print jokes, people say we are silly.
If we don't, they say we are too serious,
If we don't print contributions, we don't appreciate genius, and if we do print them, the magazine is filled with junk.
If we clip things from other magazines, we are too lazy to write them ourselves,
If we don't, we are stuck with our own stuff.
Now, like as not, some guys will say we swiped this from some magazine,
That's right, . . . we did.*
***From a well-known journal, which did not mention the source, either.** ■

AROUND THE TRADE

Hewlett-Packard have announced the production of a new Gallium-Arsenide FET, the HFET-1102 for use in the range 1-12 GHz. A minimum gain of 11 dB and a maximum noise figure of 1.7 dB are specified at 4 GHz. The company has also announced a new bipolar transistor, the HXTR-5102, capable of more than 0.5 watt output at 4 GHz with 0.1 watt input. It would be suitable for SSB transmitter service. ■

SATELLITE AND RF TELEMETRY RECEIVERS
Microdyne Corporation, represented in Papua-New Guinea, New Zealand and Australia by Scalar Distributors Pty. Ltd., manufactures receivers and related equipment for RF telemetry, meteorological and communications satellites, aerospace research and satellite television use throughout the world.

The main product line consists of receivers, diversity combiners, precision signal generators and predelection tape recording converters. Microdyne also markets complete television satellite earth terminal systems and receivers.

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Due to the wide variety of plug-in modules available, it is likely that any new satellite or other RF telemetry receiver configuration not already listed can be readily accommodated at minimum cost including FDM and single channel per carrier satellite communications receivers.

Further information may be obtained from Scalar Distributors Pty. Ltd., PO Box 48, Kilsyth, Victoria 3137. ■

BWD Power Scope (see AR, November)

QSP

SPECTRUM
"Spectrum supply is getting short. A single frequency is worth so much money that it is difficult to set a dollar value on it. The frequencies allocated to amateurs are worth a King's ransom and then some." Quote from a WARC article in July 1978 "Worldradio". ■

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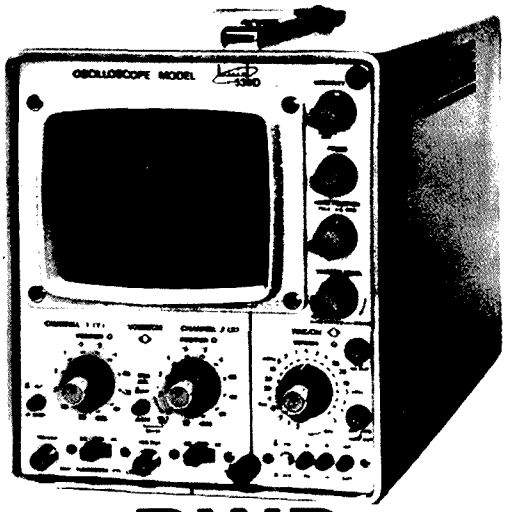

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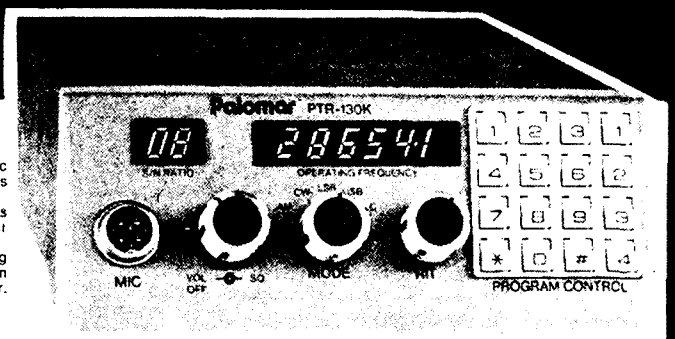

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- Size: 6½" x 2½" x 8".
- 58 ICs, including 7 LSI Circuits.
- Watch this space next month for price.

P.O.A.

SL-55 AUDIO ACTIVE NOTCH FILTER DESIGNED FOR THE FT101E

Here is the Receiver Audio Active Filter that makes all others obsolete. The Electronic Research Corporation America Model SL-55 Audio Active Filter adds unequalled versatility in receiver audio processing for SSB and CW. This filter was designed, produced and made available to the amateur community only after painstaking research and field testing of its effectiveness in minimizing QRM. Check these features:

Continuously tunable bandpass filter (not lowpass) so that the passband may be positioned anywhere from 200 to 1400 Hz. 3 dB bandwidth is continuously adjustable from 14 to greater than 2100 Hz (20 dB bandwidth from 140 to 2100 Hz).
Audio input and output impedance is eight ohms with one watt output capability.
Dimensions: 5.5 x 7.5 x 3.5 inches.
Available in grey to match FT101E.

$129

Positioning of simultaneous notch filter is continuously variable from 300 to 1400 Hz with FINE and COARSE position controls. Notch depth is fixed at nominally 30 dB. Notch tuning is independent of bandpass tuning and may be completely disabled.
Bypass switch restores the receiver audio output path to its original configuration.
Power Requirements: 240V AC at less than 1/16 amp. No batteries needed.

BAY CITY ELECTRONICS PTY. LTD.

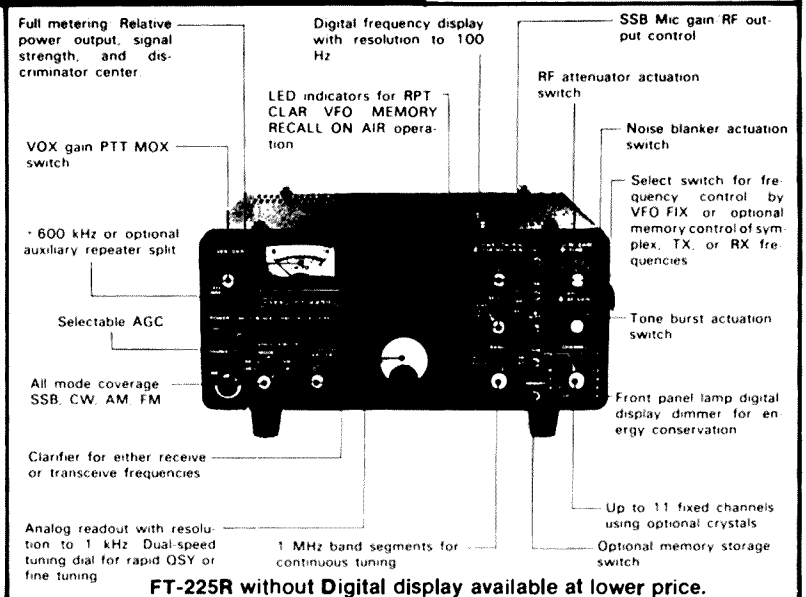
SHOP 11, STATION STREET, FRANKSTON 3199, PHONE 783 9212 BANKCARD WELCOME

FT-225RD

SSB, CW, AM, FM SOLID STATE PLUG IN MODULE

YAESU

bail



FT-225R without Digital display available at lower price.

2 Meter All Mode DIGITAL READOUT TRANSCEIVER

Features

■ Full Coverage
The FT-225RD provides operation on all modes — SSB, CW, AM, and FM — over the entire 4 MHz of the 2 meter band.

■ PLL Circuitry
The local oscillator employs the modern Phase Locked Loop (PLL) technique, with its fundamental oscillating in the 130 MHz range. This effectively eliminates spurious radiation and yields a clean output signal. On receive, the PLL likewise rejects unwanted out-of-band interference.

■ Frequency Memory Option
Following the design philosophy pioneered in the FT-901DM HF transceiver, an available option for the FT-225RD is a memory unit which allows storage and recall of any frequency within the range of the transceiver. This circuitry allows instant, programmable QSY to a favorite repeater or calling frequency with only a flick of a switch.

■ Digital Plus Analog Frequency Readout
The digital display uses large, bright LED's for maximum readability, with resolution to 0.1 kHz. The front panel lights and display may be dimmed, too, for nighttime mobile operation.

■ Versatility Features
Squelch, VOX, PTT, semi-break-in CW with sidetone, and tone burst are standard features on the FT-225RD. A superb noise blanker permits mobile SSB operation, and a discriminator center meter allows precise zeroing on FM signals. The clarifier produces ±3.5 kHz offset of either the receive or transceive frequency during VFO, memory, or fixed channel operation.

■ Fixed Channel Operation
Up to 44 simplex or repeater channels may be installed through insertion of optional crystals in the FIX unit. These crystals are available through your Yaesu dealer.

■ AC/DC Capability
The FT-225RD may be operated from 13.5 VDC, or from AC voltages of 100/110/117/200/220/234. Choice of AC or DC power is made by connection of the appropriate power cable to the receptacle on the rear panel of the transceiver.

■ Solid-State Modular Construction
Yaesu's renowned plug-in circuit boards are utilized in the FT-225RD, providing maximum reliability and ease of servicing. All circuits are fully solid-state, using IC's and FET's for maximum performance capability within a compact case.

Our years of handling and specializing in this equipment have enabled us to build up a fund of knowledge and technical experience, backed by a comprehensive range of spare parts and service facilities. We don't just sell a set, our concern extends throughout the life of your equipment.

Contact us for details of other Yaesu equipment plus the accessories required to complete your station.

All equipment from Bail's carries a 90-day warranty and complete service back-up.
Prices and specifications subject to change without notice.

bail **ELECTRONIC SERVICES**

FRED BAIL VK3YS
JIM BAIL VK3ABA

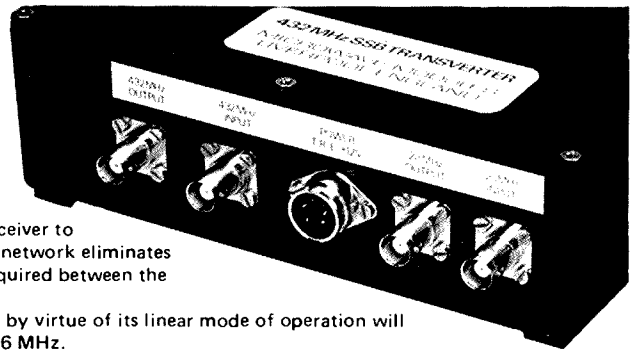
60 Shannon St., Box Hill North, Vic., 3129.
Ph. (03) 89 2213

Yaesu Agents In Australia since 1963

Radio amateur equipment from B E S also sold by —

W A	Radio Communication Services, H R PRIDE, 26 Lockhart St., Como 6152	Ph 450 4379
	WILLIS TRADING CO., 429 Murray Street, Perth 6000	Ph 21 7609
S A	FARMERS RADIO PTY LTD., 20 Stanley St., Plympton 5038	Ph 293 2155
TAS	G T ELECTRONICS, 131 Westbury Rd., South Launceston 7200	Ph 44 4773
	PRINS RADIO, 123 Argyle Street, Hobart 7000	Ph 34 6912
N S W	Aviation Tooling, STEPHEN KUHL, 104 Robey St., Mascot 2020	Ph 667 1650
	Amateur & Novice Comm Supplies, W E BRODIE, 28 Dalray Street, Seven Hills 2147	Ph 624 2691
	DIGITRONICS, 186 Parry St., Newcastle West 2302	Ph 69 2040
	RIVERCOM, Sid Ward, 9 Copland St., Wagga Wagga 2650	Ph 21 2125
QLD	H C BARLOW, 92 Charles St., Aitkenvale, Townsville 4814	Ph 79 8179
	MITCHELL RADIO CO., 59 Albion Rd., Albion 4010	Ph 57 6830
A C T	QUICKTRONIC, Jim Bland, Shop 11, Altree Crt., Phillip 2606	Ph 81 2824, 82 2864

Transverter Model MMT 432/144'S'



UTILIZING an IF of 144MHz * 10 WATTS DRIVE of ½ WATT * VOX OPERATED, TWO SELECTABLE RANGES
FEATURES EXTENDED COVERAGE FOR OSCAR 8

This 432 solid state linear transverter is intended for use with a 144 MHz transceiver to produce a high reliability transceive capability. A 10 watt load and RF sensing network eliminates the need for any ancillary circuitry. A single coaxial connection is all that is required between the transverter and the associated 144 MHz transceiver.

A wide range of applications is offered by the MMT432/114 transverter, which by virtue of its linear mode of operation will enable 144 MHz SSB, FM, AM or CW equipment to be used at 432 MHz. to 436 MHz.

Simply connect direct to your 2 metre rig, 12 volt supply, fit 70 cm antenna for instant SSB, FM, AM, CW operation, coverage 432-434/434-436 in two ranges.

FEATURES: High quality double-sided glass fibre printed board * Highly stable zener controlled oscillator stages * PIN diode aerial changeover relay with less than 0.2 dB through loss * Extremely low noise receive converter, typical 3 dB * Separate receive converter output gives independent receiver facility * Built in Automatic RF VOX with override facility * Built in 10 watt 144 MHz termination, selectable attenuator for ½ watt * Use of the latest state of the art Power Amplifier transistors provide reliable 10 watts continuous output

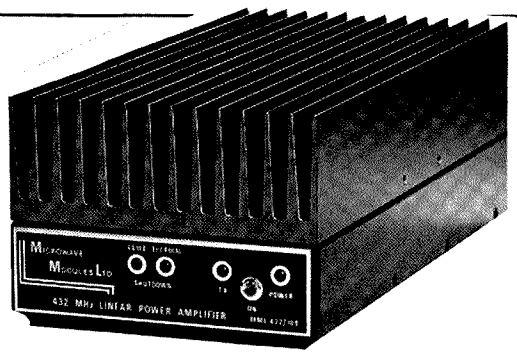
MODEL MMT432/144 'S' Price $295

Transverter Model MMT 432/28'S'

FEATURES EXTENDED COVERAGE FOR OSCAR 8

Second Crystal Oscillator gives two ranges: Low 432 – 434 MHz – High 434 – 436 MHz. Programming available to either Transmit/Receive both Low, both High, or a mixture of the two. Adjustable Drive Level is now provided by an input potentiometer. Optional RF VOX. Power Output 10 watts minimum * 28 MHz IF * Drive 1 mW to 500 mW * Aerial Changeover by PIN diode switch * Modern Microstrip Techniques * Power requirements 12 volt nominal at 150 mA 2.5 amp. peak * Case size 187 x 120 x 53 cm * Spare 432 input socket.

MODEL MMT 432/28 'S' Price: $245 **MODEL MMT 144/28 Price: $185**



100 Watt 432MHz Linear Power Amplifier

MML 432/100
Price $395

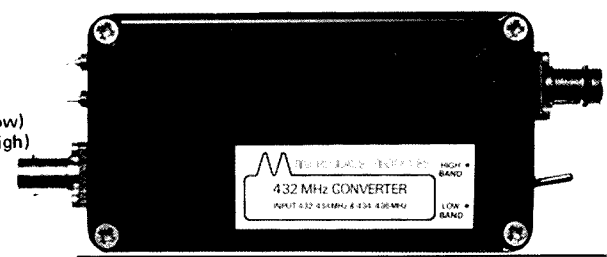
* 100 watts minimum output 10dB minimum gain
* Fully protected against poor load VSWR, over-heating and excessive or Reverse Rail
* Equiped with RF VOX and manual override.
* Frequency Bandwidth 435 MHz- 15 MHz @ - 1 dB.
* 10 watts nominal input for 100 watts output.

DUAL RANGE 432 – 434 MHz & 434 – 436 MHz CONVERTER
TYPE: MMC 432/28 'S' & MMC 432/144 'S' Price: $67.00

FEATURES:
* Extra Range (434-436 MHz) For Satellite Reception
* Ultra Low-Noise First RF Amplifier Stage
* Highly Stable Zener Diode Controlled Crystal Oscillator and Multiplier Stages

SPECIFICATIONS:

Input frequency ranges:	432-434 MHz (low) 434-436 MHz (high)
I.F. output frequency:	28-30 MHz or 144.146 MHz
Typical gain:	30dB
Noise figure:	3dB Maximum
D.C. Power requirements:	11-13.8 volts 12.5V nominal
Current consumption:	50 mA Maximum



BNC CONNECTORS – Excellent quality, fully imported from U.K. – U.S. Mil. No. UG88E/U. Price: $1.35 each.

NEW READY-TO-OPERATE MODULES AVAILABLE IN THE SALES PROGRAM OF VHF COMMUNICATIONS.

All modules are enclosed in black cast-aluminium cases of 13cm by 6cm by 13cm and are fitted with BNC connectors. Input and output impedance is 50 ohms. Completely professional technology, manufacture, and alignment. Extremely suitable for operation via sattelite or for normal VHF/UHF communications.

6 METRE MOSFET CONVERTER
Featuring 24 MHz local oscillator output for transverter use:

Input frequency:	52-54 MHz
I.F. Output Frequency :	20-30 MHz
Typical Gain:	30 dB
Noise Figure:	2.5 dB
Typical Image rejectoin:	65 dB

Crystal Oscillator Frequency: 24 MHz
Power requirements: 12 volt ± 25% at 35 mA.
MODEL MMC52/28LO Price: $49.00

1296 MHz CONVERTER
Mircostripline, Schottky diode mixer.
IF: 28-30 MHz or 144-146 MHz
Noise figure: typ. 8.5 dB
Overall gain 25 dB
Power Requirements: 12 volts DC ± 25% at 50 mA.
Price: $65.00

500 MHz COUNTER Model MMD050/500
Price $175

144 MHz MOSFET CONVERTER
Noise figure: typ. 2.8 dB.
Overall gain: typ. 30 dB.
IF: 28-30 MHz. 9-15 V 20 mA.
Price: $45.00

VARACTOR TRIPLER 432/1296
Max. input at 432 MHz. 24 W (FM, CW) - 12 W (AM)
Max output at 1296 MHz: 14 W
Price: $74.00

CONVERTERS PACK & POST $2.00

AMATEUR ELECTONIC IMPORTS IS THE EXCLUSIVE AUSTRALIAN DISTRIBUTORS FOR THESE PRECISION BRITISH MADE UNITS FROM MICROWAVE MODULES LTD.

All prices subject to change without notice. Onwards forwarding please add sufficient for freight or postage. Excess will be refunded.

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TELEPHONE: (02) 547-1467
CABLE: "AMATEURIMPORT, SYDNEY"

WICEN

Ron Henderson VK1RH
Federal WICEN Co-ordinator,
53 Hannaford St., Page ACT 2614
Ph. (062) 54 2059, A.H.

In this December issue of AR I believe it is time to review the aims of WICEN.

BACKGROUND

The Wireless Institute Civil Emergency Network, or WICEN for short, has its origins in the various State civil emergency networks set up by amateurs after World War II. In the late fifties and early sixties amateur communications were superior, relatively speaking, to those of the civil agencies and much good work was done in flood and bushfire disaster situations. In the early seventies, with improved civilian communications, including the extensive use of VHF FM and STD the demands for WICEN fell and many authorities saw no role for the amateur. However, happenings over the recent years have disproved this view and shown the organised amateur communications still have a place in emergency plans.

THE CHALLENGE

But what must we as amateurs and active WICEN members do to meet this challenge?

We must be trained and organised for our role, for the mission of WICEN is to provide a pool of trained licensed operators with equipment, available for deployment to aid communications in an emergency.

To achieve this state of preparedness we must:

(a) register with our State, regional or district WICEN committee to indicate our availability,

(b) attend WICEN training courses to gain an understanding of working with civilian agencies, in particular SES,

(c) attend WICEN exercises regularly to keep our knowledge and skills up to date.

Your WICEN committees will maintain liaison with civil authorities and endeavour to conduct training courses and exercises, often in conjunction with civic activities in order to make use of the live traffic situations and gain valuable public exposure of our capabilities.

RESERVATIONS

A final word of warning, directed primarily to WICEN committees, take care in offering communications to "everyone and his friend". It's not within the regulations and is taxing on resources. Don't forget the SES communications sections are always on the lookout for good men if you are so inclined. Remember the golden rule of Amateur Radio, "The Amateur is Balanced . . . Radio is his hobby. He never allows it to interfere with any of the duties he owes to his home, his job, his school, or his community". (ARRL Handbook.)

WICEN is but one aspect of amateur radio, together with HF DX, Oscar, RTTY, SSTV, Repeaters, VHF DX, and novice classes to name some of the contending interests before you even start on the garden!

Next issue, some thoughts on WICEN training courses. ■

AWARDS COLUMN

Brian Austin, VK5CA
P.O. Box 7A, Craters SA, 5152

A merry Christmas and a happy New Year to you all from the Manager and his staff (Marlene). May the New Year bring you lots of DX and, even more important, QSL cards.

Early in the New Year I will be publishing a full list of members of the DXCC together with their scores. However, I would like to welcome the first Novice licensee to make the grade, Len Poynter, VK3NAC. Congratulations, OM.

DARC DX AWARDS continued:

2. WAE

2.1. WAE stands for "Worked All Europe", a certificate awarded to amateur radio stations for contacts with almost all European countries and islands on different amateur bands. The WAE is also available to SWLs. The rules apply accordingly.

2.2. The award is issued in three classes: WAE III, WAE II, and WAE I. The classes are based on the number of European countries worked and a score of country points added up from the deferent bands (cl. 2.3.).

Applicants for the basic WAE III have to submit QSL cards proving two way contacts with at least 40 different countries of the "European Countries List". At the same time the cards must prove a minimum of 100 country points.

WAE II requires 50 countries with a total of at least 150 points. For WAE I 55 countries and 175 points are needed.

After receiving the basic award only the necessary additional conrmations are required for a higher class.

2.3. Each European country counts one country point on each of the six HF-bands (1.8 MHz, 3.5 MHz, 14 MHz, 21 MHz, 28 MHz). Only four bands per country, however, are eligible for the point score. Five points per country can be achieved by working the same station on ve bands. Two additional points per country can be obtained by a contact on one of the VHF/UHF bands. Stations outside Europe may claim 2 points for each European country on 1.8 MHz and 3.5 MHz.

2.4. The WAE is issued in two divisions:

2.4.1. Exclusively telegraphy, i.e. two way CW contacts.

2.4.2. Exclusively telephony, i.e. two way AM/FM/SSB contacts.

2.5. Holders of WAE I get a special WAE badge.

3. EU-DX-D

3.1. The EU-DX-D is an award that may be claimed annually. First year of issue is 1964.

3.2. The EU-DX-D is issued in the following classes: Telegraphy - Telephony (AM/FM/SSB) - Mixed Modes. For the "mixed" class at least 30 per cent of the contacts must be made in a different mode.

3.3. The basic idea of the award is a proportional combination of European and non-European contacts worked in the course of one calendar year.

3.3.1. A minimum of 50 points is required for the EU-DX-D. 20 points must be obtained by contacts with European countries and 30 points by contacts with countries outside Europe. All these contacts have to be made within one calendar year.

3.3.2. All amateur bands (HF and VHF/UHF) may be used. Each different country counts one point (on 1.8 MHz and 3.5 MHz two points). A country can only be counted once regardless of the band(s) used. The countries are determined by the "European Countries List" and ARRL's "DXCC Countries List".

3.3.3. Stickers are available for each additional block of four European plus six non-European countries within the same calendar year.

3.4. The EU-DX-D may be claimed every year anew. Each year's score may be added to obtain the EU-DX-D 500 and EU-DX-D 1000. The DARC issues a seal of merit for 500 points and a trophy for 1000 points. There is no limit as to the number of years.

Address:
DARC DX-AWARDS
P.O. Box 262
D-895 Kaufbeuren
Germany (FRG) ■

CONTESTS

Wally Watkins VK2ZNW/NCU
Box 1065, Orange 2800

CONTEST CALENDAR

December
2/3 ARRL 160 METRE CONTEST
9/10 ARRL 10 METRE CONTEST
16/Jan7 ROSS HULL VHF/UHF MEMORIAL CONTEST

January
27/28 THE 1979 FRENCH CONTEST CW
JOHN MOYLE MEMORIAL FIELD DAY.

THE 1979 FRENCH CONTEST

CW January 27th 0000 UTC to 28th 2400 UTC.
Codes: for all stations: RST and the No. of the QSO.

Traffic: only with francophones countries —
— 95 French departments (two figures).
— and DA1.2 stn/FFA (F forces in DL)
— all DUF countries
— 9 Belgian provinces (two letters)
— and DA2 stn/FBA (Belgian forces in DL)
— 23 Cantons of Switzerland (two letters)
— all other francophones countries — LX — 4U — OD — 3B — 9Q — 9U — HH — VE2.
Points: for each QSO in the same continent 3; with another continent 10.
Multipliers: one point, per band, for each unit above.

Final scoring: the sum of all points for QSO multiplied by the sum of all points multipliers.
Logs: must be sent, with recapitulative sheet (all multipliers list per band, for checking), to —
REF French Contest sq. Trudaine 2 75009 Paris.

The sole 1978 contestant from Australia was VK4AK (A1).

THE WEST AUSTRALIAN 150TH YEAR CELEBRATION CONTEST

CONDITIONS

The aim of the contest is for amateurs in all continents to contact amateurs in Western Australia (VK6) on all bands using all modes, this being to commemorate the 150th year celebration of the foundation of Western Australia.

REWARDS

The three highest scores from each continent for mixed and individual modes will receive a commemoration certificate. This contest is also open to SWLs.

For VK amateurs and SWLs the three highest scores from each State will be eligible for a certificate while VK6 participants who have more than 100 out of State QSOs will ge an award.

RULES

1. Duration:
The contest will commence at 1600Z on 31st December, 1978 and end at 1600Z on 31st December, 1979.

All authorised amateur bands may be used between 1.8 MHz to 28 MHz using any of the modes appropriate to the regulations applying to the entrant. Operators are encouraged to operate both phone and CW.

2. Scoring:
One contact in each mode is allowed in each band every day with the same station, for which the following scores and multipliers will apply:
CW — 5 points per contact
Phone — 3 points per contact
RTTY — 6 points per contact
Multipliers: One point per band used, provided that 30 QSOs are obtained on that band, excepting for 1.8 and 3.5 MHz, where 1 QSO will count.
Final Score — Total Points x Total Multipliers.

3. Logs:
Contest logs to be set out as shown below and bear a front cover sheet bearing the following:

Call: Claimed Score:
Address: Sig.:

Date	Time	Call	Band	Mode	RST Out	RST In	Points Scored

■

1978 VHF MID-SUMMER FIELD DAY CONTEST

The NSW VHF and TV Group is conducting the annual Mid-Summer Field Day Contest over the weekend 9-10th December.

Starts:
1200 Saturday 9th December (EASST)

Finishes:
1200 Sunday 10th December.

RULES

1. All amateur bands 52 MHz and above may be used.
2. A station may be worked once per band per clock hour.
3. Minimum scoring distance is 1 km.

4. Scoring is only permitted on a direct contact or via OSCAR. No HF, crossband or repeaters allowed for scoring.
5. Serial numbers, callsigns, band, time, mode and location of each station worked must be recorded in your station log.

SECTIONS

1. Field Station multi-operator.
2. Field Station single operator.
3. Mobile Station.
4. Home Station.

In the case of a single operator field station, only one person is permitted to operate the station, but unlimited moral support is allowed.

Entries may be submitted for the best six consecutive clock hours and/or the best overall score in each of the above sections.

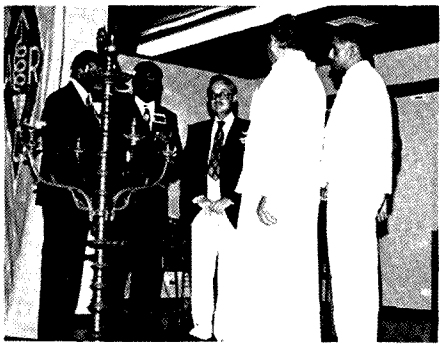
SCORING

	8m	2FM	2Tune	70cm	576	1200	2400	3400	5700	10G	21GHz
1-50km	3	1	3	4	10	20	40	70	100	140	200
51-100	6	2	8	10	50	100	150	200	300	500	1000
101-150	15	5	15	30	100	200	400	800	1600	3200	6400
151-300	30	30	30	50	200	400	800	1600	3200	6400	21800
301-500	75	45	45	100	500	1000	2000	4000	8000	16k	32k
501-800	60	75	75	200	600	1200	2400	4800	9600	20k	40k
801-1200	15	105	105	400	700	1400	2800	5600	11k	22k	44k
1200-2000	30	225	225	500	800	1600	3200	6400	12k	24k	48k
2001+	75	375	375	600	1000	2000	4000	8000	16k	32k	64k

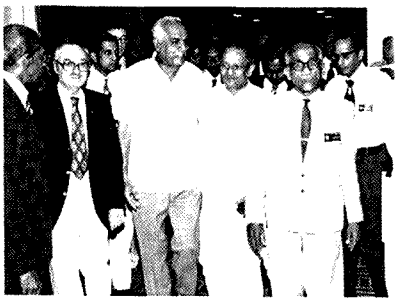
ENTRIES must give the callsign, number of contacts and points claimed, for each station worked (entries should show points claimed for each band as well as the total points for each station worked). It is not necessary to submit a complete log extract. Attach a cover sheet showing your callsign, location and points claimed in each section entered.

Entries must reach the Secretary, VHF and TV Group, WIA, 14 Atchison Street, Crows Nest, NSW, 2065, by Friday, 9th February, 1979.

OSCAR: 2-10 VK or ZL 20 pts., other 50 pts.
70cm modes VK or ZL 50 pts., other 100 pts.
NOTE: Laser beams, spotlights, nuclear radiation, etc. score as for 21 GHz. Carrier pigeons may be used to set up contacts but not for scoring. (Fire restrictions preclude the use of smoke signals in this contest). ■



The ceremony of the lighting of the oil lamp, by the Minister of State.



Arrival of the Minister of State to open the training course. Left to Right: John Amaratunga 4S7JA —President RSSL, Gerd Schnabel DJ7GS — DARC, Mr. A. R. M. Jayawardene — P.M. Gen. and Dir. Gen. Telecoms., B. D. Rampala 4S7BR, The Hon. A. De Alwis, Min. of State, B. Fernando 4S7BC, Z. Wijes Uriya 4S7ZW.

INTERNATIONAL NEWS

Recently elected as the 102nd, 103rd and 104th members of the IARU were the amateur radio societies of Haiti, British Virgin Islands and Antigua.

It is most pleasing to observe that Amateur Radio magazine has received mentions in several recent editions of the prestigious Telecommunication Journal of the ITU under the heading "Review of Reviews" covering publications, in many languages, received by the ITU.

The following press statement, received from IARU R3 Secretary, illustrates the international co-operation between amateur radio socities as a growing force. The WIA contributed $250 to this particular project.

"A carefully prepared training project of the International Amateur Radio Union — in close co-operation with the Deutscher Amateur-Radio-Club e.V. and other national amateur radio clubs will soon come true.

On September 30th, 1978, a team of 8 trainers from the Federal Republic of West Germany will go out to Colombo, Sri Lanka, to carry out a three week's comprehensive technical training course for 38 students from Sri Lanka who have been prepared for the lectures for the past eight months and who have already successfully passed interim tests.

The subject of the training course is electronics and amateur radio and the target of the training is to sit for the postmaster general's examination immediately after the end of the training.

The Government of Sri Lanka was kind enough to make available for this course the Sri Lanka Foundation Institute in Colombo where trainers and students will be accommodated during the time of the training and where suitable modern training rooms may be used. The expenses for the air tickets for the trainers will be absorbed by the International Amateur Radio Union Headquarters IARU while the daily allowances will be paid by Deutscher Amateur-Radio-Club e.V. in West Germany. Contributions were also made by the IARU Region 3, and by German manufacturers of electronic equipment such as the Siemens AG.

The Federal German Government will donate the Radio Society with a complete amateur radio station complete with a modern antenna and this station will be handed over to the Sri Lanka radio amateurs by the ambassador of the Federal Republic of Germany, the Hon. Dr. Dr. Wockel, during the official opening of the training course.

Radio amateurs world-wide are observing this pilot course with greatest interest as it is the first time in the history of international amateur radio that such a project will materialise. If successful, it will be a useful way for the training of interested young people of developing countries to gain basic knowledge in electronics and to join the about 800 000 radio amateurs all over the globe in worldwide friendship and mutual understanding.

Parallel to this model course the American Amateur Radio League ARRL has developed a low-price shortwave receiver in kitform which can be easily assembled and which will be available for purchase in a few months time. This brand new receiver will enable technically interested future radio amateurs to take part in the world-wide radio contacts of the radio amateurs.

The latest news about the Sri Lanka project is that Japanese Amateur Radio Club JARL has presented the Radio Society of Sri Lanka with yet another shortwave transceiver for their national amateur radio station. This will mean in practice that the participants of the course will be able to communicate immediately once they have successfully passed their examination with the postmaster general of Sri Lanka."

TWO FURTHER PRESS RELEASES ARE REPRODUCED BELOW:

"The first pilot training course on electronics and amateur radio ever known of in the history of international amateur radio was started in Colombo, Republic of Sri Lanka, on October 1st, 1978.

Sponsored by the governments of Sri Lanka and the Federal Republic of Germany, by the international amateur radio union, by Deutscher Amateur-Radio-Club of West Germany and the International Divisions of several West German firms such as Siemens the official opening ceremony for the training course was held on the evening of October 1st, 1978 in the Sri Lanka Foundation Institute which is the host of the pilot project on electronics and amateur radio.

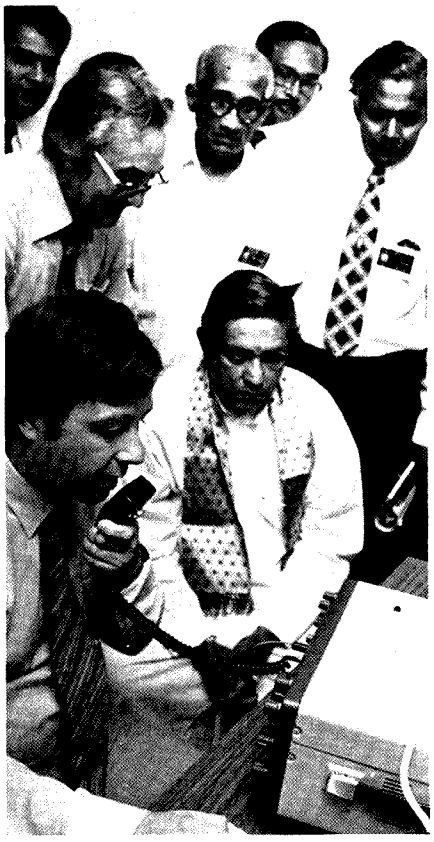
Present at the opening ceremony were the Minister of State of the Republic of Sri Lanka, the Hon. Anandatissa de Alwis, M.P., Mr. A. R. M. Jayawardene, Postmaster General and Director General Telecommunications, Dr. G. Heisch, Charge d'Affaire of the embassy of the Federal Republic of Germany, Mr. John E. Amaratunga, President of the Radio Society of Sri Lanka, and Mr. Gerd Schnabel, in charge of the team of trainers from the Federal Republic of Germany. Present was also Dr. D. D. J. Nanayakkara, Secretary to the Radio Society of Sri Lanka.

In his address to the audience of about 400 guests, the Minister of State emphasised the importance of skilled technical training for applicants from developing countries and he continued that amateur radio — in his opinion — was a good means to train young men in the basics of electronics which would not only result in a good reserve of skilled men in the countries concerned but would also inspire further training on local level by the participants who had taken the course. The Minister of State continued that he would offer any possible help to the Radio Society of Sri Lanka and he offered a home for the club-owned shortwave station which was donated by the West German Government.

The Postmaster General and Director General Communications stressed in his speech that training courses like this on a more or less private basis were really worth to be backed up by all parties concerned and he continued that the Government of Sri Lanka would offer all possible assistance for amateur radio on the forthcoming WARC 1979 and would — this was a promise — definitely vote for keeping or even extending international amateur radio frequencies.

The Charge d'Affairs of the Embassy of the Federal Republic of Germany underlined the importance of direct initiatives for the training of young people in developing countries. He said it was the first time that the West German Government took part financially in such an activity inspired by private organisations but as he felt this to be a good and important matter he was pleased to donate to the Radio Society of Sri Lanka a most modern shortwave amateur radio station which would enable the participants of the course to go into the air immediately after they had successfully passed their examination with Sri Lanka postal authorities.

Mr. Gerd Schnabel, representative of the International Radio Union and the Deutscher Amateur-Radio-Club during the pilot project in Colombo, Sri Lanka carried out in his speech that the international amateur radio union would always be



The Minister of Education of the Republic of Sri Lanka watches a QSO which Hans 4S7VZ (DJ0VZ) is having with an Australian AR station in WA. The Irish born operator was thrilled to be able to have a few words with a member of the Sri Lanka Government.

prepared to offer assistance to local associations whenever needed and he pointed out that a good reserve of skilled men would be made available by amateur radio on local level and that best results could be achieved with cheapest means. He continued that it was no secret that even NASA frankly admitted that staff requirements for the NASA organisation could not be met so easily if there was not a permanent supply of highly skilled technicians who usually received their first training on electronics through the American Amateur Radio League, the American amateur radio organisation. He further said that any government was well advised if it would make use of the nearly unlimited possibilities of amateur radio which does not only create international friendship, without looking at race, colour, or political opinion, but would care for international understanding with more than 100,000,000 amateur radio stations all over the world."

"On Saturday, October 7th, 1978, the Minister of Education, Nissanka Wijeratne, visited the training course for electronics and amateur radio, held at the Sri Lanka Foundation Institute in Colombo by eight trainers of the IARU/DARC.

In the course of the visit the Minister of Education expressed his satisfaction that Sri Lanka had been chosen as the first place to carry out such a training course and he assured the audience that amateur radio will have his full support in all schools and universities of the country. He authorised the Radio Society of Sri Lanka to visit schools and universities to give speeches on amateur radio and the Minister added that he will sponsor local school and university clubs under the Radio Society of Sri Lanka and that he would be prepared to raise certain funds from the Ministry of Education to enable such clubs to set up their own amateur radio stations once one or more of the members have passed through the PMG's examination.

This is no doubt a considerable breakthrough for amateur radio in Sri Lanka and — after successful completion of the course performed by trainers of IARU/DARC at the moment sufficient trainers will be available to set up local clubs in other cities of Sri Lanka and to start a training programme immediately. This, too, will have the full support of the Minister of Education and may be carried out in school rooms in the various town and communities.

To end his visit to the training course for electronics and amateur radio, the Minister of Education paid a visit to the club station of the Radio Society of Sri Lanka, donated by the Government of the Federal Republic of Germany and presently located at the premises of the Sri Lanka Foundation Institute in Colombo. A contact with West Australia could be made at once and the Minister of Education had a few words with the operator at the other end — an Irishman who had emigrated to Australia nine years ago and he was obviously thrilled to have the rare opportunity to talk to a member of the Sri Lanka Government.

The amateur radio station of the Radio Society of Sri Lanka has made more than a thousand contacts so far. It is operated under the call sign of 4S7RS (Radio Society) and also by the German instructors who got an immediate clearance for their local licences and were allowed to use the same suffixes as at home. 4S7GS (DJ7GS) 4S7KL (DK8KL) 4S7WV (DJ3WV) and so on. All instructors will regularly be on the air until October 21st, 1978, as they will return to the Federal Republic of Germany on October 22nd. ■

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.

11.10.78

The Editor,
Dear Sir,

Firstly, let me say that I support VK2YA's letter in October AR. It seems to be an unfortunate trend these days to make various grades of amateur licence easier to obtain by a general lowering of the technical standard by one means or another. To me, this is totally unacceptable not only in concept but also in principle. The concept would appear to be that if the amateur bands can be populated, let us do so with only minor consideration to the possible end result. Some time ago employers in the technical and engineering fields would give preference to an applicant who held an AOCP. Indeed, it was considered that if the applicant held an AOCP it indicated that the person had, apart from formal qualifications, a definite technical orientation with a desire to improve his/her technical knowledge which of course was of great benefit to the employer. These days, however, the story is somewhat the reverse. This is due to the rather primitive attempts at public relations advertising and the effective lowering of the technical standard of the various examinations in relation to the state of technical development within the communications industry. If you think this is just "waffle" I suggest you apply for a number of technical positions within various companies and government bodies. Fortunately, the door is not yet fully closed and some bodies will still value the AOCP as an added skill rather than a hindrance and an indicator of possible anti-social activities.

The reasoning of the principle would appear to be: "If it was good enough before, it should be good enough now". While I, in a lot of instances disagree with that little gem, the very act under which we are licensed dictates to a degree the technical level of the various exams. Any attempt to make these exams less demanding to suit the vast untapped reserves of future operators only depletes the standing of amateurs in the eyes of the all-important general public, who in a lot of cases already regard the amateur service as a high-powered form of citizens radio service made up of technical misfits who cause interference, and talk incessantly about the weather to faceless names around the world.

Further to this, I am in favour of "tick the box" answers for the NAOCP at hopefully a technically higher level than has been the norm lately, I am most definitely opposed to the same principle for the AOCP or LAOCP. While essay type answers require some extra effort to mark, what better way for a technically competent person to judge whether or not the person sitting for the exam has the right ideas and application in the examined subject? Granted that there are some people who find essay type answers very difficult due to exam nerves and the like and I can feel for those people as I have the same problem. However in our humble existence, there are people in all walks of life and vocations who just cannot make the grade required of them due to one reason or another and have to either live with the situation and accept their lot or find the required internal inertia to better themselves by application or further continued study. Of course, the above comments also apply to the proficiency test in telegraphy. Whilst CW to some may seem an outmoded form of communication, it is at feast another and further qualification that an amateur can obtain for further privileges on our bands and generally requires a lot of hard work to gain a degree of proficiency in, but itsn't that the very thing that makes the goals we strive for worth something, something to be proud of?

In final comment on this subject, let me say that it would be most certainly of very great benefit to all amateurs and the service in general, if we make a concerted effort to train our prospective amateurs to a higher level, with a better understanding of communication electronics rather than to lower our standards as a form of false economy in order to bolster our numeric strenght. Remember, CBers have number but amateurs have technical expertise, let us opt for quality, not quantity at a sacrifice . . .

Ian Foster VK3BLF, Nicholson 3882. ■

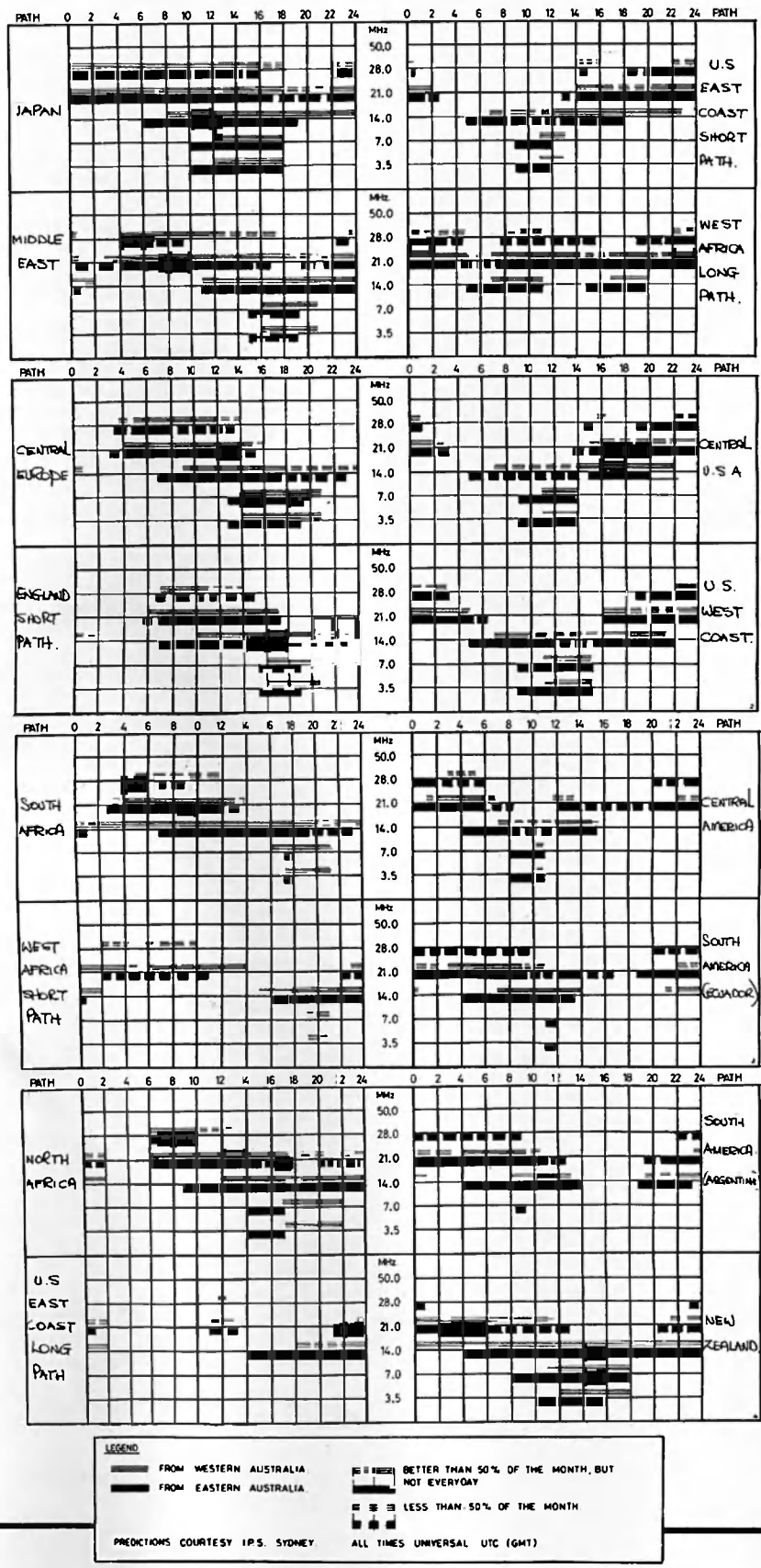
1979 SUBSCRIPTIONS

- **WIA Members are reminded that 1979 Subscription notices will be mailed out during December.**
- **1979 is the year of the great WARC when amateur radio and the WIA will need every ounce of support — so please arrange early payment of 1979 subscriptions when you receive the notice.**
- **Members wishing to be re-graded as pensioners — write NOW for clearance — write to your Division NOW.**
- **New members joining in 1978 — you will receive a notice for a pro-rata amount to render you financial to 31st December 1979. Early payment of this will avoid problems with AR.**
- **All members are reminded that AR address labels will be automatically suppressed for those still remaining unfinancial after a short period of grace.**
- **ADDRESS CHANGES, CALL-SIGN CHANGES, OTHER CHANGES:**

  Write NOW to WIA, Box 150, Toorak, Vic. 4132, advising all changes—please do not wait for subscription notice to reach you. ■

IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



ALARA

AUSTRALIAN LADIES' AMATEUR RADIO ASSOCIATION

This month our series on licensed YLs goes to South Australia, to interview Jenny Warrington VK5ZBI. Jenny is one of the six licensed YLs in the State and the first and only lady Z call.

Jenny has not been licensed for long, but she is typical of many YLs either in, or trying to get into, amateur radio.

"I suppose I first became interested in amateur radio when Mike, my OM, got his limited call in December 1974, but it wasn't until January 1976 that he suggested that I should do the AOCP course at a local technical college. The first year the teacher was David VK5HP and the second year Murray VK5ZQ. I sat the theory exam three times and finally passed in August 1977.

Mike had passed his morse the same day I passed my theory and he got his full callsign in October; he became VK5AMU. In December the Radio Branch very kindly allowed me to take his old callsign, VK5ZBI.

On 5th December I first went to air, very, very nervously. I called a friend, Clem VK5GL, and within the first hour I had worked 10 local stations, including Myrna VK5YW. One of the OMs remarked that it was like working a new country. Apart from that night, my only other transmitting of note was the RD contest, in which I transmitted for 15 hours.

We have a Weston 551 2m transceiver, which Mike rashly said was my Christmas present in 1975. We don't have much HF gear, but when we have borrowed some I have enjoyed coming up on the ALARA net. **(What about a Christmas present for Mike?—Ed.)**

I hope to sit for my CW sometime next year. Mike has a regular practice session on Thursday nights, but at present I go to cake decorating classes on Thursday, so CW will have to wait.

My other hobbies include gardening, knitting, crochet and making terrariums. I have three children, two at high school, and one just started primary school. I help out at both school canteens, belong to the Uniting Church fellowship group and have just resigned as president of our Mothers and Babies Health Association. So I don't get on air very often".

In closing this month's ALARA notes we wish all our readers a happy Christmas and provide our hint of the month, from a YL who wishes to remain nameless.

Do you ever wish you had an intercom system to talk with the OM in the shack? If so, you will find that a mixmaster makes an extremely good intercom, especially if he works HF. A long sustained blast will make it impossible for him to work anyone, and thus force him to come in for tea. With practice short messages can be sent by morse code. However, with continued use, this system tends to be replaced by a conventional system, that can be more easily ignored.

73 from ALARA,
Heather Mitchell VK3AZU, Publicity Officer. ■

Jenny Warrington VK5BI

IARU NEWS

FOURTH REGION 3 CONFERENCE

The IARU Region 3 Association held its fourth conference in Bangkok, Thailand on 7th, 8th and 9th October. Member Societies represented by delegates were ARRL (USA — Pacific Territories) — HARTS (Hong Kong) — JARL (Japan) — MARTS (Malaysia) — NZART (New Zealand) — PARA (Philippines) — RAST (Thailand) — SARTS (Singapore) and WIA (Australia).

In addition, Vic. Clark W4KFC, Vice-President of IARU was present, as Noel Eaton VE3CJ, President of the IARU, was unable to make the journey to Bangkok because of ill-health. The four Directors of the Region also attended the Conference.

The Conference was formally opened by the Deputy Minister for Communications of the Royal Thai Government, Sriphoom Suknetr (HS1SS). The Deputy Minister assured delegates that the claims of the Amateur Service for the WARC would be carefully borne in mind by the Government of Thailand.

The Conference appointed the President of the host Society, RAST, Kamchai Chotikul HS1WR, as Honorary Chairman of the Conference and Fred Laun HS1ABD, Working Chairman. David Rankin 9V1RH, Secretary of the Region 3 Association, was appointed Conference Secretary and Noaki Akiyama JH1VRQ, was appointed Assistant Secretary of the Conference.

Each Society reported on the present position of WARC preparations in its country and considerable time was devoted to WARC generally. The Conference varied a number of previous policies adopted by the Region 1 and Region 2 Conferences this year. In particular, a policy not to seek change to Article 41 of the ITU Radio Regulations, was confirmed. That Article deals with the Amateur Service. The Conference adopted a paper relating to the Amateur Satellite Service submitted by JA1NET.

The President of the IARU had previously informed IARU Member Societies that Michael Owen VK3KI, would be a member of the IARU Observer Team. The Conference submitted two additional delegates from the Region to the President of IARU for his consideration. Shigetake Morimoto JA1NRET and David Rankin 9V1RH, who would each be available for approximately half of the ten week period of the WARC. In addition, Dick Baldwin W1RU, as Secretary of the IARU announced that Tom Clarkson ZL2AZ, had been invited to be present during the WARC as Special Adviser to the President of IARU.

A grant of additional funds to meet the cost off JA1NET and 9V1RH, as members of the IARU team to the WARC, was announced by Shozo Hara JA1AN, President of JARL and further funds were promised by PARA and WIA. Other business of the Conference included discussion of the Region 3 news, QRA locator systems, Project ASERT, the General Regulations of Region 3, better communications between the Regional organisation and Member Societies and many other matters.

Two Directors, Masami Saito JH3PJE and Tan Lian Huat 9V1QD, did not offer themselves for re-election and the four persons nominated were therefore appointed Directors of the Association, namely, Keigo Komuro JA1KAB, Jose Tupaz Jr. DU1JJT, Michael Owen VK3KI and Tom Clarkson ZL2AZ. David Rankin 9V1RH was re-appointed Secretary of the Region 3 Association.

The next Conference of the Region 3 Association will be in Manila in 1982, though the Directors were asked to evaluate the results of the WARC and advise Member Societies of the effect of those results.

The Fourth Conference of the IARU Region 3 Association was marked by the continuation of a spirit of mutual co-operation between the Member Socities and the continued recognition of the importance of the next years for the Amateur Radio Service. ■

HAMADS

- Eight lines free to all WIA members. $9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

Due to early closing dates for copy with this and January 1979 issue, Hamads which normally would be published in this issue, have of necessity, bean held over until our January issue.

We apologise to members for any inconvenience caused.

The January issue is expected to be published and delivered before Christmas.

Copy for the February 1979 issue is requested by 15th January 1979. The February issue will be published approximately 14 days later than usual.

FOR SALE

Hallicrafters FPM-300 250W input SSB/CW solid state Tcvr with 240W AC & 12V DC PSU built in, deluxe mobile mount included, owner's manual and Dynamic mike supplied also, $495. Hallicrafters HT-37 SSB Tx with antenna relay mike, owner' manual, uses two 6148B'S 100W PEP output 240-110 step-down transformer supplied, $225. 10-80m bands, Mosley TA-33 yagi with cable CDE rotator, as new, $375. Complete Yaesu FL-2100B linear, as new, $525. Collins 1-30 MHz Communications Rx, superb radio, all the usual Collins features standard, $650. John Berry. Ph. (02) 389 6979 AH — (02) 389 6455 bus.

Swan 240 with power supply and spare O/P valves, in working order, $200. Grid Dipmeter LDM815, as new, $70. VK3AVA, 8 Brennan St., McKinnon, 3204. Ph. (03) 578 2058.

Swan 350, with AC supply, $350; Swan 240 OC/DC supply $240; HT37 Hallicrafters Tx, $190; Plessey B240 T/R, 23-38 MHz, AC, $80; 432 Tx ATV and sub carrier generator, $100; MR20 HI Band on 3 and 40, $30; 2 in. CRO, $50; Audio Speech Processor, $40; SWR Bridge, $15. Lots of other gear and bits and pieces. Send SAE. Service manuals with all equipment and all 100 per cent and working OK. No reasonable offer refused. VK2AJY, QTHR.

Kenwood R-599 Rx, covers all amateur bands 1.6 to 147.400 MHz, SSB, CW, AM and FM, 240V AC or 12V DC, with operating manual, $300. VK4QF, QTHR. Ph. (07) 370 8785.

WANTED

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Has someone a "Q" multiplier? Transistor model or circuit details for same. Please contact A. Harrison, Nilma, 3821. Ph. (056) 23 2450.

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(Editor's Note: The power quoted exceeds the Australian legal limit)

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SILENT KEYS

It is with deep regret that we record the passing of —

WALTER MARTIN PETERSON VK6LW

It is with deep regret that we record the passing of Wally VK6LW, on August 10th 18978, after a long period of disability.

Welly was licensed in 1937, and worked for a numbar of Perth commercial radio stations, finishing with 6KY as Chief Engineer in 1955.

He was a member of the Institute of Radio Engineers.

Wally waa involved in early experimentation with frequency modulation broadcasting, and was well known for his line home brew AM station.

In 1966 he suffered a severe heart attack and stroke which left him partially paralysed, and with a apeach problem.

Until his death this year, he operated on 2 metres.

From 1955 until his forced retirement he was a technical correspondence teacher, and was dedicated to the welfare of his many students to whom he gava many hours of extra tuition.

He is survived by his wife and four children. ■

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