



amateur radio

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JANUARY
1968

30c

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Coaxial Type with "Free Edge" bass cone and horn tweeter

8CX50	8 in.	30-22,000	15 watts	\$23.75
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12TX50	12 in.	18-22,000	25 watts	\$62.50

Single Cone "Free Edge" type:

5A50	5 in.	50-15,000	8 watts	\$15.00
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8L50 8 in. Woofer	37-4,000	15 watts	\$28.25
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14.342 Mc.	

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VK6WI, Sundays,

TASMANIA

VK7WI, Sundays, at 1000 hrs. E.A.S.T.	
3672 Kc., and re-transmitted by representative stations on—	
7146 Kc.	144.1 Mc.
53.032 Mc.	432.6 Mc.

THE YEAR IN REVIEW

There's an old adage that says one should never look backwards but always forward to the future. This may be very true in some aspects of living, but in the technical field of Amateur Radio I believe it a good thing to look back and review at least the immediate past in order to more adequately prepare for the future.

This will be my last year as Federal President of the W.I.A. and during my 17 odd years on the Federal Executive I have been working alongside men from all walks of life who have zealously applied themselves in their own spare time to the problems of administering the affairs of the Wireless Institute of Australia. This has resulted in the realisation of many early ambitions and a logical expansion of the administration of the Institute to cope with increasing membership, a growing list of licensed Amateurs, an upgrading of the technical knowhow of Amateurs, the preservation and rationalisation of the regulations governing the operation of Amateur Stations and in general the representation of the Amateur Service in Australia on a basis compatible with the large and well organised Societies overseas.

As in any kind of Society the internal organisation has to keep pace with the times and in this regard it was necessary some years ago to move towards federating the Institute. Last year final agreement between the Divisions of the W.I.A. was reached which will result in the formation of a "Federal Company", the members of which will be the W.I.A. Divisions in each State. The Federal Executive will act as Directors of this Company, fully responsible to, and controlled by, the members, but empowered to act on behalf of its members in such manner that representation of the Amateur Service, the administration of the affairs of the Institute and expansion of Regional activities in the national sphere will become very much more effective. In addition, the Federal Constitution affords a legal protection for Executive members, hitherto enjoyed only by Divisional Council members. To bring this to fruition has taken five years—and looking back it has been five years well spent in providing a more effective and workable constitution commensurate with the requirements of the present and for the future.

The W.I.A. Federal Executive has always been privileged to have a good liaison with the Australian Post Office who administer the use of the radio frequency spectrum in Australia. There have been many problems to solve over the years, but I believe the present co-operative outlook existing between the W.I.A. Federal Executive and the Central Office of the Postmaster-General's Department has never been better. Over the past two years this co-operation successfully produced a complete re-write of the **Handbook for the Guidance of Operators of Radio**

Stations in the Amateur Service, sections of which have appeared in recent issues of the Institute's magazine "Amateur Radio". This has been a major achievement in up-dating the conditions of operation of Amateur Stations to the benefit of licensees and surely, also, it must ease the administrative load of the Department.

This co-operative "channel of communication" between the W.I.A. Federal Executive and Central Office has firmly established means by which regulatory problems involving Amateurs can be dealt with by the Federal Executive, the results of such negotiations being promulgated uniformly to the States through both the P.M.G. State Superintendents and the Divisions of the W.I.A. Such a liaison is a major function of the Federal Executive and Amateurs concerned in regulatory problems are urged to direct details of specific problems to the Executive through their State Divisional Councils and not direct to the Radio Branch in their State. By this means your problem will receive the attention of the Central Office of the Postmaster-General's Department and a uniform decision throughout the States will result.

Looking back over the past year, I believe the image of Amateur Radio has markedly improved. The community service rendered by the Wireless Institute Civil Emergency Network (W.I.C.E.N.) during actual and simulated emergencies has been a powerful influence in engendering this improvement. From a backroom hobby, Amateur Radio has emerged as a recognised communication service, accepted by the Civil Defence Organisations as a valuable asset in its role of protecting public property in times of emergency.

The Youth Radio Scheme (Y.R.S.), fostered by the W.I.A., has also assisted in lifting the image of Amateur Radio. The scheme is now a widespread and successful operation, taking a useful technical training course into the educational system of schools.

That Amateur Radio should have—and deserves—a better image seems to me to be of paramount importance, for the true worth of Amateur Radio to a country is much more than the general public concept of fellows "tinkering around with bits and pieces of equipment" and "nattering away on the air with technical jargon". Amateur Radio is a scientific basis for the technological advancement of any country which supports it, evidenced in Australia by the large number of Amateurs who operate its communication services in one way or another. As an illustration of this, the lecture presented to the I.R.E.E. on December 12 last year on the occasion of celebrating Radio Founders' Day was devoted to the role Amateur Radio has played in the field of professional and commercial communications. The lecture, given by Dr. Allan Butement, VK3AD, Director of Research of the Plessey Group of Com-

panies, was one of those events which plays a vital part in lifting the image of Amateur Radio.

Apart from normal administrative matters, probably the greatest problem facing all Amateur Radio Societies is the preservation of the existing Amateur frequency band allocations. Last year Air Commodore George Pither, VK3VX, joined the Federal Executive as the W.I.A. official Federal Liaison Officer. His major task—when the time comes—will be to represent the W.I.A. at conferences at home and abroad which will deal with the allocation of frequencies to the Amateur Service. He is an Amateur well equipped to carry out this important work, being experienced in top-level diplomacy and having a wide knowledge in the field of communications. Pending the requirement of his services officially, Air Commodore Pither is assisting in the organisation of the proposed Australian Intruder Watch Service, details of which have appeared in recent issues of "Amateur Radio" magazine. The Service will be implemented officially early in the new year for which we still require the services of many more Amateurs who are prepared to devote a few hours each week to monitoring the bands if the scheme is to be as successful as it is in the United Kingdom and the United States of America. This Service is being implemented because of a direct request last year from the International Amateur Radio Union of which the W.I.A. is a member.

Finally, and important too, is the work done by the Federal Executive in the area of liaison and assistance to Amateurs in Region III, neighbouring countries. During last year many editorials, articles and broadcasts relating to this matter were undertaken, designed to focus attention on the urgent necessity for the W.I.A., as one of the largest of the Region III Amateur Societies, to take an active part in promoting Amateur Radio in this Region (S.E. Asia and Oceania).

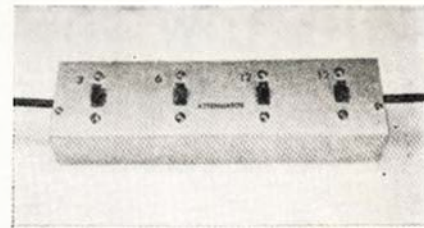
I believe we have made a good start but there is a lot of work to be done if Region III is to play its part at future I.T.U. Conferences. The Region I. and Region II. Amateur Societies are both large and well organised. In Region III, there are many countries which have little or no Amateur Radio activity. This spells danger to Amateur frequencies if the I.T.U. examines frequency allocations on a Regional basis as it appears it well might do. I am therefore of the opinion that the role of the W.I.A. is to do everything in its power to assist the under developed countries, particularly in the formation of Amateur Radio Societies. By this means a stronger and united front can be presented in defence of the Amateur Service frequency requirements.

1967 was a year of progress; 1968 must be a year of achieving further results from this progress. With the continued dedication of those who enjoy taking up administrative posts with the W.I.A. we will no doubt achieve our aims for the benefit of the Amateur Service.

—G. Maxwell Hull,
Federal President.

A Simple Step Attenuator*

BYRON GOODMAN, WIDX



THE attenuator to be described is for use between antenna and receiver, to reduce overloading by extremely strong signals.^{1,2,3} Attenuation between 3 and 33 db. can be obtained in 3-db. steps by closing one or more of four slide switches. A more elaborate design might include 1 or 2-db. intervals, but the sole intent here was to make the device simple and inexpensive. Common 10% tolerance composition resistors are used.

Referring to the circuit diagram in Fig. 1, when all of the switches are in the "up" position there is a direct connection between P1 and P2. Moving S1 "down" introduces a 3-db. pi-section

circuit" position was available at each switch. Opening one switch, the attenuation was 39 db. (measurement at 28 Mc.). As the switches were progressively opened, the additional attenuation per switch decreased, and opening the last switch introduced only 12 db. additional attenuation over that obtained with three switches open. It is unlikely that the next step (24 db.) is practical with this simple construction, and that's why two 12-db. sections are included.

The unit was built on a piece of 5" x 8" sheet aluminium bent into a 1½" deep and 2" wide channel. The switches are mounted 2" apart. Co-axial line

an accurate attenuator), an audio oscillator and oscilloscope, or a source of d.c. and a voltmeter.

Connect a 50 ohm resistor or other termination across the output (receiver) plug. The voltage at this point (measured by receiver, oscilloscope or voltmeter) should be 0.71 times the input voltage for the 3-db. section, 0.50 times the input voltage for the 6-db. section, and 0.25 times the input voltage for the 12-db. section. Eut again, if it doesn't work out right on the button, so what? It will still work and it will help you on more than one occasion when the QRM gets heavy.

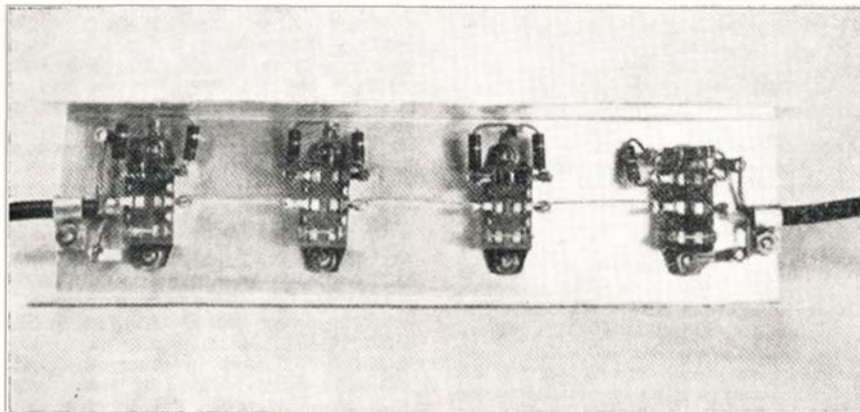
(Anyone interested in a more precise step attenuator—and who has the facilities for measuring r.f. resistance values—can design his attenuator sections from the following:—

$$R_{series} = \frac{A^2 - 1}{2A} R_0$$

$$R_{shunt} = \frac{A + 1}{A - 1} R_0$$

where R_0 = characteristic resistance, e.g. 50 ohms.

A = reciprocal of output/input voltage ratio; e.g. 1.414 for 3 db., 2.0 for 6 db., 4.0 for 12 db., and so on.)



Resistor networks for the attenuator are mounted on the switches and grounded to lugs held by the switches. Note outer conductor of co-axial cable is fanned out and grounded either side of switch.

pad, moving S2 introduces 6 db. attenuation, and S3 and S4 each add 12 db. attenuation. When two or more switches are "down" the attenuation is the total of the attenuations for the active sections.

It should be noted that the design is based on the assumption that the receiver looks like 50 ohms; if it is higher, the lower values of attenuation will be less than stated above. But just because your receiver doesn't look like 50 ohms (or because you don't know what it looks like) doesn't mean the attenuator won't work; it will, but the attenuation values will be different. So what?

The use of the 12-db. maximum section is based on measurements made when the switches were first installed. They had been wired for the straight-through connections but no attenuating resistors had been installed; an "open

(RG-58/U) was secured at each end by small aluminium cable clamps bent from scrap aluminium. The ends of the co-axial lines were terminated in a BNC plug for the receiver and an SO-239 receptacle and UG-177/U hood for the antenna connection. Obviously these connections would vary with the station and application.

Using a signal generator and receiver for measurements at 28 Mc., no differences in attenuation could be detected with a bottom plate on or off.

Anyone who wishes to confirm the attenuations of the various sections can use a signal generator (it must have

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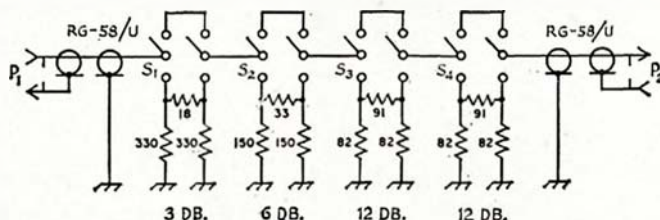


Fig. 1.—Circuit diagram of the Step Attenuator. All resistors are ½ watt composition.

P1, P2—See text.
S1 to S4—D.p.d.t. slide switches.

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* Reprinted from "QST," August 1967.

1 Andrade, "Recent Trends in Receiver Front-End Design," June, 1962; "A.R.," Jan., 1964.

2 Talley, "Receiver Front-End Attenuator," "QST," January, 1964.

3 "The ITT Mackay Marine 3010-B Receiver," "QST," April, 1967.

A MOBILE POWER SUPPLY FOR A GALAXY III.

G. A. CLIPSHAM,* VK2SJ

THIS supply, as designed, is large enough to power my transceiver to full output. With minor adaptation it would suit a Swan or similar unit. Using new materials throughout, it cost approximately \$45 to build. The design is not necessarily the final word in engineering, and just grew as experiments proceeded. For instance, one half of the supply operates with grounded emitters, whereas the other has grounded collectors; one switches at 1,000 c.p.s., but the other at 350 c.p.s.

If I were starting again I would probably use transformer cores with similar thickness tape, but that would involve changing the turns per volt parameters if they were both to operate at the same switching frequency. However, once I had purchased cores, I decided to use them irrespective, and hence the dissimilarity between the two halves of the supply. Any constructor knowing what he is about could easily adjust this if he wished.

The supply consists of two parts; one providing all voltages except that needed for the final amplifier. Using the data given below, provision is made for 800 volts at 400 mA. (peak), 325 volts at 200 mA., and 100 volts at 35 mA.

Firstly, obtain two H.C.R. toroidal cores, size 7C and 10C, the smaller one with 0.002" tape and the other with 0.004" tape. These are available from Telcon, at 17 Wyndham St., Alexandria,

very carefully between the high voltage winding and the primary. Any breakdown here will almost certainly destroy the transistors. Use hook-up wire tails on all the fine windings for convenience and it is a good idea to label each end as you go. It can be very confusing later if they get mixed.

About half a pound each of 14 and 16 s.w.g. and one pound of 27 s.w.g. wire is more than enough. Buy the better gold coloured enamelled insulation; it is much tougher and more durable than the dark coloured stuff.

WINDING DETAILS

Small Transformer with 7C Core:

Primary: 2 x 19 turns wound biflar—16 s.w.g. d.c.c.
 Feedback: 2 x 24 turns wound biflar—27 s.w.g. enamel.
 100 volt winding: 85 turns—27 s.w.g. enamel.
 325 volt winding: 325 turns—27 s.w.g. enamel.

Larger Transformer with 10C Core:

Primary: 2 x 24 turns wound biflar—14 s.w.g. d.c.c.
 Feedback: 2 x 27 turns wound biflar—21 s.w.g. enamel.
 800 volt winding: 800 turns—27 s.w.g. enamel.

I used 2N441 transistors and six are required. They are available from Anodecon Sales at 443 Concord Road,

they are operating under favourable conditions in this design anyway.

The forward bias network used is somewhat unusual and was purloined direct from "CQ" magazine. It uses a 5 ohm resistor in series with a 24 volt 50 mA. lamp. Because the resistance of the lamp is under 50 ohms when cold, a high forward bias is presented to the transistors at switch-on, which makes for instantaneous starting, but once heated, its resistance rises to something like 500 ohms which keeps the primary current very low in the event of a short circuit on the load and eliminates thermal runaway. If suitable lamps are not available, a resistor of 500 ohms should be satisfactory.

The whole supply is housed in a 16 s.w.g. aluminium case about 7" x 6" x 5". This size was dictated by the need to accommodate the heat sinks with their fins running vertically when mounted on the firewall of my Holden car. A wrinkle here worth knowing (VK2BAE passed it on to me); purchase a pint of wrinkle finish paint and half a pint of special thinners from Brolite at Ralph St., Alexandria, cost about \$1.50.

A proper spray gun is ideal, but I used a Flit gun with very satisfactory results. First drill all the necessary holes, then remove the components, and degrease the metal in a mild solution of caustic soda for a few minutes. Thoroughly wash and dry, and then spray with a full coat and bake it in the family oven for about half an hour at 265°F. The result is very professional and it won't be long before all your gear sports a similar finish.

My power supply proved to be quite free of noise. I used a small choke in the primary lead as indicated in the circuit, about half an inch in diameter and then cemented a small piece of ferrite core inside to increase its efficiency. Use at least 7/0.0036" wire from the battery. The converter will draw not less than 30 amps. on peaks, so watch that battery, especially if you have an automatic car!

ACKNOWLEDGMENT

Acknowledgment is due to VK2WT and VK4ZAX for helpful assistance.

ADDITIONAL READING

A.R.R.L. Mobile Handbook, third edition, pages 180-189.
 "Choice of a Magnetic Core for Use in D.C. Converters," Telcon.
 "CQ" Magazine, May, June and July, 1963.
 "Philips Miniwatt Digest," Vol. 2, Nos. 1, 2, 6 and 8.
 "Amateur Radio," Dec. 1965 (this is a must).

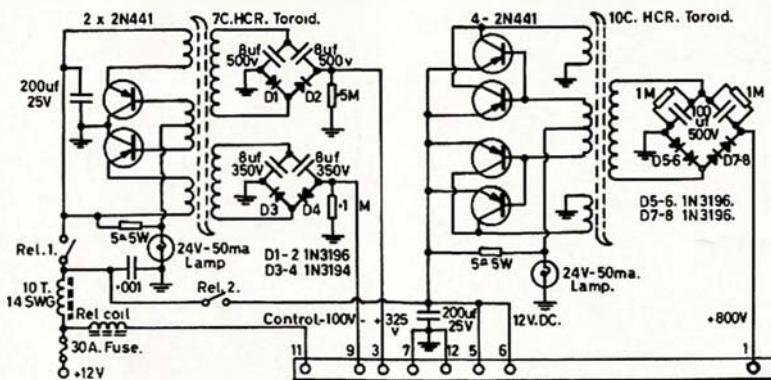


FIG. 1. CIRCUIT FOR DC-DC. POWER SUPPLY FOR GALAXY III.

N.S.W., at approximately \$5.50 the pair. Both A.R.R.L. Mobile Handbook and "Amateur Radio" for December 1965 cover the winding operations well and the reader is referred to them. However, I found it easier to wind the high voltage, and consequently fine wire, on first, then the heavy primary, and finally any other windings needed.

The primary makes the winding very bumpy and it is better to cover the core with a layer of paper tape (it is easier to lay the turns if a light coloured tape is used) and then insulate each layer as it is put on carefully using an ice-cream stick as a shuttle. Insulate

Rhodes, N.S.W., and whilst ordering procure the necessary diode rectifiers as well, together with three Delco heat sinks, Part No. 7281361. These are very suitable under all conditions and come already drilled for use at about \$2.25 each. Incidentally, when ordering don't forget to mention "for use in d.c.-d.c. converters" and sales tax is only 12½%.

Most published circuits specify to use matched transistors when using them in parallel. Otherwise small 0.1 resistors are placed in the common feed to each emitter or collector as necessary. I did not use them as the load split nicely and there was no evidence of uneven heating, but then



* Rural Bank, Walcha, N.S.W., 2354.

THE MILLIMATCH*

A SENSITIVE VERSION OF THE MONIMATCH MARK II.

LEWIS G. McCOY, WIICP

IN the last year or so the cost of transistors that can be used in transmitters has dropped to a point where more and more Hams, both newcomers and old timers, are becoming interested in low-powered transistorised rigs. And by low power, we mean transmitters whose output is measured in terms of milliwatts, not watts.

Several very low power transmitters have recently been described in "QST," and our mail bag attests to the popularity of these units. Such equipment is easily portable, and many Hams, particularly v.h.f. operators, have discovered that extremely low power can be lots of fun.

One problem in using very low powered transmitters is the difficulty in making antenna adjustments or checking output when tuning up. There "just ain't any" test equipment available to do the job. The regular garden variety of reflectometer, such as the Monimatch, isn't sensitive enough. The Millimatch, described in this article, provides adequate sensitivity—even for rigs with output levels as low as 10 milliwatts!

THE MILLIMATCH—WHAT IT IS

The Millimatch is similar to the Monimatch Mark II,¹ except that a transistor current amplifier has been added. Fig. 1 is the circuit of the Millimatch. Of all the reflectometers that have been described since the original Monimatch, the Mark II. is one of the best designs for accuracy of readings at v.h.f., up to and including the 144 Mc. band. For the benefit of the newcomer who is not familiar with reflectometers, a short description is in order.

When you attach a co-axial line of, say, 50 ohms characteristic impedance to an antenna and feed power through it to the antenna, a certain amount of power will be reflected back down the line toward the transmitter if the impedance of the antenna is anything other than 50 ohms. The larger the difference between the impedance of the line and the impedance of the antenna, the greater the ratio of reflected power to forward power. One method of checking this ratio is with a reflectometer, which, when inserted in the co-ax. line, in effect samples the forward and reflected voltages separately. From these relative voltage values the relative forward and reflected power, as well as the standing wave ratio on the line, can be determined.

Referring to Fig. 1, the J1 end of the Millimatch is connected to the transmitter and the J2 end to the antenna. When the transmitter is turned on, r.f. current flowing along the conductor between the fittings induces voltages in

L1 and L2. The voltage induced in L1 is proportional to the forward line voltage, and the voltage induced in L2 is proportional to the reflected line voltage. The L1 voltage is rectified by CR1, and the d.c. is applied to the base of Q1. Q1 amplifies this d.c., which is then read on M1. When S1 is switched to read reflected voltage, the voltage in L2 is rectified by CR2 and fed through the amplifier.

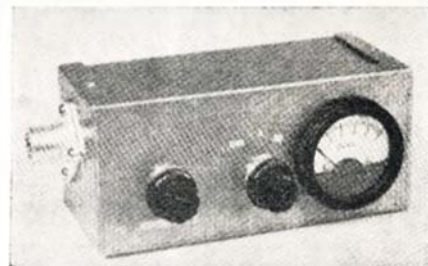
The standing wave ratio on the co-axial line is found by first switching S1 to read forward voltage and adjusting sensitivity control, R6, so that M1 reads exactly full scale; then S1 is switched to reflected voltage and the reading noted. Let's assume the meter is calibrated from 0 to 10 in even divisions. The formula for determining the s.w.r. is quite simple:—

$$SWR = \frac{V_o + V_a}{V_o - V_a}$$

where V_o is the forward voltage and V_a is the reflected voltage. For example, suppose that we set R6 so that M1 reads full scale, or 10, in the forward position, and when we switch to reflected we have a reading of 3. This would amount to

$$\frac{10 + 3}{10 - 3} = \frac{13}{7} = 1.8 \text{ to } 1.$$

However—and this is a point that some Amateurs overlook—many reflectometers are not truly accurate instruments for measuring s.w.r. They are excellent for showing when a matched condition (an s.w.r. of 1 to 1) exists, but under any other condition the voltage readings are not dependable, because of poor linearity of the diode rectifiers used at CR1 and CR2. If the diodes were perfectly linear over the entire range of reflected and for-



This is the completed Millimatch. At the left is the sensitivity control, R6. S1 is in the centre, and M1 at the right.

ward voltages being measured, the formula above would give accurate s.w.r. checks. If sufficient resistance is used in series with the diodes, their output tends to become more linear, but the sensitivity is reduced. We used R4 and R5 to improve the accuracy, and the loss in sensitivity is more than made up for by the amplifier, Q1.

In the Millimatch, another factor that gets into the act to upset the accuracy of s.w.r. readings is the linearity of the transistor used as an amplifier. However, regardless of the accuracy of s.w.r. readings, the bridge is excellent for showing when a match is achieved. Additionally, by setting S1 in the forward position, the relative r.f. output of the transmitter can be observed on M1. This is a valuable tool when tuning up a transmitter.

CONSTRUCTION INFORMATION

The Millimatch is enclosed in a 2½" x 2½" x 5" minibox. The transmission-line section consists of an inner conductor (a piece of ¼" o.d. copper tubing, 4½" long) and two pieces of copper flashing for the outer conductor. These two pieces measure 1" wide and 4½" long, plus a ¼" lip at each end for mounting under the screws that secure J1 and J2. Separation between the copper strips and inner conductor is maintained by two insulated spacers, Fig. 2. These spacers also serve to space the pickup wires L1 and L2 at the correct distance from the inner conductor.

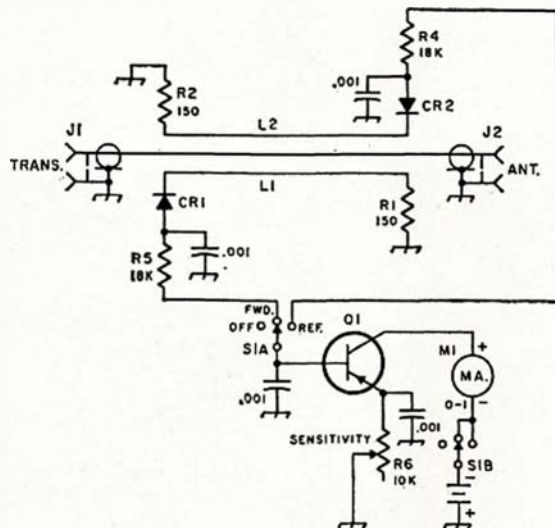


Fig. 1.—Circuit diagram of the Millimatch. Resistances are in ohms (K equals 1,000). The 0.001 uF. capacitors are disc ceramics.

- CR1, CR2—1N34A germanium diodes.
- J1, J2—Co-ax. chassis receptacle, type SO-239.
- L1, L2—See text.
- M1—0-1 milliammeter. A more sensitive type can be used, but is not required.
- R1, R2—150 ohms, ½ watt carbon or composition for 50 ohm bridge, 100 ohms for 75 ohm unit.
- R4, R5—18,000 ohms, ½ watt.
- R6—10,000 ohm control, miniature type.
- S1—2-pole, 3-position switch.

* Reprinted from "QST," August 1967.

¹ McCoy, "Monimatch Mark II.," "QST," Feb. 1957; "A.R.," April 1957.

Any available insulating material of reasonably low loss, such as bakelite or polystyrene, can be used for the spacers.

Mounted on the front of the minibox are M1, S1 and R6. Almost any of the miniature panel meters available from radio distributors can be used for M1 as long as they don't protrude more than $1\frac{1}{4}$ " behind the panel. We checked several types and found that most of them protruded 1" or less.

Mount J1 and J2 as close to the rear of the minibox as possible, as shown in the photographs. Slide the spacers over the copper tubing and then tin the inside ends of the tubing with solder. Also tin the inner-conductor terminals of J1 and J2. Slide the ends of the tubing over the conductor terminals and solder. You can then mount the copper strips in place.

The pickup wires, L1 and L2, are $3\frac{3}{8}$ " lengths of No. 14 tinned wire. The wires are centered in the spacers as shown in the photograph and cemented in place with Duco cement.

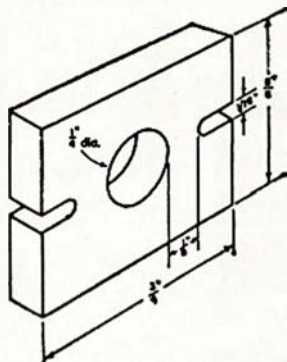


Fig. 2.—Dimensions of the Insulating spacers used to hold bridge wires and outer conductor strips in place.

R1 and R2 are $\frac{1}{2}$ watt resistors and must be carbon or composition, not wire-wound. For a 50 ohm bridge, use 150 ohm resistors, and for a 75 ohm unit, use 100 ohm resistors. (No, that last isn't a typographical error!) The ends of the resistors that are soldered to L1 and L2 are $\frac{1}{4}$ " long. Tin the ends of the pickup wires and the ends of the resistors with solder and solder the resistors in place. Don't overheat the resistor as too much heat can change the value. The remaining ends of the resistors are soldered to lugs mounted under screws that hold J1 and J2, keeping the leads as short as possible.

When connecting CR1 and CR2 to the pickup wires, use a heat sink on the lead between the body of the diode and the lead being soldered. Too much heat can easily ruin the diode.

We used a transistor socket for mounting Q1, but it could be mounted by its own leads if desired. The $1\frac{1}{2}$ volt battery was installed by soldering wires to both ends, no holder being used. Some penlite cells have a pressure-type contact at the base, or negative, end. This is a circular plate that must have pressure on it to make contact. If you get that type battery, take a knife and slice away the plate to get at the actual base of the battery.

Almost any p.n.p. type transistor will work for Q1. We tried several types

from the junk box—2N114, 2N117, 2N705, and 4JD1A67—and they all had more than adequate gain. As a matter of fact, we had removed about 50 different transistors from surplus computer boards, and every p.n.p. type had adequate gain for full-scale deflection of M1 with 25 milliwatts input at 28 Mc.

TESTING AND USING THE MILLIMATCH

Connect the Millimatch to your transmitter, using 50 or 75 ohm co-ax. as required. Leave the antenna end of the bridge unconnected. Turn on the rig, switch S1 to forward and set the sensitivity for about half-scale reading. Next, switch to reflected. The readings for forward and reflected should be about the same. Next, if you want to check the accuracy of the bridge, connect a 1 watt carbon resistor of the appropriate value, 50 or 75 ohms, between the inner hole and outer shell of J2. Switch S1 to forward and adjust

the sensitivity to full scale. Then switch to reflected and the reading should drop to zero.

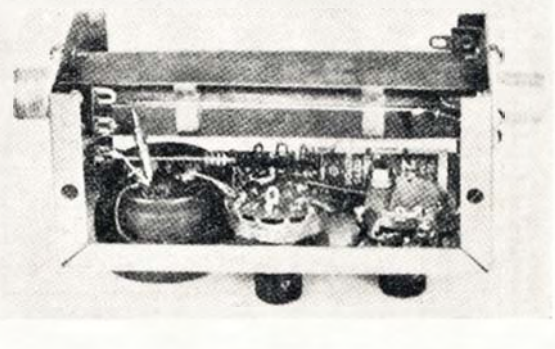
You may find that when you first turn on the Millimatch, you will get a slight reading on the meter without the transmitter being on. This is the "no-signal current" in the transistor. Whatever the no-signal current reading is, and it will be very small, assume this value as "zero" when the transmitter is turned on and worked into a matched load.

You can check the accuracy of the s.w.r. readings with the formula previously mentioned by using dummy load resistances of various values. For example, a 150 ohm resistor will represent a 3 to 1 s.w.r. with a 50 ohm bridge.

As we stated earlier, the Millimatch will enable you to match your antenna system, and just as important, provide an excellent output indicator for that flea-power rig.

★

This shot shows the "innards" of the Millimatch. Pickup line L1 is mounted in the grooves on the insulated spacers. CR1 is at the left. At the right, just in front of the sensitivity control, is Q1 in its socket. The $1\frac{1}{2}$ volt penlite cell is at the rear.



CHANGE IN RADIO SYSTEM FOR LOW POWERED M.F. AND H.F. RADIOTELEPHONE SERVICES

(Statement by the Director-General Posts and Telegraphs)

The Director-General, Posts and Telegraphs, Mr. T. A. Housley, announced recently that following discussions between representatives of the Post Office, the Royal Flying Doctor Service, other outpost services, and the radio industry, it has been agreed that radio stations in the outpost networks should change from double-sideband to single-sideband radio transmission.

He said that the programme agreed upon for the change provided for all control stations in the outpost services to be equipped for operation on single-sideband by 1st July, 1970. They would operate both d.s.b. and s.s.b. equipment over the following five years until 1975. In addition, all outpost stations will be required to install s.s.b. equipment during this five-year period. The use of double-sideband transmissions would be discontinued as from 30th June, 1975.

Mr. Housley explained that the need for such a change arose because of the heavy demand in Australia and other parts of the world for new radio stations to be accommodated in the medium and high frequency bands.

He said that it was important that a service such as the R.F.D.S., on which so many people in the outback depended, should operate under the best possible conditions.

The increasing demand for radio services was already causing a serious overcrowding of frequencies and unless the change from d.s.b. was made a chaotic situation could eventually occur.

The Director-General said that many of the existing lower powered, double-sideband transmitters and receivers had already been in use for many years and would in any case be due for replacement in the near future.

Mr. Housley added that in the circumstances the Post Office considered that the time was now most suitable to implement a conversion from double to single-sideband operations for all medium and high frequency, lower powered radiotelephone services.

The conversion would affect fifteen major control stations including twelve in the Royal Flying Doctor Service, and about 4,500 outpost stations, both fixed and mobile, operating across two-thirds of the continent.

The other outpost services involved included those of the Bush Church Aid Society (Ceduna, South Australia), the Queensland Ambulance Transport Brigade (Cairns Division), and the services based on the O.T.C. coast station at Darwin.

Mr. Housley said that the conversion would be the first major change in the system of radio communication used by outpost services since radiotelephony replaced the earlier experimental Morse systems introduced by the Australian Inland Mission nearly forty years ago.

The adoption of the new system paralleled similar developments overseas and fell into line with recommendations made by a committee of the International Telecommunications Union and the Frequency Allocation Review Committee which was set up under the chairmanship of Sir Leonard Huxley by the Australian Government in 1960.

Both committees reported that one of the most important methods of achieving economy in the use of the high frequency spectrum was in the replacement of double-sideband by single-sideband systems and discontinuance of the use of double-sideband systems by 1970.

The Director-General pointed out that all Australian high-powered fixed services have been operating in accordance with these recommendations for some years, but because of the higher cost and limited availability of suitable single-sideband equipment the Post Office had deferred action on until now to extend the change to the lower powered services. Single-sideband transmitters and receivers were now readily available at a more economical price.

[This change does not apply to the Amateur Service.—Ed.]

A 3-TRANSISTOR AUDIO COMPRESSOR*

CAPTAIN PAUL H. LEE, W3JHR

This simple compressor can be a boon to the s.s.b. operator since it will keep up the average level and talk power and prevent over-drive and splatter.

IN the days of a.m., overmodulation caused splatter due to negative modulation peak chopping. In the modern days of s.s.b. too much audio also causes splatter, but due to over-driving of the linear amplifier stages in an s.s.b. transmitter, and the consequent generation of non-linearity products. Some s.s.b. transmitters have automatic level control (a.l.c.), but this may not always be effective in preventing over-driving. Here at W3JHR I decided to use an audio compressor amplifier to prevent over-driving, not

aluminium box, which is in turn mounted on my audio control and phone patch panel in my station console. The batteries are contained in the box.

Another way of building the unit would be to mount the components on a printed circuit board, and to find room for it inside the s.s.b. exciter, and to power it from 9 volts d.c. stolen from the exciter's plate supply. It could then be permanently wired in to the exciter, or connected to a front panel switch which could be labelled "compressor in/out".

COMPONENTS

The components are of course small. Half-watt resistors are used, and the small 6 and 10 volt electrolytic capacitors are employed. An r.f. choke is in-

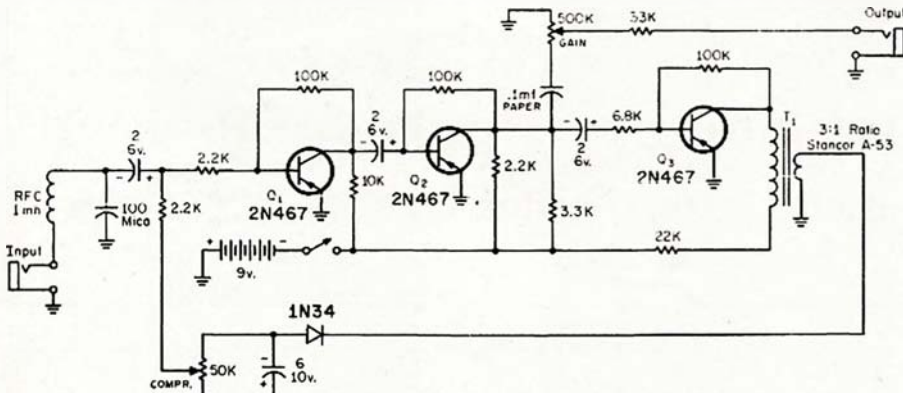


Fig. 1.—Circuit of the W3JHR Audio Compressor. The transistors are all 2N467 and the compression pot is a log taper.

only of the final amplifier but of all other stages in the transmitter as well. When I had the 1 kw. a.m. transmitter, I used a compressor[†] employing vacuum tubes. This was sold, however, and so I decided to build one using transistors.

CIRCUIT

The circuit of this simple unit is shown in Fig. 1. Three type 2N467 transistors are used. Two of them are the audio amplifier which drives the transmitter. The third is the audio amplifier which drives the 1N34 diode to produce the d.c. bias for gain control of the first stage. The unit is powered from a 9 volt battery. The type of battery commonly used in transistor radios can be used, but I prefer to use six 1½ volt flashlight batteries in series, because they last longer.

CONSTRUCTION

The compressor can be built in many ways. It can be built into a beer can, for example, with an input jack on one end and the output jack on the other end. The microphone can be plugged into the input end, and a length of shielded cable can then be run from the output jack of the compressor to the input jack of the transmitter. I built my unit in a 6 x 6 x 6 inch

cluded in the input circuit for the obvious purpose of protecting the input transistor from stray r.f. which it will rectify very beautifully. The only large component is the 3 to 1 audio transformer which drives the diode rectifier, and that is a Stancor A53 unit, which I used merely because I happened to have it in my junk box. No doubt a miniature type of 3 to 1 ratio could also be found and used. The bias control potentiometer, which controls the amount of compression, is a logarithmic taper which gives a smoother control of the compression than would a linear type.

GENERAL

There isn't much more that can be said about the unit itself because it is so simple. It has proven its worth many times, in providing a high average level of voice signal on s.s.b. with excellent "talk power," while at the same time preventing over-driving of the various stages in the exciter. It is particularly useful in this regard when running phone patches, because of the wide variations in audio level obtained from the party on the other end of the phone line. The unit has a fast attack time and a fairly slow release time, which is ideal for voice use. I heartily recommend its construction and use by those who desire to improve their s.s.b. signals.

Tinned Fuse Wire—Fusing Current and Time Values

Approx. Diam. (inches)	S.W.G.	Fusing Current (amp.)	Fusing Time (seconds)	Work. Current (amp.)
0.114	9			
0.128	10			
0.116	11	405		
0.104	12	344		
0.092	13	286		
0.086	14	232	29	77
0.072	15			
0.064	16	166	23	55
0.056	17			
0.048	18	108	18	36
0.040	19			
0.036	20	70	14	23
0.032	21	58	12	19
0.028	22	48	11	16
0.024	23	40	10	13
0.022	24	33	8	11
0.020	25	28.5	8	9.5*
0.018	26	25.0	7	8.0
0.0164	27	22.2	7	7.4
0.0148	28	18.0	6	6.0
0.0136	29	16.8	5.5	5.6
0.0124	30	14.0	5	4.7†
0.0116	31	12.7	5	4.2
0.0108	32	11.5	5	3.8
0.0100	33	10.2	4.6	3.4
0.0092	34	9.0	4.5	3.0‡
0.0084	35	7.9	4.4	2.6
0.0076	36	6.8	4.2	2.3
0.0068	37	5.7	4.1	1.9
0.0060	38	4.8	3.7	1.6
0.0052	39	3.8	3.5	1.3
0.0048	40	3.4	3.4	1.1
0.0044	41	3.0	3.3	1.0
0.0040	42	2.6	3.2	0.9
0.0036	43	2.2	3.2	0.7
0.0032	44	1.9	3.2	0.6
0.0028	45	1.6	3.2	0.5
0.0024	46	1.3	3.2	0.4
0.0020	47	1.0	3.2	0.3
0.0016	48			
0.0012	49			
0.0010	50			

* 10 amp. fuse wire.
† 5 amp. fuse wire.
‡ 3 amp. fuse wire.

Notes:

- Time figures are based on tests made—being approximate time from application of F.C. to cold wires until fusing of same.
- Maximum Working Current equals Fusing Current ÷ 3, based on tests made.
- Table figures apply to single tinned Cu wire in commercial fuse holders, open or tube type, where wires are not in close fitting to non-conductor of heat. For commercial holders where wire is closely surrounded by a non-conductor of heat, e.g. asbestos braid, multiply table figures by 0.75.
- For parallel strands twisted in single fuse holders of the open type, multiply the table figures by the following factors:

Strands:	1	2	3	4
Factor:	1.0	1.67	2.33	3.0
Strands:	5	6	7	8
Factor:	3.67	4.33	5.0	5.67
Strands:	9	10	11	12
Factor:	6.33	7.0	7.67	8.33

* Reprinted from "CQ," July 1967.
† Lee, P. H., LCDR, "More Modulation per Dollar," "CQ," August 1952, page 18.

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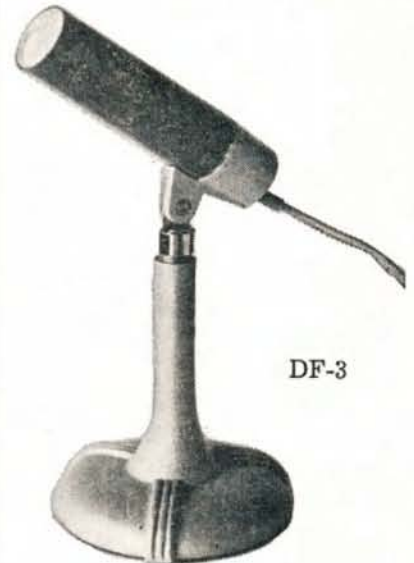
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OBJECTS

- 1.1 This Award was created in order to stimulate interest in working DX in Australia and to give successful applicants some tangible recognition of their achievements.
- 1.2 This Award, to be known as the "DX Century Club" Award, will be issued to any Australian Amateur who satisfies the following conditions.
- 1.3 A certificate of the Award will be issued to the applicants who show proof of having contacted one hundred countries, and will be endorsed as necessary, for contacts made using only one type of emission.

REQUIREMENTS

- 2.1 Verifications are required from one hundred different countries as shown in the Official Countries List.
- 2.2 The Official Countries List will be published annually in "Amateur Radio" and will be amended from time to time as required. Should a country be deleted from the Countries List at any time, members and intending members will be credited with such country if the date of contact was before such deletion.
- 2.3 The commencing date for the Award is 1st January 1946. All contacts made on or after this date may be included.

OPERATION

- 3.1 Contacts must be made in the H.F. Band (Band 7) which extends from 3 to 30 Mc., but such contacts must only be made in the authorised Amateur Bands in Band 7.

- 3.2 All contacts must be two-way contacts on the same band. Cross band contacts will not be allowed.
- 3.3 Contacts may be made using any authorised type of emission for the band concerned.
- 3.4 Credit may only be claimed for contacts with stations using regularly-assigned Government call signs for the country concerned.
- 3.5 Contacts made with ship or aircraft stations will not be allowed, but land-mobile stations may be claimed provided their specific location at the time of contact is clearly shown on the verification.
- 3.6 All stations must be contacted from the same call area by the applicant, although if the call sign is subsequently changed, contacts will be allowed under the new call sign providing the applicant is still in the same call area.
- 3.7 All contacts must be made when operating in accordance with the Regulations laid down in the "Handbook for the Guidance of Operators of Amateur Wireless Stations" or its successor.

VERIFICATIONS

- 4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that two-way contacts have taken place.
- 4.2 Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will be grounds for disqualification of the applicant.

- 4.3 Each verification submitted must show the date and time of contact, type of emission and frequency band used, the report and the location or address of the station at the time of contact.
- 4.4 A check list must accompany every application setting out the details for each claimed station in accordance with the details required in Rule 4.3.

APPLICATIONS

- 5.1 Applications for membership shall be addressed to the Federal Awards Manager, Box 2611W, G.P.O., Melbourne, Vic., 3001, accompanied by the verifications and the check list with sufficient postage enclosed for their return to the applicant, registration being included if desired.
- 5.2 A nominal charge of 25c, which shall also be forwarded with the application, will be made for the issue of the certificate to successful applicants who are non-members of the Wireless Institute of Australia.
- 5.3 Successful applicants will be listed periodically in "Amateur Radio". Members of the D.X.C.C. wishing to have their verified country totals over and above the one hundred necessary for membership, listed will notify these totals to the Federal Awards Manager.
- 5.4 In all cases of dispute, the decision of the Federal Awards Manager and two officers of the Federal Executive of the W.I.A. in the interpretation and application of these Rules shall be final and binding.
- 5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the W.I.A. reserves the right to amend them when necessary.

AUSTRALIAN V.H.F. CENTURY CLUB AWARD

OBJECTS

- 1.1 This Award has been created in order to stimulate interest in the V.H.F. bands in Australia, and to give successful applicants some tangible recognition of their achievements.
- 1.2 This Award, to be known as the "V.H.F. Century Club" Award, will be issued to any Australian Amateur who satisfies the following conditions.
- 1.3 Certificates of the Award will be issued to the applicants who show proof of having made one hundred contacts on the V.H.F. bands, and will be endorsed as necessary, for contacts made using only one type of emission.

REQUIREMENTS

- 2.1 Contacts must be made in the V.H.F. Band (Band 8) which extends from 30 to 300 Mc., but such contacts must only be made in the authorised Amateur Bands in Band 8.
- 2.2 In the case of the authorised bands between 30 and 100 Mc., verifications are required from one hundred different stations at least seventy of which must be Australian. The Amateur Bands 50 to 54 Mc. and 56 to 60 Mc. will be counted as one band for the purposes of the Award.
- 2.3 In the case of the authorised Amateur Band between 100 to 200 Mc. and any authorised band between 200 to 300 Mc., verifications from one hundred different stations for each band is required.
- 2.4 It is possible under these rules for one applicant to receive three certificates, one for each of the authorised Amateur Bands nominated in Rules 2.2 and 2.3.
- 2.5 The commencing date for the Award is 1st June, 1948. All contacts made on or after this date may be included.

OPERATION

- 3.1 All contacts must be two-way contacts on the same band, and cross band contacts will not be allowed.
- 3.2 Contacts may be made using any authorised type of emission for the band concerned.
- 3.3 Fixed stations may contact portable/mobile stations and vice versa, but portable/mobile station applicants must make their contacts from within the same call area.
- 3.4 Applicants, when operating either portable/mobile or fixed, may contact the same station licensee, but may not include both contacts for the same type of endorsement.
- 3.5 Applicants may only count one contact for a station worked as a limited licensee with a Z call sign who is subsequently contacted as a full A.O.C.F. holder.
- 3.6 All stations must be contacted from the same call area by the applicant, although if the applicant's call sign is subsequently changed, contacts will be allowed under the new call sign providing the applicant is still in the same call area.
- 3.7 All contacts must be made when operating in accordance with the Regulations laid down in the "Handbook for the Guidance of Operators of Amateur Wireless Stations" or its successor.

VERIFICATIONS

- 4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that two-way contacts have taken place.
- 4.2 Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will be grounds for disqualification of the applicant.
- 4.3 Each verification submitted must show the date and time of contact, type of emission and frequency band used, the report and the location or address of the station at the time of contact.

- 4.4 A check list must accompany every application setting out the following details:—
 - 4.4.1 Applicant's name and call sign, and whether a member of the W.I.A. or not.
 - 4.4.2 Band for which application is made, and whether special endorsement is involved.
 - 4.4.3 Where applicable, the date of change of call sign and previous call sign.
 - 4.4.4 Details of each contact as required by Rule 4.3.
 - 4.4.5 The applicant's location at the time of each contact if portable/mobile operation is involved.
 - 4.4.6 Any relevant details of any contact about which some doubt might exist.

APPLICATIONS

- 5.1 Applications for membership shall be addressed to the Federal Awards Manager, Box 2611W, G.P.O., Melbourne, Vic., 3001, accompanied by the verifications and the check list with sufficient postage enclosed for their return to the applicant, registration being included if desired.
- 5.2 A nominal charge of 25c, which shall also be forwarded with the application, will be made for the issue of the certificate to successful applicants who are non-members of the Wireless Institute of Australia.
- 5.3 Successful applicants will be listed periodically in "Amateur Radio". Members of the V.H.F.C.C. wishing to have their verified totals over and above the one hundred necessary for membership, listed will notify these totals to the Federal Awards Manager.
- 5.4 In all cases of dispute, the decision of the Federal Awards Manager and two officers of the Federal Executive of the W.I.A. in the interpretation and application of these Rules shall be final and binding.
- 5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the W.I.A. reserves the right to amend them when necessary.

AUSTRALIAN D.X.C.C. COUNTRIES LIST

	Phone	C.W.		Phone	C.W.
AC3	Sikkim		FR7	Tromelin Is.	
AC4	Tibet		FS7	Saint Martin	
AC5	Bhutan		FU8, YJ1, 8	New Hebrides	
AP	East Pakistan		FW8	Wallis & Futuna Is.	
AP	West Pakistan		FY7	Fr. Guiana & Inini	
BV (C3)	Formosa		G	England	
BY (C)	China		GC	Guernsey and Deps.	
CE	Chile		GC	Jersey I.	
CE9, KC4, LU-Z, VK0, VP8, ZL5	etc., Antarctica		GD	Isle of Man	
CE0A	Easter I.		GI	Northern Ireland	
CE0X	St. Felix I.		GM	Scotland	
CE0Z	J. Fernandez Arch.		GW	Wales	
CM, CO	Cuba		HA	Hungary	
CN2, 8, 9	Morocco		HB	Switzerland	
CP	Bolivia		HB0 (HE)	Liechtenstein	
CR3	Portuguese Guinea		HC	Ecuador	
CR4	Cape Verde Is.		HC8G	Galapagos Is.	
CR5	Principe, Sao Thome		HH	Haiti	
CR6	Angola		HI	Dominican Rep.	
CR7	Mozambique		HK, 5J	Colombia	
CR8, 10	Port. Timor		HK0	Arch. of San Andres and Providencia	
CR9	Macao		HK0	Bajo Nuevo	
CT1	Portugal		HK0	Malpelo Is.	
CT2	Azores		HL, HM	Korea	
CT3	Madeira Is.		HP	Panama	
CX	Uruguay		HR	Honduras	
DJ, DL, DM	Germany		HS	Thailand	
DU	Philippine Is.		HV	Vatican	
EA	Spain		II, IT1	Italy	
EA6	Balearic Is.		IS1	Sardinia	
EA8	Canary Is.		JA, KA	Japan	
EA9	Ifni		JT1	Mongolia	
EA9	Rio de Oro		JY	Jordan	
EA9	Spanish Morocco		K, W	U.S.A.	
EA0	Spanish Guinea		KA0, KG6I	Bonin & Volcano Is.	
EI	Rep. of Ireland		KB6	Baker, Howland and Am. Phoenix I. (inc. Canton I.)	
EL	Liberia		KC4	Navassa I.	
EP, EQ	Iran		KC6	Eastern Caroline Is.	
ET2, 3, 9E	Ethiopia		KC6	Western Caroline Is.	
F	France		KG4	Guantanamo Bay	
FB8	A'dam & St. Paul Is.		KG6	Guam	
FB8	Crozet Is.		KG6	Marcus I.	
FB8	Kerguelen Is.		KG6 (Rota, Tinian, Saipan, etc.)		
FC	Corsica			Mariana Is.	
FG7	Guadeloupe		KH6	Hawaiian Is.	
FH8	Comoro Is.		KH6	Kure I.	
FK8	New Caledonia		KJ6	Johnston I.	
FL8	Fr. Somaliland		KL7	Alaska	
FM7	Martinique		KM6	Midway Is.	
FO8	Clipperton I.		KP4	Puerto Rico	
FO8	Fr. Oceania		KP6	Palmyra Group, Jarvis I.	
FO8	Maria Theresa		KR6	Ryukyu Is.	
FP8	St. Pierre & Miq. Is.		KS4B	Ser'na Bank & Roncad Cay	
FR7 (from 25/6/60)	Glorioso I.		KS4	Swan Is.	
FR7 (from 25/6/60)	Juan de Nova and Europa Is.		KS6	American Samoa	
FR7	Reunion I.		KV4	Virgin Is.	

	Phone	C.W.
KW6	Wake I.	
KX6	Marshall Is.	
KZ5	Canal Zone	
LA	Bouvet I.	
LA, JX	Jan Mayen	
LA	Norway	
LA, JW	Svalbard	
LU	Argentina	
LX	Luxembourg	
LZ	Bulgaria	
MP4B	Bahrein	
MP4Q	Qatar	
MP4D, T	Trucial Oman	
OA	Peru	
OD5	Lebanon	
OE	Austria	
OH	Finland	
OH0	Aland Is.	
OK	Czechoslovakia	
ON4	Belgium	
OX, KG1, XP	Greenland	
OY	Faeroes	
OZ	Denmark	
PA0, PI1	Netherlands	
PJ	Neth. West Indies	
PJ2M	Sint Maarten	
PX	Andorra	
PY	Brazil	
PY0	Fernando de Noronha	
PY0	St. Peter & Paul Rocks	
PY0	Trindade & Martin Vaz Is.	
PZ1	Netherlands Guiana	
SL, SM	Sweden	
SP	Poland	
ST2	Sudan	
SU	Egypt	
SV	Crete	
SV	Dodecanese	
SV	Greece	
TA	Turkey	
TF	Iceland	
TG	Guatemala	
TI	Costa Rica	
TI9	Cocos I.	
TJ (FE8)	Cameroon Rep.	
TL8 (from 13/8/60)	Cen. Afric. R.	
TN8 (from 15/8/60)	Congo Rep.	
TR8 (from 17/8/60)	Gabon Rep.	
TS (3V8)	Tunisia	
TT8 (from 11/8/60)	Chad Rep.	
TU2 (fr. 7/8/60)	Ivory Coast Rep.	
TY2 (fr. 1/8/60)	Dahomey Rep.	
TZ2 (from 20/6/60)	Mali Rep.	
UA, UV, UW1-6, UN1	Eur. R.S.F.S.R.	
UA1	Franz Josef Land	
UA2	Kaliningrad Region	
UA, UW9, 0	Asiatic R.S.F.S.R.	
UB5, UT5, UY5	Ukraine	
UC2	White Russian S.S.R.	
UD6	Azerbaijan	
UF6	Georgia	

	Phone	C.W.
UG6	Armenia	
UH8	Turkoman	
UI8	Uzbek	
UJ8	Tadzhik	
UL7	Kazakh	
UM8	Kirghiz	
UO5	Moldavia	
UP2	Lithuania	
UQ2	Latvia	
UR2	Estonia	
VE, VO	Canada	
VK	Australia	
VK2	Lord Howe Is.	
VK4	Willis Is.	
VK9	Christmas I.	
VK9, ZC3	Cocos Is.	
VK9	Nauru I.	
VK9	Norfolk I.	
VK9	Papua Terr.	
VK9	Terr. of New Guinea	
VK0	Heard I.	
VK0	Macquarie I.	
VP1	British Honduras	
VP2	Anguilla	
VP2	Antigua, Barbuda	
VP2	Br. Virgin Is.	
VP2	Dominica	
VP2	Grenada & Deps.	
VP2	Montserrat	
VP2	St. Kitts, Nevis	
VP2	St. Lucia	
VP2	St. Vincent & Deps.	
VP3 (see 8R)		
VP5	Turks & Caicos Is.	
VP6	Barbados	
VP7	Bahama Is.	
VP8	Falkland Is.	
VP8, LU-Z	South Georgia	
VP8, LU-Z	South Orkney Is.	
VP8, LU-Z	South Sandwich Is.	
VP8, LU-Z, CE9	Sth. Shet. Is.	
VP9	Bermuda Is.	
VQ8	Agalega & St. Brandon	
VQ8	Chagos Is.	
VQ8	Mauritius	
VQ8	Rodriguez I.	
VQ9	Aldabra Is.	
VQ9D (from 10/11/65)	Desroches	
VQ9F (fr. 10/11/65)	Farquhar Is.	
VQ9	Seychelles	
VR1 (includ. Canton Is.)	British Phoenix Is.	
VR1	Gilbert & Ellice Is., Ocean Is.	
VR2	Fiji Is.	
VR3	Fanning & Christmas Is.	
VR4	Solomon Is.	
VR5	Tonga Is.	
VR6	Pitcairn I.	
VS5	Brunei	
VS6	Hong Kong	

	Phone	C.W.
VS9A, P, S	Aden and Socotra	
VS9H	Kuria Muria	
VS9K	Kamaran Is.	
VS9M	Maldive Is.	
VS9O, MP4M	Sultanate of Oman	
VU2	India	
VU	Laccadive Is.	
VU	Andaman & Nicobar Is.	
XE, XF	Mexico	
XF4	Revilla Gigedo	
XT2 (from 5/8/60)	Voltaic Rep.	
XU	Cambodia	
XW8	Laos	
XZ2	Burma	
YA	Afghanistan	
YI	Iraq	
YK	Syria	
YN, YN0	Nicaragua	
YO	Roumania	
YS	Salvador	
YU	Yugoslavia	
YV	Venezuela	
YV0	Aves I.	
ZA	Albania	
ZB2	Gibraltar	
ZC6	Palestine	
ZD3	The Gambia	
ZD5 (ZS7)	Swaziland	
ZD7	St. Helena	
ZD8	Ascension Is.	
ZD9	T. da Cunha and Gough Is.	
ZE	Southern Rhodesia	
ZF (VP5)	Cayman Is.	
ZK1	Cook Is.	
ZK1	Manihiki Is.	
ZK2	Niue	
ZL	Chatham Is.	
ZL	New Zealand	
ZL1	Kermadec Is.	
ZL4	Auckland and Campbell Is.	
ZM7	Tokelaus	
ZP	Paraguay	
ZS1, 2, 4, 5, 6	Rep. of S. Africa	
ZS2	Prince Ed. and Marion I.	
ZS3	South-West Africa	
ZS8 (Basutoland)	Lesotho	
ZS9 (Bechuanal'd)	Botswana Rep.	
1M	Minerva Reef	
1S	Spratly Is.	
3A	Monaco	
3C (see VE)		
3W8, XV5	Vietnam	
3Y (see LA)		
4S7 (VS7)	Ceylon	
4U1	I.T.U. Geneva	
4W1	Yemen	
4X4, 4Z (from 14/5/48)	Israel	
5A	Libya	
5B4 (ZC4)	Cyprus	
5H1 (VQ1)	Zanzibar	
5H3 (VQ3)	Tanganyika	
5N2 (ZD2)	Nigeria	
5R8 (FB8 Madagascar)	Malagasy	

	Phone	C.W.
5T5 (from 20/6/60)	Mauritania	
5U7 (from 3/8/60)	Niger Rep.	
5V (F.D.)	Togolese Rep.	
5W1 (ZM6)	Samoa	
5X5 (VQ5)	Uganda	
5Z4 (VQ4)	Kenya	
6O1, 6O2 (fm. 1/7/60)	Somalia R.	
6W8 (from 20/6/60)	Senegal Rep.	
6Y (VP5)	Jamaica	
7G1 (from 1/10/58)	Rp. of Guinea	
7Q7 (ZD6, Nyasaland)	Malawi	
7X (FA)	Algeria	
7Z (HZ)	Saudi Arabia	
8F (from 1/5/63)	Indonesia	
8R (VP3 Br. Guiana)	Guyana	
8Z4	Saudi Arabia-Iraq N.Z.	
8Z5 (9K3)	Saudi Ar.-Kuwait N.Z.	
9A (MI)	San Marino	
9G1 (from 5/3/57)	Ghana	
9H1 (ZB1)	Malta	
9J (VQ2, N. Rhod.)	Zambia	
9K2	Kuwait	
9L1 (ZD1)	Sierra Leone	
9M2 (from 16/9/63)	W. Malaysia	
9M6, 9M8 (from 16/9/63)	East Malaysia	
9N1	Nepal	
9Q5 (pr. OQ5-0)	R. of The Congo	
9U5 (from 1/7/62)	Burundi	
†9V1 (9M4, VS1)	Singapore	
9X5 (from 1/7/62)	Rwanda Rep.	
9Y4 (VP4)	Trinidad and Tobago	

† From 16/9/63 to 8/8/65 counts as West Malaysia.

"DELETED" COUNTRIES LIST

C9 (prior 1/1/64)	Manchuria
CN2 (prior 1/7/60)	Tangier
CR8 (prior 1/1/62)	Goa
ET2 (prior 14/11/62)	Eritrea
FF8	French West Africa
FI8 (pr'r 20/7/55)	Fr. Indo China
FN (prior 1/11/54)	French India
FQ8	Fr. Equatorial Africa
11 (prior 1/4/57)	Trieste
I5 (prior 1/7/60)	It. Somaliland
JZ0 (pr'r 1/5/63)	W. New Guinea
PK1, 2, 3 (prior 1/5/63)	Java
PK4 (prior 1/5/63)	Sumatra
PK5 (prior 1/5/63)	Borneo
PK6 (prior 1/5/63)	Celebes and Mollucca Is.
UN1 (prior 1/7/60)	Kar-Fin. Rep.
VO (prior 1/4/49)	Newf./Lab.
VQ6 (prior 1/7/60)	Br. Somalil'd
VS4 (prior 16/9/63)	Sarawak
ZC5 (pr. 16/9/63)	Br. Nth. Borneo
ZD4 (pr. 5/3/57)	Gold Coast, Togo
9M2, VS2 (prior 16/9/63)	Malaya
9S4 (prior 1/4/57)	Saar
9U5 (from 1/7/60 to 30/6/62)	Ruanda-Urundi

NEW CALL SIGNS

SEPTEMBER 1957

VK1ZAF—W. B. R. Brooks, P.O.E.C., Cottage 64, H.M.A.S. Harman, Canberra, 2600.
 VK1ZGX—P. G. M. Bruer, 8 Merrit Pl., O'Connor, 2601.
 VK2BGP—G. I. Post, 32 Rutherford St., Blacktown, 2148.
 VK2BHC—La Hermandad De La Costa Radio Club (Sect.), 53 Wyong Rd., Mosman, 2088.
 VK2BLY—L. T. Young, 2 Iredale Ave., Crenorne, 2090.
 VK2BTL—A. M. La Macchia, 26 Derby Rd., Hornsby, 2077.
 VK2ZNV—M. F. Veevers, 46 Haig St., Wentworthville, 2145.
 VK2ZSI—R. L. Close, 37 Bombala St., Dudley, 2290.
 VK3AQE—P. J. Woodyard, Goulburn Valley H'way, South Shepparton, 3630.
 VK3ZUQ—B. R. K. Smart, 19 Hyslop Pde., East Malvern, 3144.
 VK3ZWG—S. R. Gregory, 30 Grandview Rd., Brighton North, 3186.
 VK3ZZD—D. K. Morgan, 13 Bowden St., Wendouree, 3355.
 VK3ZZH—K. J. Hollinrake, 49 Mayfield Ave., Malvern, 3144.
 VK4HP—T. T. Hopgood, 47 Maxwell St., New Farm, 4005.
 VK4HX—D. S. Roden, 3 Woodford St., Holland Park, 4121.
 VK4IJ—J. A. Bowgen, 4 Cairns St., Rockhampton, 4700.
 VK4KR—E. W. Davis, 39 Miva St., Cooroy, 4563.
 VK4PM—J. G. Porter, Station: Nelly Bay, Magnetic Island, via Townsville, 4810; Postal: C/o. Nelly Bay P.O., Magnetic Island, via Townsville, 4810.
 VK4RK—E. R. Harvey, 3 Paradise Pl., Surfers Paradise, 4217.
 VK4ZBA—A. H. Barnes, 61 Meemar St., Chermaside, 4032.
 VK4ZDW—D. W. Rickard, 47 Market St., Toowong, 4066.
 VK4ZGW—G. W. Shield, 14 Cameron St., Fairfield, 4103.

VK4ZKT—K. H. Tietze, 9 Normal Pde., Eagle Junction, 4011.
 VK4ZLY—L. R. Yarrow, 16 Makepeace St., Rosewood, 4340.
 VK4ZSM—S. J. Madsen, 30 Pope St., Tarragindi, 4121.
 VK5FI—R. E. Gunnourie, Station: Portable in South Australia; Postal: C/o. Superintendent, Radio Branch, P.M.G. Dept., 31 Franklin St., Adelaide, 5000.
 VK5MP—L. N. Porter, John Dallwitz Ave., Angoston, 5353.
 VK5XV—G. A. Van der Harst, 31 Dudley Cres., Marino, 5049.
 VK5YN—A. V. Newman, 78 McKenzie Rd., Elizabeth Downs, 5113.
 VK5ZIF—I. D. Foster, 40 Addison Rd., Hove, 5048.
 VK6AI—P. C. Cole, 42 McGillivray Ave., Morley Park, 6062.
 VK6LJ—L. J. Smith, Lot 55, McGillivray Ave., Morley Park, 6062.
 VK7MD—D. R. Marsland, 16 Nimrin St., Howrah, 7018.
 VK7ZNS—N. Stutterd, 60 View Rd., Burnie, 7320.
 VK8ZEB—E. S. Blackburn, 623 Dudley St., Rapid Creek, 5782.
 VK9ZDW—D. McC. Weston, Station: D.C.A., Single Men's Quarters, Konedobu, Port Moresby; Postal: C/o. D.C.A., P.O. Box 80, Port Moresby.
 VK9ZGV—G. W. Van Galen, Station: No. 67, 5th St., Lae, T.P.N.G.; Postal: C/o. D.C.A., Box 102, Lae, T.P.N.G.

VK3AZK—J. L. Thomason, Transferred Interstate.
 VK4TW—C. I. Ferris.—Not renewed.
 VK4VW—V. J. Wilson.—Ceased operation.
 VK4ZCF—J. L. Eaton.—Ceased operation.
 VK4ZEE—P. J. Fitzherbert.—Transferred Victoria.
 VK4ZKJ—E. W. Davis.—Now VK4KR.
 VK5AS—Phillips Electrical Industries Pty. Ltd.—Ceased operation.
 VK5OE—D. E. Sillar.—Not renewed.
 VK5ZLP—L. N. Porter.—Now VK5MP.
 VK5ZXR—G. A. Van der Harst.—Now VK5XV.
 VK6MJ—A. C. MacPherson.—Left country.
 VK6ZEX—B. C. Campbell.—Not renewed.
 VK7ZMD—D. R. Marsland.—Now VK7MD.

BACK NUMBERS OF "AMATEUR RADIO"

Are your files complete? If not, check if the issues you need are still available. We have limited supplies of the issues listed below.

Copies up to 1960 can be had for 15 cents per copy including postage. 1961 to 1966 inclusive, 25 cents per copy including postage.

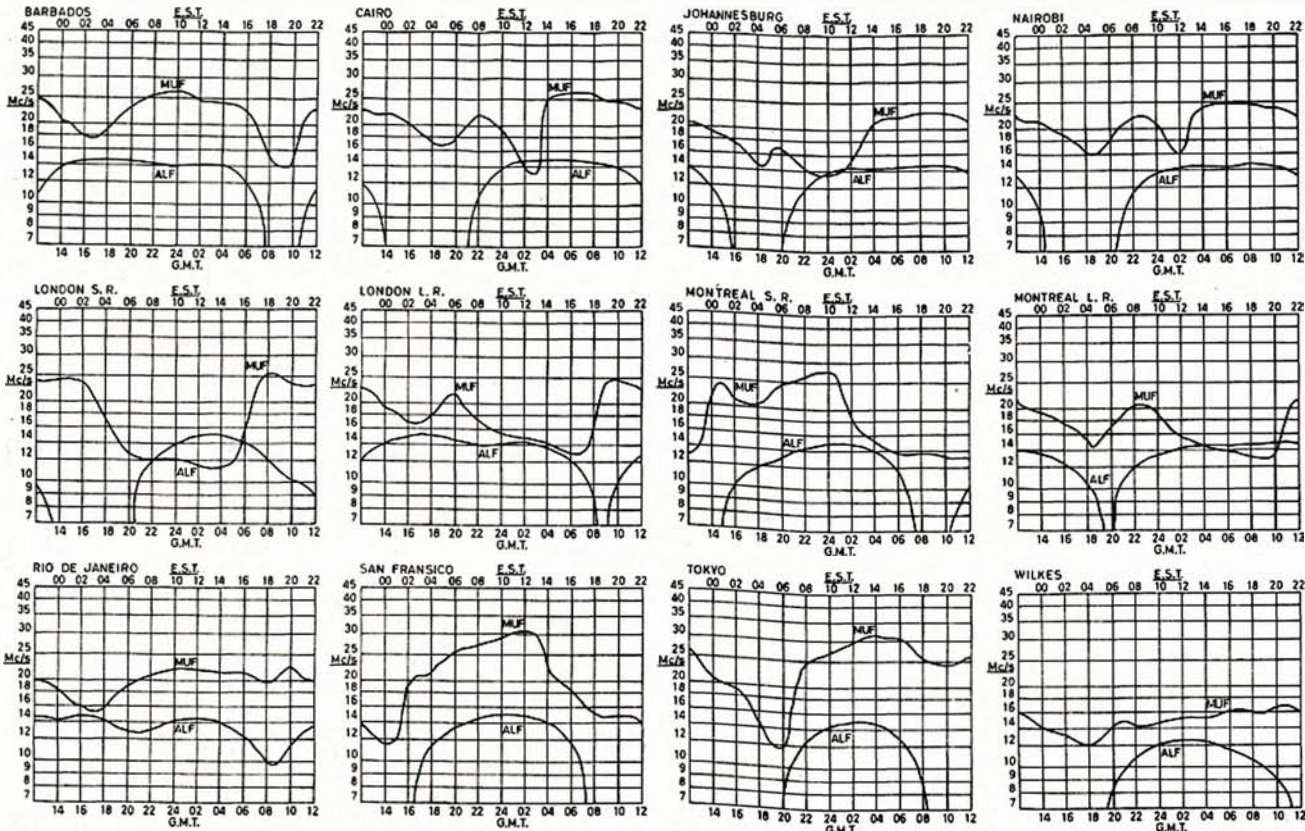
- 1955: March, May, June, October, November.
- 1956: February, April, May, June, October, December.
- 1957: February, October, November.
- 1958: April, May, November, December.
- 1959: March, May, June, August, September, October, December.
- 1960: March, April, June, July, October.
- 1961: April, May, June, July, August, September, October, November, December.
- 1962: February only.
- 1963: June, July, August, September, October, November, December.
- 1964: All months except July.
- 1965: All months.
- 1966: All months except October and December.
- 1967: February, March, April, May, June, October, November, December.

CANCELLATIONS

VK2XX—E. C. Howard.—Not renewed.
 VK2YS—N. E. Littlejohn.—Not renewed.
 VK2ZG—H. Cullerton.—Deceased.
 VK2ALM—L. L. McGarry.—Now VK1AM.
 VK2AMG—L. M. Burston.—Transferred Interstate.
 VK2AXF—A. Stewart.—Not renewed.
 VK2BMF—M. N. Featherstone.—Not renewed.
 VK2ZBU—A. M. La Macchia.—Now VK2BTL.
 VK2ZEJ—B. J. Mason.—Not renewed.
 VK2ZGP—G. I. Post.—Now VK2BGP.
 VK2ZJB—S. J. Brown.—Not renewed.
 VK2ZRL—R. F. Lester.—Transferred Interstate.
 VK2ZRS—R. de W. Satchell.—Not renewed.
 VK3AON/T—A. J. Henry.—Not renewed.

PREDICTION CHARTS FOR JANUARY 1968

(Prediction Charts by courtesy of Ionospheric Prediction Service)



Rules for the Australian S.W.L. Century Club Award

OBJECTS

1.1 This award was created in order to stimulate interest in logging DX in Australia, and to give successful applicants some tangible recognition of their achievements.

1.2 This award, to be known as the "S.W.L. Century Club Award," will be issued to any resident Australian Short Wave Listener who satisfies the conditions following:

1.3 A certificate of the award will be issued to any applicants who produce proof of having logged one hundred countries, and will be endorsed, as necessary, for loggings made in respect of one type of emission.

REQUIREMENTS

2.1 Verifications are required from one hundred different countries as shown in the official "Australian DXCC Countries List".

2.2 The official countries list will be published annually in "Amateur Radio" and will be amended from time to time as required. Should a country be deleted from the list at any time, members and intending members will be credited with such country if the date of logging was before such deletion.

2.3 The commencing date for the award is 1st January, 1946. All loggings made on or after that date may be included.

OPERATION

3.1 Loggings must be made in the h.f. band (Band 7), which extends from 3 to 30 Mc, but each logging must only be made of stations operating in the authorised Amateur Bands in Band 7.

3.2 Loggings may be made of any authorised type of emission for the band concerned.

3.3 Credit may only be claimed for the logging of stations using regularly-assigned government call signs for the country concerned.

3.4 Loggings of ship or aircraft stations will not be allowed, but land-mobile stations may be claimed, provided their specific location at the time of logging is clearly shown on the verification.

3.5 All stations must be logged from the same call area by the applicant.

VERIFICATIONS

4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards,

or other written evidence showing that specific loggings have been made.

4.2 Each verification submitted must be exactly as received from the station whose signals were logged and altered or forged verifications will lead to the rejection of that card, and may lead to the disqualification of the applicant.

4.3 Each verification submitted must show the call sign, the date, and the time of contact, type of emission and frequency band used, and the location or address of the station at the time of logging.

4.4 A check list must accompany every application setting out the following details:

- 4.4.1 Applicant's name and listener number, if any, and whether a member of the W.I.A. or not;
- 4.4.2 Details of any special endorsement involved;
- 4.4.3 Details of each contact as required by Rule 4.3;
- 4.4.4 The applicant's location at the time of each logging if portable/mobile operation is involved;
- 4.4.5 Any relevant details of any contact about which some doubt may exist.

APPLICATIONS

5.1 Applications for membership shall be addressed to the "S.W.L. Awards" Manager, G.P.O. Box 2611W, Melbourne, Victoria, 3001, accompanied by the verifications, check list and sufficient postage for the return of the verifications, registration being included if desired.

5.2 A nominal charge of 25c, which shall also be forwarded with the application, will be made for the issue of the certificate to successful applicants who are non-members of the Wireless Institute of Australia at the time of application.

5.3 Successful applicants will be listed periodically in "Amateur Radio".

5.4 In all cases of dispute, the decision of the S.W.L. Awards Manager and two officers of the Federal Executive of the W.I.A. in the interpretation and application of these rules shall be final and binding.

5.5 Notwithstanding anything to the contrary in these rules, the Federal Council of the W.I.A. reserves the right to amend these when necessary.

2 METRE S.S.B. TRANSMITTER

(Continued from Page 3)

registering on the g.d.o., I tracked back through and found it.

All the sockets were the ceramic type with shields; shielding was finally incorporated in the final 3/12 when it was decided to run it as a 10 watt mobile.

Zener diodes replaced the cathode resistors, clamping the bias at -20 volts, which, along with the 150v. screen regulation, gave quite a copyable signal on 144 Mc.

A test over 10 miles from beam to vertical dipole gave quite good results. The speech quality was fairly harsh but this was cured by a few capacitors in the audio pre-amplifier.

VK3ZBJ taped several overs and played them back. The overall results were very satisfactory and the hours spent building the rig were justified.

This rig draws approximately 200 mA. and mobile operating comes easy due to the crystal control.

If a v.f.o. is to be used, it would be a simple matter to build up a stable v.f.o. with an output at 112 Mc. This can be fed to the grid of the quadrupler or another way would be to use the 6EJ7 as a frequency multiplier to 111 Mc. from a lower frequency v.f.o.

W.I.A. D.X.C.C. (S.W.L.)

Listed below are details relating to those Australian Short Wave Listeners to whom this certificate has been awarded:—

Cert. No.	Call	Name	Date Awarded
1.	L3042	Eric Trebilcock	1/11/65
2.	L2022	Don Grantley	28/12/65
3.	L3211	Warwick Smith	31/3/66
4.	L4018	Chas. Thorpe	11/7/66
5.	L5080	Ernie Luff	25/1/67
6.	L3229	Bob Halligan	18/11/67

TECHNICAL ARTICLES

Readers are requested to submit articles for publication in "A.R.," in particular constructional articles, photographs of stations and gear, together with articles suitable for beginners, are required.

Manuscripts should preferably be typewritten but if handwritten please double space the writing. Drawings will be done by "A.R." staff.

Photographs will be returned if the sender's name and address is shown on the back of each photograph submitted.

Please address all articles to the
EDITOR "A.R.,"
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 EAST MELBOURNE, C.2,
 VICTORIA.

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SWL

Sub-Editor: D. GRANTLEY, WIA-L2022
P.O. Box 222, Penrith, N.S.W., 2750

Much is being written at the present time and research is being undertaken in order to preserve data on the early days of radio. Many of our older listeners could add much of interest to these writings, so I have asked a man who has been associated with listening since the early days to pass on to us his impressions of the days gone by, and without further ado, I pass these notes over to the pen of Harry Major, who will continue with this series over a few months.

IN THE BEGINNING

"I was fortunate to be old enough in the early 20s to take an active interest in wireless, as it was then known. From the pre-war stage, radio had developed tremendously, and it came as a great thrill when we were able to listen to music and speech in place of Morse and time signals from VIM in the Domain, Melbourne. The amateurs, or experimenters as they were called, were becoming more active and testing of equipment and transmission was carried out by broadcasting musical recordings. Owing to attending evening classes, my activities were somewhat curtailed, and it was not until 1923 that I was able to make anything more than a crystal set. Audio parts were scarce, circuits and reliable information had to be home made. Fortunately, through my work, I was able to construct many pieces quite easily, assisted by a fellow enthusiast from the P.M.G. Department. One of our local Amateurs, who had opened a radio business, became friend and mentor of many would-be listeners. He used to broadcast regular evening sessions, and this helped to create greater interest. VK3WA was the first station I ever listened to.

"I did not keep records of those early days, and so some of my facts may not be correctly placed, and others omitted. The foregoing was the basis of an article of mine which appeared in the 'Listener In' of Jan. 18, 1936, since then I have collected anything historical which has appeared in radio magazines, together with a large collection of information and short wave radio circuits, copies of which are available to S.w.l.'s on request (and a stamped envelope).

"English wireless magazines were by now publishing details of radio sets, and parts were available. Earphones were plentiful in Australia, but almost everything else, including tuning condensers, fixed condensers, grid-leaks and of course coils, had to be made by hand, and it was some time before loudspeakers came on the market. In 1923, a crystal set took up as much space as a large valve set did a few years later. Bright emitter valves were in use, and later a new series of dull emitter valves became available. These had a lower filament consumption and became very popular, their advantages were quickly recognised and their faults soon learned.

Before the days of metal chassis and cabinets, hand capacitance was a problem, parts had to be widely spaced, the wiring in bright tinned bus-bar, uninsulated, had to be carefully set out to avoid inductance. Quite a number of listeners learned, to their sorrow, the usual effect of dropping something metallic into the wiring whilst the set was in operation. Tuning was usually carried out by means of long ebonite handles and then under difficulties. Fine tuning was impossible, reaction controls and too close coupling coils caused considerable interference, or 'joys' as they became known.

"Aerials were long, high and often elaborate; two, three or more wires spaced a few feet apart, and as transmitting stations used comparatively low power, every effort had to be made to catch the often elusive signals."

TOP BAND IN VK

Following the remarks from George Allen on top-band activity in the U.K., I have asked well known 1.8 Mc. enthusiast, John VK5KO, to give us a run-down on what to expect here in Australia. Firstly here in VK, conditions are vastly different from those in England or on the continent, where a few watts and a piece of anything for an antenna will get you a host of contacts. Not so out here, for much of the gear used by the G boys just would not be adequate out here in the vastness of VK.

John stresses the point that the moist soil of G-land is a big factor over there. Thus, for the attempt to operate on top band out here, we must look to our antenna as a basic requirement. On this matter, I quote John, "Obviously, the best antenna on any band is a matter of opinion, but basically the minimum technical requirement for a base level result is that it be at least a half wavelength long, and half wavelength above earth. At 1.8 Mc. this would involve an antenna 260 ft. long and 250 ft. high. A 520 ft. top would be better for all round reception. If this is not possible, then a vertical antenna of 130 ft. (quarter wave) with at least eight radials of 130 ft. buried, and fanning out at 45 degree angles. These structures are actually minimal, for reasonable reception."

It would appear that in this area, 1.8 Mc. is not a S.w.l.'s band, as will be seen from the following summary of John's letter. Firstly, it needs complete darkness along the entire path of the contact; this is more evident on this band than on 40 or 80. Sigs. are weaker, and QRN levels under good conditions are very high. Obviously the QRN and the signals come by the same media, so if conditions (say to central U.S.A.) are excellent, you will also have a contribution from every thunder and electrical storm on route.

John has just finished a half yearly report for W.I.B.B. This covers, in fact, a period of 14 months, in which time VK5KO had only 30 DX contacts on a few isolated openings. Four on one night, three on one other, two on two other occasions, and the remainder being single contacts with long gaps in between. A four-month 40-night sked with two W stations, January to May 1967, resulted in only one QSO (in mid March), and that 339 each way—it is doubtful if anybody who had not been solidly experienced in weak DX would have heard them.

Summary, unless the listener is an experienced DX man, able to read exceptionally weak c.w. signals, and has at least the minimum antenna for this band, then top band is out for him. However it is a challenge for chaps who are capable of reading through QRN and can copy c.w. speeds are of necessity very slow, and contacts are positive. There are only a handful of experienced c.w. operators amongst the S.w.l.'s of Australia, probably in the world, and it would be a rare thing for a listener to have a DX card from a 1.8 Mc. contact from this country.

PERSONAL NOTES

Eric L3042 has had QSLs from 100 countries this year (to end October), an objective he tries for each year. In November, he reported hearing some excellent DX on 7 and 14 Mc. c.w., including VQ9JW (Aldabra) for his 301st country heard (all time). ETSFMA (K4FMA), VS8DO, GW3NDB, ZC4RB, 9V1LK, EP2BQ, VQ9JW, 5Z4SS and ZS60S were the plums on 7 Mc., whilst on 14 Mc. he heard these: VS-9AWA, H1BLAL, FK8BL, PY1FK, HK3BAE, 9M8II, 7X0WW, PY7TY, HK7UL, ZD5X, ZE-3JO, VQ8CC, CR7BN, 5R8AM, ZS2CV, 5Z4SS, MP4BEU, CR7IZ, 45TEC, PY2SO, ETSUSA, ZE2KV, 9J2GT and XW8BP.

Ern Luff has received his second Canadian award, this time the Calgary Stampede award. Little doubt he would be the first VK S.w.l. to receive it, maybe first S.w.l. in the world.

DX NEWS

I have nothing of interest this month, however, as promised, here are some more DX stations who QSL via the courtesy of W2CTN: PY7BAC/PY0, PZ1AP, SL1CF, TA3BC, TG-9AL, T1ZCMF, T12WD, T21A, VE1AS/VE1, VK2AYY/VK2, CK2FR/VK2, VK9s AG, JK, MJ, NT, RR, SB and TD; VP1TA, VP2s AP, KH, KT and LD; VP3RW, VP4TR, VP5BP, VP5IG, VP6BA, LJ and PV; VP7BP, CS and NY; VP8AI and HJ; VR2DA, VR2DK, VS9MB, MP and PHH; VU2GW, VU2JA, WGTGA/8F4, XW8AI/FG7, YA1YL, YS1CN, 1M, MM, RSE and SB; ZC4CZ and SG; ZD3F, ZD3H, ZSSM, ZD8BC, HB, HI and RH; ZD9AM and HL; ZE1AY and BK; ZK1PK, ZSSWE, ZSM, ZSG, 3A2BZ, 3A0DK, 4W1C, D and F; 5A2CW, 5A3-CAD, 5B4AA, C2, RA and TC; 5H5HV, 5J3LR, 5N2DCP, ACE and KHK; 5X5IG, 5Z4IV, 7X2CT, 7Z1AA, 9G1BQ, CW and DV; 9J2IE, 9L1BC, 9M2YY, 9M4LP, 9M6BM, 9Q5IG, 9Q5KG, 9V1LP and 9Y4TR. This is the complete list, which was correct at end of October, 1967.

Again, we remind you that John W2CTN does a wonderful job handling all these QSLs and is naturally out of pocket in doing so. It is to the benefit of all S.w.l.'s that your reports to him be 100 per cent. accurate, contain at least the minimum data of date, time in GMT, band, mode of operation, station being worked (stations called and not worked or CQ calls are rarely if ever, entered in the log, so don't waste your time and John's by reporting these transmissions), RST of both stations if possible, these are the minimum requirements for a S.w.l. report. Better still,

if you can include details of several successive contacts, band conditions, weather conditions, and anything else of interest.

I doubt if he (or any other manager or DX station for that matter) will be interested in the DX scores and particulars of awards which S.w.l.'s have obtained, a courteous request for a card "for award purposes" will do more for any individual, and S.w.l.'s in general, than the often forwarded "Skite Sheet".

The S.w.l. movement is at the present time facing the hardest period I believe, irresponsible and unethical operators have brought the hobby into ridicule. It is the duty of every S.w.l. to do everything in his power to raise the standard of his activities so that the appreciation of our efforts will be increased, and to do this, it will be necessary for every group and office-bearer to look hard at his own "doings" to ensure that never again will any Amateur be able to refer to us as the Division's "problem children," and be recognised for what we are, not a parasitical branch of the hobby, but co-members (paid up to the end of the financial year), interested in hearing, learning, uniting with, and doing anything we can to assist in the operation of Amateur Radio in general.

There is no room in the S.w.l. movement, or in any organisation for that matter, for the smartie, the person who wants to push his own interests to the detriment of the group, and the W.I.A. in general. Don't forget that the Amateur is a far more experienced man and certainly in most cases, knows far more about radio and operating, and the hobby in general, thus is entitled to your respect. Don't insult him by demanding a S.w.l. QSL card, particularly with a half completed or inaccurate report, but approach him in a courteous manner, treat him with respect. After all, we are in no position to demand, and when writing to either a local or overseas DX man, extend to him the courtesy of either a stamped envelope or an I.R.C. in the case of the overseas operator. I cannot stress this last matter too highly. DX operators are plagued by dozens of requests for cards, and even by using the bureau, considerable expense can be incurred in return for some information of very doubtful value, for all DX men, regardless of location, know the ability of their gear, and where and when they can work into a given locality.

In other words, chaps, we must in many cases raise the standard of our activities and our approach, or we've had it.

All for this year, thanks to all who have assisted in 1967, and all the best for 1968. —L2022.

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

LEARNING THE CODE

Editor "A.R.," Dear Sir,
There has recently been a noticeable increase in the number of Amateurs who are converting their Limited licence to the Full licence. This is very gratifying, for the full licence offers much more scope, whether the interests lie in building or operating. However, the study of Morse is one that demands persistence and practice; and of late, some students have been learning the code with a system that has a very serious disadvantage. In this system, the characters are sent fairly fast (about 18 to 20 w.p.m.) and the overall speed is reduced by increasing the spacing between each letter. Whilst this system has the advantage of helping the student to recognise fairly fast code, and giving him time to think, it does have a very serious disadvantage. When the student first hears Morse that is sent with normal spacing, he is unable to copy it, for it appears to him to have no spacing.

The relationship between dots, dashes and spaces is a constant, regardless of the actual words per minute, and this is easily demonstrated with a Wheatstone perforated tape. Perfect Morse can readily be found in the 6.3 to 6.5 Mc. band, and also in the 8.4 to 8.7 Mc. band; these frequencies carry most of the shipping traffic and much of it is tape sent. If recorded on a dual speed recorder and played at half speed it will provide excellent practice.

The "super-spaced" Morse is not real Morse; it is seldom heard on the Amateur bands and never heard on the Commercial bands. What is perhaps more important, it is not likely to be heard in the examination room, for the P.M.G. examiners are ex-Commercial operators.

—John H. Smith, VK3IQ.

THE NEW HANDBOOK

Further to the notes that appeared in the October and November issues of "A.R.," some additional points of interest from the new Handbook follow—

AGE LIMIT

Licences for stations in the Amateur Service can now be obtained at the age of 15. The intending Amateur may, however, sit for the examination from the age of 14. If successful, he will receive his certificate of proficiency, but must wait until he is 15 before an amateur operator's licence will be issued. Extracts from the Handbook state—

Paragraph 3—Licences for radio stations in the amateur service may be granted subject to such conditions as are prescribed—1. The person who has attained the age of 15 years . . ."

Paragraph 9—An application for examination will not be accepted from a person who has not attained the age of 14 years."

EXAMINATIONS

Several changes have been made in the Handbook in respect to examinations—

(a) The frequency of the written part of the examination for A.O.C.P. or A.O.L.C.P. has been reduced and are now held twice yearly. The Morse test will, however, continue to be held four times a year.

Paragraph 6 states—"Examinations for amateur operator's certificates and amateur operator's limited certificates are conducted in selected centres in capital cities and at cities and towns at which a District Radio Inspector is stationed, on the third Tuesday of February and August. Examinations in telegraphy only are also held at these centres on the third Tuesday of May and November."

(b) **Partial Failures in Examinations.**—Whilst basically there has been no change in the previous situation where a year's exemption was allowed before re-examination, the change in frequency of examination has necessitated the re-phrasing of the relevant Handbook paragraph which now states—

Paragraph 20—Exemption from re-examination in each subject in which a candidate was successful, and granted, in the case of theory and regulations for the ensuing two full examinations (February and August), and for telegraphy for the ensuing four examinations (February, May, August, and November)."

(c) **Marking of C.W. Examinations.**—The new Handbook clarifies the situation with regard to the marking of c.w. examinations. In the old Handbook it was simply stated that a pass mark of 70% was required and in many cases the intending amateur had prepared

himself for 70% "correctness of text", i.e. if he could copy 70 words out of the 100 he felt qualified to sit for the telegraphy examination. In fact the standard required was, and is, much higher and in the same terms was, and is, about 97% "correctness of text". As a result, the candidate often failed when he felt certain he had passed.

Paragraph 19 states—"In the telegraphy receiving test the candidate is required to receive 70 words (averaging 5 letters per word) in mixed plain language and figures (each figure counting as 2 letters) in 5 minutes. Each figure or letter incorrectly received counts as one error (a loss of 3 marks) with a maximum of 3 errors (a loss of 9 marks) in any one word or group. Additionally, one mark may be deducted for each doubtful character. More than 10 errors (30 marks) or its equivalent will result in failure."

In the telegraphy sending test the candidate is required to send the equivalent of 34 words (averaging 5 letters per word) in mixed and plain language and figures (a figure counting as 2 letters) in 2½ minutes. Each uncorrected letter or figure error involves a loss of 3 marks with a maximum of 3 such errors (a loss of 9 marks) in any one word or group. Additionally, one mark may be deducted for each corrected error, bad formation (each character) and spacing. More than 5 uncorrected errors or its equivalent or failure to complete the sending test in the allotted time will result in failure.

(d) **Suggested Text Books**—For the theory part of the examination the list of recommended text books has been brought up to date and **paragraph 16** lists the following:—

- Radio Amateur Handbook (A.R.-R.L.).
- Radio Handbook (Editors and Engineers).
- The Amateur Radio Handbook (R.S.G.B.).

The examination and regulations, **paragraph 17**, makes it quite clear that the candidate will be examined on chapters 1 to 8 of the new Handbook. He will not be expected to be able to quote the Wireless Telegraphy Regulations appended to the "new" Handbook.

T.V.I.

In all of the discussions with the Department this subject was the one least able to be precisely defined. The following statement of the situation appears in **paragraph 69**. Neither the Institute nor the Department are completely satisfied with the statement but could find no better way of expressing their intention.

Paragraph 69—Where the reception of broadcasting or television programmes is being affected by the operation of an amateur station, the licensee shall, except for brief

tests necessary to determine corrective measures, refrain from further transmission on the frequency or frequencies that cause the interference during the operating hours of the broadcasting or television stations affected. If such corrective action is successful in eliminating the interference the station may resume normal operation. However, if the combined efforts of the complainant and the licensee fail to clear the interference or the former refuses to cooperate with the licensee in the matter the Superintendent, Radio Branch, or District Radio Inspector should be notified accordingly. Each such case shall be investigated on its merits and the licensee shall be advised if and when he may resume transmissions or of the conditions under which his station may be operated."

The amateur cannot expect the right to transmit to the detriment of many television viewers or broadcast listeners. In the last resort he must accept that whether or not he is permitted to transmit whilst causing interference is a value judgment as to what is reasonable in all the circumstances of a particular case. Television or broadcast interference is not a problem that can be solved by the application of an arbitrary rule (except perhaps to the detriment of the amateur).

The fact is that the Department must have the discretion to judge what is reasonable. The fact of the matter, also, is that in every case where the problem has arisen in recent times, to the knowledge of the Institute, the Executive have found no cause to complain with the attitude adopted by the Department towards the amateur.

T.v.i. is not a problem that can be solved by regulations. In most cases it is a problem of human relations; in most cases t.v.i. can be cured before it is a problem. Much depends on the individual amateur himself.

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DX

Sub-Editor: ALAN SHAWSMITH, VK4SS
35 Whynt St., West End, Brisbane, Qld., 4101

Conditions are still holding up on all bands and quite a variety of prefixes can be worked, particularly on 14 and 21 Mc. 1968 promises to be a good year. Many DX-peditions are in the planning, including some brand new ones. So keep an ear to the receiver.

NOTES AND NEWS

Aldabra: As reported previously, John VQ-9JW will be active from here till March next. He is keen to work VKs on all bands. If you want a QSO on 160 or 80 it is necessary to make a sked first. He will come up on 3695 at 1830 or 7003 1930. Other frequencies are 23690, 21350, 14203, 14080, 21080, 7070. He usually commences daily around 1800 and continues through. QSL G3ONU.

Galapagos: HC8FN 14103 0030. QSL WA2WUV.
Sudan: Both ST2SA and ST2PO are active and worked here 14020 1930. The former is on fixed frequency. He has been sent xtal to put him on 2804 so keep an ear out. QSLs for ST2SA go to Sid Ahmed Ibrahim, P.O.B. 244, Ft. Sudan. Professionally he is an ophthalmologist. Requests radio magazines and some I.R.C. please with your QSL. ST2PO says send his via the bureau.

Seychelles: Harv the Brain now using the call VQ9V on 28690 1730.

Sao Thome: CR5CA 21060 2260. Also CR5SP on 14 and 21 s.s.b. Heard worked VKs 2100z.
Vietnam: K8NHV/XV5 is conferring with F.C.C. in an attempt to legalise his status. At present he is not permitted to QSO Ws. (VK-4UC)

Ncuru: Don Miller says there will be operation from here early in 1968. This will not be W4CHA who was in VK last year. VR1 and VR2 is the planned DX-pedition for the latter commencing around Feb. Bob will be QRV all bands. More information when it comes to hand.

South Orkney: VP8JD 14 s.s.b. 0200. QSL VE3ACD.

Rochas Atoll: PY0AQB is currently QRV from here. It might be given D.X.C.C. status. QSL PY7AQB.

Yemen: 4W1KV 14086 1900. QSL HB9KV.
West Spitzbergen: JW8YB 14103 1145. Mode c.w. not s.s.b.

Wilkes Base: VK0GP 14185 1015.

Saudi Arabia: 7Z3AB 14060 2100.

South Georgia: VF8IE 21329 2130. QSL DOTM.

Grenada: VF2GB 21329 2130. VP2GLE, who these past months has been very QRV on 14 c.w. is off to the States for an indefinite time.

Spanish Morocco: EA8EO 14060 and higher. 1900z. Has S9 sig here but not too steady.

Corsica: FC2CD 14198 1930. Also FT2T/FC is active on 21040 approx. around 1100z.

South Shetland: VF81Y 14094 and 15 mx around 0900z. QSL R.S.G.B.

Lesotho: 7P1AR 14105 0400. Also 21 Mc. sometimes.

Chagos: VQ8CD has been heard here on a.m. 14110 1600.

South Sandwich Is.: LUZZI is said to be active from here. No other information.

U.S.S.R., Zone 23: UA0KYA 14012 1430.

Bear Is.: JW2BH 21065 1900. Also JW5UL said to be on sometimes. QTH JW2BH, Bjornoya Tromsø, Norway. First mail out is next May. Radio magazines would be appreciated.

Indonesia: PK8YBC 14170 1240. QTH 31 Ksalam St., Bandoeng. (VK4MY) PY8YAK also on the air at 2000z. QTH Haruman. Usually around 14195.

Iceland: TF2WKM and TF2WKS both active around 0500 on 14 s.s.b. Mainly worked Europe. Also one or two others active on c.w. at 1900z.

Cameroon: TJ1QQ can be easily worked around 14008, 0600 and 1930z.

Liberia: EL3C is said to be working 80 and 160 and looking for VK QSOs. He is ex-SMSACC, Akis Schenning, C/o. Roberts Int. Airport, Liberia. A note will arrange a sked Also QRV from Nimbo is EL8O on 14 s.s.b. and higher. QSL SM3BNV.

French Somali: FL8FP 28600 2030. QSL B. A. 188, Djibouti, T.F.A.I.

Azores: CT2AP 21 a.m. 1315 and 2400.

Madra: CT3AS is a regular on 14 through 28 c.w. on the low end around 020. Also will come up on 7 Mc. Worked here on this latter band at 1900. Best time on ten is 0900.

Vatican: HV3SJ is said to be active s.s.b. all bands. The HV3SJ on 14 c.w. is reported as a pirate. (This remains to be seen.—AL)

French Guyana: FYTYM 14190 0430.
Jan Mayen: JX2XF now on c.w. 14 Mc. 1400 and 2100.

Marion Is.: ZS2MI still going strong on a.m. 14150 1700. QSL ZS4OI.

Botswana: Ed ZS8Q 14047 1515. P.O. Box 45, Francistown.

Wrangle Is.: UA0KIP 14029 1800.

Niger: SU7AL 14165 2300. QSL W4WHF.

Somali Rep.: 8O1GB 21330 1900, and 14195 sometimes. QSL W1YRC.

St. Helena: ZD7FF 14218 0000. QSL W8UAS.

Tunisia: 8V8BZ 14195. QSL DL7FT.

Gabon: TR8AI 14050 1600. QSL P.O. Box 177, Libreville.

Try: 5V1ZR and one or two others active.

Senegal: 6W8DQ 14200 0000. Also 6W8DD sometimes on A1 around 0700z.

Rwanda: 9X5GG 21326 1930; QSL DOTM.

9X5PS is also very active 14 c.w. about 1900.

Easter Is.: CE0AE has been on from here earlier this year. VK2PF reports his correct QSLing address as C/o. Ham Shack, P.O. Box 37, A.P.O., New York, 09339. CE0PG 14205 0125.

Afghanistan: YA1FV 14195 0800z. Also 28710 1000. He is expected to be QRV from XV5 soon.

Argentine Is.: VP8IU 14140 2000 and later. Said to be on daily. QSL G3MBQ.

Bouvet Is.: Unofficial number has it that activity using call 3Y0AB will occur late Dec. and early Jan. However times are not finalised.

Timor: CR8AH 21223 1200z. J. B. Santos Leits, P.O. Box 225, Dili, Timor.

ACTIVITIES

Merv VK4DV reports 20 as good and notched up these: TG8EP, LX1RB, OE9ZBJ, OX3BX, KZ5QA, VK4HG (Willis), VP6RC, Z55XA, EP3AN, 7Q1LZ, OZART, G5AAM, LZ1BZ, YJ-8BW, CE6CA, CR6BK, LU4DMG, W3DWG/VRG, 9G1KC, CE1FC, AP2MR, U5ARTEX, LASVJ, UW3VT, UR2KAW, S0VWL, SP5AKG, U18AG, 9M2DR, OF2LA. Mostly between 0700 and 1230. Merv also reports that both 15 and 28 are showing promise.

Dud VK4MY has run up a nice list this month. Some of the best were YJ8BW, 3C7-AXQ, UA0EH, VR1L, OF2AM, CX9CO, 5N2ABF, VS6DO, VS6AJ, VU2CK, VK8UO, U99FP, OQ8V, KX6FN, CE6CA, UR2AR, XW8BX, 9V1OB, HL8TM, ZS6DH, YU2HA, CP5AB, TJ-1QQ, UA1KAE (Antarctica), UN1BR, UTSFK, VP2GLE, EA8FE, UG6EA, KS6CG, UWSWA, PK8YBC, 9Q5EP, HV3SJ, YO3LM, VU4UK. Mainly on s.s.b. and between 0630 and 1200.

Chas VK4UC, like all school teachers, very QRL at this time of the year, nevertheless managed these: FR7ZD, VU2NA, ZD5X, BV2A, UR2EJ, DM2BJD, UFGAM, HS4AK, ZF1ES, ZF6DX, YS1SRD, ZESJU, OA4O, HV3SJ, VP-1LL, S0VWB. All 14 c.w./s.s.b. and around 1200 mainly.

Peter VK4PJ still picking up an odd country or two, logged the following: 20 s.s.b. mainly between 14150 and 14195: CR4AY, FK-82AU, SZ4KL, UT5LE, ZC4CN, 3V8Z, CR5SP, 4Z4AO, CZ4MO, VR1L, 7X0AH, VU2VZ, YV4QG, VS9AS, 7X2XS, 5V1KC, FO8BV, K8NHV/XV5, PJ3CB, JT1KAA, YJ8BW, HC5BZ, 9J2WR, 9M2NF, 9Y4AR, UJ8AC, ZS1JA, YV1OT, HI-8AL, CN8BV. 15 mx: KP4BCL, KP4CSU, UA-3ZO, XW8BX, UW3IN, ON5JY. Ten metres: I1MKN, VU2JM, EA7GF.

SOME QTHs

VP1LL—VESACD.
HS4AR—P.O. Box 2008, Bangkok.
ZF1ES—R.S.G.B.
ZF1DX—K6KDS.
SV0WB—C/o. Am. Con.-Ge., Salonika, A.P.O., N.Y. 09693.
TF2WKS—WB2DXL.
TF2WKM—SM7DQC.
EP2MM—WOYLN.
HZ3TYQ—Box 1721, Aramco City, Dhahran.
VP6PJ—WB2UKP.
7X0AP—P.O. Box 414, Algiers.
TA1AB—P.O. Box 699, Karakoy, Istanbul.
VQ8BC—5A3TT.
Wanted: QTH of 6W8DD please.

AWARDS

Worked Scandinavian Prefixes—W8FPX: The Polar Bears' Radio Club issues this award to any Amateur for contact with Scandinavian Amateurs using different prefixes.

There are three classes—40, 30 or 20 prefixes. Five I.R.C. must be enclosed with the application. QSL cards are not required. Only a signed list checked by two other Amateurs. Apply to P.B.R.C., C/o. Sven Elfvig, Solgardsgatan 15, Ornskoldsvik, Sweden. Scandinavian prefixes are all SM, OH, LA, OZ, OY.

SUMMARY

Want to further yourself in Amateur Radio in '68? Then belong to one or more of the many "IN" groups. Maybe the following organisations will interest you?

A.H.C.—Award Hunters' Club: If you collect awards you may be eligible. 25 certificates from four continents is the basic requirement. A.H.C. has in its ranks many worthwhile Hams, engaged in promoting Amateur Radio. To belong to A.H.C. is to be in the right company. For particulars, apply VK4SS, Oceania Secretary. Enclose an I.R.C. or stamp please.

I.A.R.J.S.—International A.R. Journalistic Society: If you aspire through journalism, editing, writing, photography or P.R. of any kind, I.A.R.J.S. is the group for you. Its members rank among the top in ARdom. If you want to bring yourself right into the latest in thought and progress in A.R., this is the Society for you. Formed after the pattern of Sigma Delta Chi. Full particulars from Secretary, Mary Alice Koctur, K0BWW, 3116 Backmeyer Rd., Richmond, Indiana, U.S.A. Int. SSBers: Want to join a band of Hams that puts personalities before prefixes? Where friendship is the thing. "The Voice," s.s.b.'ers magazine will bring you pictures and comes galore. For a new dimension in A.R. begin by listening on the s.s.b.'ers system 14332 1800z. Your next impulse will be to write to Editor K4ICA, V. Mayree Tallman, 428 S.W. 28th Rd., Miami, Florida, 33129, U.S.A., for more info.

Please remember chaps, that DX news is always needed here, particularly items concerning Oceania. Deadline is at end of month or just prior to same. 73 and DX, Al VK4SS.

A.R.R.L. INTERNATIONAL DX COMPETITION

PRECIS OF RULES

Amateurs throughout the world are invited to participate in the 34th A.R.R.L. International DX Competition. Special certificates of performance will be issued to the top phone and c.w. scorer in each country. In addition, a handsome plaque will be awarded to the continental high scorers (non W/VE), single operator, phone and c.w.

Dates: Phone, Feb. 3-4, Mar. 2-3, 1968. C.w., Feb. 17-18, Mar. 16-17, 1968.

Times: 0001 G.M.T. Saturday to 2400 G.M.T. Sunday.

Object: DX stations QSO as many of the 48 contiguous U.S. states and Canadian call areas as possible. Repeat contacts on additional bands are permitted.

Points: Each complete contact counts three points, incomplete contacts count two points.

Exchange: Send RS(T) and input power. The W/VE will transmit RS(T) and his state/province.

Multipliers: On each band, your multipliers are the 48 contiguous U.S. states, plus VO and VE1 through VE8, a total of 57. Your final multiplier is the sum of multipliers worked on each band. QSO points times the final multiplier equals the final claimed score.

Logs must contain dates, times in G.M.T., bands, exchanges and points. (Signed legible copies of your log are acceptable.) Logs, with summary sheet (see below) and multiplier check list must be sent to A.R.R.L. no later than April 21, 1968. Send to: A.R.R.L. DX Test, 225 Main St., Newington, Connecticut, U.S.A., 06111.

SUMMARY SHEET

Call C.W./Phone Country
Single Operator Multioperators
Name Number and Street
City and Country D.C. input watts
Transmitting Equipment
Receiver(s) Antennae
1.8 3.5 7 14 21 28 Totals

Multiplier
Contacts
(pts.) x (mult.) equal (claim. score)

I certify, on my honour, that I have observed all competition rules as well as all regulations established for Amateur Radio in my country, and that my report is correct and true to the best of my belief. I agree to be bound by the decisions of the A.R.R.L. Awards Committee.

CONTEST CALENDAR

Until 14th January: Ross R. Hull Memorial Trophy V.h.f. Contest.
3rd/4th Feb.: John Moyle Memorial National Field Day Contest.
3rd/4th Feb.: 34th A.R.R.L. International DX Competition (phone), 1st week-end.
17th/18th Feb.: 34th A.R.R.L. International DX Competition (c.w.), 1st week-end.
2nd/3rd March: 34th A.R.R.L. International DX Competition (phone), 2nd week-end.
16th/17th March: 34th A.R.R.L. International DX Competition (c.w.), 2nd week-end.

VHF

Sub-Editor: CYRIL MAUDE, VK3ZCK
2 Clarendon St., Avondale Heights, Vic., 3034

Not much Interstate news has been received this month, possibly caused by the fire in the Mail Exchange back in November. The reports received show that 6 metres is becoming rather interesting as far as the DX is concerned with openings to JA beginning to be as common place as working across town. By the time you read this, the Ross Hull Memorial V.h.f. Contest will be in full swing and if band conditions are to form, some good scores should be made.

All those who have heard the VK0CR beacon over the past 12 months, would you please send all details possible to Noel VK3ZPQ or myself as soon as possible.

Well cheers and 73, and a prosperous New Year, DX and otherwise. Cyril VK3ZCK.

NEW SOUTH WALES

Hunter Branch: 52 Mc.—No DX has been worked so far from the Newcastle district, but Hunter Branch member Z210, stationed near Macksville, partly worked a JA on Nov. 8. The JAs were worked from the Sydney district at the same time.

Frank Z2FX is back on 6, also Kev Z2KW has had a few QSOs on the net each Saturday and Sunday mornings. Stewart 2AYF, Bill

Z2WM and Mac Z2MO are the mainstays of the net with odd ones coming in to test their gear.

144 Mc.—Some fair openings have been made to Sydney during the month and signals have been up to 5 x 8 both ways. Bob Z2GU hopes soon to be on the band from Raymond Terrace with a 3/12 final. Z2FR has been to Darwin that many times with the Air Force he should know his way blindfolded. Stewart 2AYF and Tony Z2CT have been hearing signals on 432. 2AYF was able to copy signals from Sydney and play the signals back on tape via 144 Mc. 73, Mac Z2MO.

VICTORIA

Activity here mainly consists of 8 mx DX with a sprinkling of 2 mx to VK7. Reports claim that JAs have been heard on 8 and ZLs on 2, but no confirmations have been received. The VK0CR 8 mx beacon has been operating but without its keyer and it is believed to have been heard again in Melbourne. Rod will be returning to Melbourne in the very near future and will bring the beacon with him. It is hoped that a new beacon using semiconductors and valves will be ready to be shipped to Macquarie Island in the new year.

The V.h.f. Group will hold Field Days on Dec. 31, Jan. 1 and Jan 21, also on the National Field Day on 3rd and 4th Feb. Last but not least the VK3 6 mx beacon is on 51.78 Mc. with an aerial power of 20 kw, and about 70 kc. wide. 73 and best DX, Cyril 3ZCK.

Eastern Zone: 52 Mc.—The sporadic E season has started here in Gippsland, first ZL opening on 18/11/67 (1915-1935K); first VK opening to VK4, 19/11/67 (1730-1930K). VKs 4ZAZ, 4ZWB, 4ZAL, 4ZBJ, 4ZIS and 4NG, together with VK4 t.v. channels 0, 1 and 2 logged. N.Z. ch. 1 t.v. received again on 20/11/67 at 1840K, and Bris-

bane ch. 0 t.v. 20/11/67 between 1130-1215K and again at 1955K. Lance 4ZAZ stated it was his second VK opening this season, also he reported the last JA opening was 15/11/67 and 12/11/67 at midday. We cannot transmit on 6 mx band here in Latrobe Valley whilst ATV0 is on "air".

Miki JA4BEX (headache powder) reports JA41GY beacon will be operating by end of November on 50.050 Mc. A2, 10 watts to a ground plane from Mount Ouza (100 km. s.w. of Hiroshima, an excellent path to VK). It is not continuous operation. Reception reports to be sent to JA4AO Hiroshima (Yamaguchi Pref.). The f.m. net with 50 mobiles is 51.000 Mc. in JA.

144 Mc.—12/11/67, VKs 3ZGA, 3ZCG and 3ZDP worked VK7ZBE, peaking 8 to 9, also heard VK7VF beacon. VKs 3CJ, 3CI, 3ZEF, 3AEF, 3ZER, 3ZNC, 3ZNY and 3ZNB Wonthaggi have been worked by Gippsland stations last month. 73, George 3ZCG.

Western Zone.—Roy 3ZYG and Bob 3ARM are on 2 mx most mornings and work into Adelaide consistently on both 8 and 2 mx between 0700-0800. Active stations in the Zone include Herb 3MN (Yannac), Roy 3ZYG (Kangaroo), Bob 3ARM (Servicetown), Bill 3ZAX and Jim 3ZMS (Inhill), Roy 3AOS (Telangate), Graham 5ZUF (Bordertown), Gavan 3AEJ and George 3ZEA (Rainbow) all on 8 and 2 mx, and Lionel 3ZLL (Broughton), Brian 3ZFS (Tarranginnie), Norm 3ZUY (Rupanyup) and John 3ZXI (Drung) on 2 mx only.

JAs have been heard in the Zone on 5th and 6th at about 1300 for about 15 mins. and Roy 3ZYG worked two of them on the 6th with signals peaking at S8. Roy and Bob 3ARM worked VKs 2, 4, 5 and 6 on 23rd. 73, Bob 3ARM.

SOUTH AUSTRALIA

Doug VK8KK has now moved to Darwin as has Jim VK5ZS, both hear the VK5WI news which is relayed there on 6 mx. Garry VK5ZK will be portable VK2 over Xmas. Last, but not least, the beacons 53.00 and 144.8 Mc. both on 24 hour operation. 73, Alex.

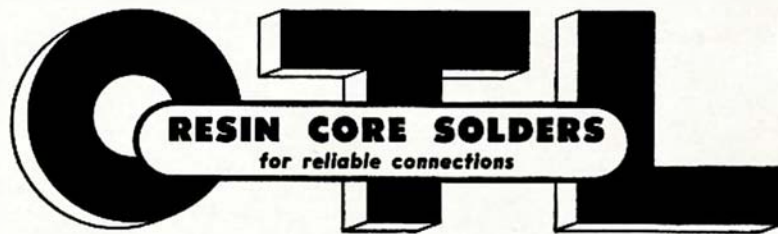
(Will Alex please let me know who he is as the information supplied in his letter is very interesting, but most of it was reported in Dec. "A.R."—Sub-Editor.)

CENTRAL AUSTRALIA

Activity in this part of the continent as far as six metres is concerned is almost nil, except for the continuous line-up of JAs who can be worked for 24 hours every day. Bert VK8QQ, in Daly Waters, reports that he has not slept for weeks as there has been no casing up of the number of JAs who appear to have nothing else to do but call him.

As far as two metres goes, you poor devils in the Southern and Eastern States had better improve your converters and Galah perches as we up here have been working Ws, Gs and VEs with monotonous regularity. 73, George VK8GG.

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Publications Committee Reports

The November meeting was held a week after copy date, hence no report in the last issue. At the November meeting, correspondence was received from VK3QV/W, VK3ASI and VK9TB. Technical articles were received from VKs 1AU, 2SJ, 2ZEZ/T, 3ZOM, 3ZWA, 3ZWG and 8EP.

The circulation manager reported on his discussion with the mailing service, and the steps being taken by them to improve their service. We are still getting many copies of "A.R." returned due to incorrect addresses. We ask all members to advise their Divisions promptly of any change of address and likewise, Divisions should pass this information on to us promptly. Remember, it takes at least two months for us to get our records and stencils altered, hence you could miss out on several copies of "A.R." if you fail to keep us up-to-date.

A further review of "A.R." costs, as they are affected by the new postal charges, was made. It was decided that these be absorbed until the February issue, but thereafter these additional charges will have to be carried by the Divisions.

The December meeting will not be held until after copy-date. No correspondence or technical articles have been received up to the 1st December. The fire in the Melbourne Mail Office caused delays in mail deliveries, but all notes received up to Saturday 2nd have been included in this issue. The tight schedule to which we have to work during December prevents allowing for any undue delays. We, therefore, apologise to any correspondents whose notes have not arrived in time for inclusion in this issue.



FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL

MEMBERSHIP RETURNS

	VK2	VK3	VK4	VK5	VK6	VK7
Month end.	Jun.	Oct.	Sep.	Oct.	Oct.	Sep.
Life	15	14	—	4	6	7
Full	797	813	342	372	238	144
Associate	361	243	119	134	74	78
Others	10	—	28	22	—	—
Total	1183	1070	489	532	318	229

Prev. Total (1287) (1058) (478) (525) (318) (229)
Grand total of full members, 2752, equals 50 per cent. of the total licenses.

LICENSED AMATEURS (Figures for August, 1967)

	VK1	VK2	VK3	VK4	VK5
Full	68	1312	1118	463	481
Limited	14	411	523	177	223
Total	88	1723	1641	640	704

	VK6	VK7	VK8	VK9	VK0
Full	284	130	18	63	4
Limited	127	75	5	12	0
Total	411	205	23	75	4

Total Full, 3947; total Limited, 1567; grand total, 5514.

FEDERAL CONSTITUTION

Mr. S. McIndoe, of Messrs. Hedderwick, Fookes and Alston, Melbourne, has been given the following documents and has been asked to present all relevant material to the Attorney-General for approval of the new Constitution. Viz.: the present Constitution amended to provide for Incorporation, the proposed Constitution with the relevant amendments from this year, copies of financial statements for the past three years, and photocopies of constitutional motions from official Federal Council minutes.

FEDERAL TREASURER

Kevin Connelly, VK3ARD, has resumed duties as Federal Treasurer, and Executive wishes to place on record its thanks to Tom VK3ZIQ who acted as Treasurer during Kevin's absence overseas. One of Kevin's first tasks will be to analyse the Federal Convention expenses from Hobart, and indicate to Divisions and Federal Councillors the extent of any further financial inebtedness as a result of that Convention.

T.V.I. CASE

In the last Federal Bulletin, reference was made to a t.v.i. case. A recent letter from the Controller, Radio Branch, P.M.G. Department, states: "With reference to our recent discussions about television interference caused by the operation of an amateur station at Inverell, N.S.W., I have been advised that this matter has now been settled to the satisfaction of all concerned."

A letter from the amateur to his Federal Councillor, forwarded to Executive, indicates that he was involved in some small expense in rectifying the complainant's t.v. receiver. This in no way sets any precedent, as it is a matter of determining in each case, looked at separately, what is reasonable in that particular case. It is apparent that the amateur felt that on balance, it was reasonable in this case to pay the necessary expense, while still holding the belief that the amateur should not necessarily be responsible for the expense involved, as a matter of principle.

FEDERAL AWARDS MANAGER

Bill Hempel, VK3AHO, our recently appointed Awards Manager, indicated recently to the Federal President that the amount of work is increasing very rapidly, this fact coupled with increasing work problems and domestic difficulties has resulted in a bank-up in the issuance of awards, etc. Bill has asked that Executive relieve him of the position of Awards Manager, as soon as possible, but in the meanwhile he will carry on as his time permits. Executive is therefore looking for a successor to Bill in this office.

INDONESIA

Executive has been in correspondence with the P.A.R.I.—Persatuan Amateu Radio Indonesia—(Indonesian Amateur Radio Union) and other Indonesian Amateurs who have written asking for assistance. P.A.R.I. states that "After 17 years of prohibition, the Indonesian Radio Amateur is now allowed to be on the air again." Indonesian Amateurs have been worked, but still using the PK8 prefix rather than the 8F prefix. Executive has taken steps to verify this operation, and to ascertain the status of P.A.R.I., the name of their licensing authority, etc., also quite a deal of material such as back copies of "A.R.," copies of Handbooks (s.s.b., v.h.f., etc.), call books, Stanford Research Reports, specimen Y.R.S. courses, constitutions, QSL information, etc., has been sent to P.A.R.I. and others. Some of this has been sent by the Federal Secretary personally to individual Indonesian Amateurs with the result that I find my own library somewhat depleted. Please can someone give me an unwanted copy of the January and July issues of "A.R." The publisher is out of these, and so am I! Please?)

INTRUDER WATCH

The following paragraphs from a letter received by Federal President from the Hon. Organiser, R.S.G.B. Intruder Watch, may be of interest to members:

When the presence of an Intruder station is confirmed, the G.P.O. sends reports to the administration concerned and this usually does the trick. Intruders that have been moved recently include Radio Pakistan 7008 Kc., RMY (printer) 21044 Kc., RKA73 Moscow (Facsimile, second harmonic of 10711 Kc.) 21422 Kc., EPD Tehran 7010 Kc., ZAG Tirana 7096 Kc., Radio Monte Carlo 7085 and 7097 Kc., Radio Tirana 7090.

Our biggest problem is Radio Cairo who has three frequencies in the 40 metre band, and of course Radio Peking who has eight frequencies in the 40 metre band. Repeated letters to Peking usually result in a letter being received pointing out that as they are not a member of U.N. they are not bound to stick to frequencies laid down by I.T.U. convention."

T.V. REPEATER STATIONS IN QUEENSLAND

This month a request for investigation of a report from a "usually reliable source" that a t.v. repeater on Channel 5A was to be established in the Nambour area, was received by Executive. Consultation with Central Office P.M.G. Department, indicates that the Nambour channel is planned as 5, not 5A. It would assist F.E. if any requests to investigate such matters were supported by names, dates, places, etc., rather than the rather nebulous "usually reliable source."

JAMBOREE-ON-THE-AIR

Advance notice has been received that this activity will take place in 1968 on the weekend of 19th and 20th October. It appears that this year less stations participated, perhaps because of the earlier date, so 1968 has returned to the more usual mid-October weekend.

MEMBERSHIP

As can be seen from the first item in these notes, our full membership hovers around the 50 per cent. mark still. It is known that some Divisions are conducting a membership drive, perhaps it is relevant that A.R.R.L., in their latest Annual Report, indicate that there has been an increase in their membership. They send each new licensee a "congratulations" mailing, and a follow-up mailing stressing the value of "QST," etc., to the newcomer. There

SILENT KEY

It is with deep regret that we record the passing of the following Amateurs:

VK2PV—Peter Vesper
VK4BH—Harold Brown

appears to be about a 20 per cent. overall effectiveness of this procedure, also experimentally QSL Bureaux sent out membership blanks with information on League services with cards to non-members. In addition forms are always enclosed with replies to queries from non-members.

MAGAZINE SUBSCRIPTION RATES UP

Dick Ross, K2MGA, Editor of "CQ" magazine, indicates that as a result of increased postal charges and printing costs, they have been forced to make the first rise in subscription rates in eleven years. The sub. will rise \$1 p.a. effective 1st March, 1968.

FEDERAL QSL BUREAU

Gene Krulsh, W8QVN, in forwarding QSLs dating back many years, adds that he is returning to sea as Sparks after an absence of 19 years. Will be active as maritime mobile.

The results of the U.S.S.R. 50th Anniversary of the Revolution Contest, 1967, contains the following VK stations, both of whom won certificates and medals: VK3AXK 8712 pts; VK3APN 752 pts.

The disastrous fire in the mail exchange, Melbourne, at end of November, destroyed 200 bags of overseas mail. It seems certain that many incoming QSL despatches would be amongst the contents of the destroyed mail.

John VK4HG closed down on Willis Island on November 16 and has returned to VK3. His replacement at Willis is not a Ham. John has taken delivery of all accumulated QSLs and promises to reply to all in a little time.

—Ray Jones, VK3RJ, Manager.

NEW SOUTH WALES

COUNCIL NEWS

Council activity over the Christmas holidays was limited so there is little to report. Council remind members that the Convention is on during the Australia Day week-end. Details of the Field Day and its location can be obtained from the Divisional Bulletin and VK2W1 broadcasts.

President Ken Finney has invited critics of the Council or its officers or other administration to submit their criticism to Council in writing and they will be replied to. In response to the only letter so far received, Ken advises that a statement will be published in the Bulletin.

CONVENTIONS AND FIELD DAYS

It is understood that several Conventions and Field Days were held in N.S.W. late last year. As no information has been received of the Field Days, I assume they are of no interest to readers of "A.R."

NOVEMBER GENERAL MEETING

The November general meeting was held at Wireless Institute Centre on 24th and was well attended. The meeting was opened by President and Chairman, Ken Finney, and the brief formal business conducted included the acceptance of quite a number of new members. Visitors were JA1NDO and ZS6BJ.

The lecture for the evening was given by Mr. Peter Stokes, of D.C.A., which he called "Making Waves in the Beautiful Countryside." In explaining this odd title, Mr. Stokes read a quote which said that Italy was a beautiful country. In his explanation, he said that during a working visit to the north of Italy he could see that beauty was a matter of opinion. Mr. Stokes then showed many slides of this part of the world and included some fine shots of Venice. The many slides taken were of excellent quality and were enjoyed by all. The vote of thanks given by Bill 2YB was appropriately carried.

The lecture set for January is on Log Periodic Antennae and will be given by Dr. Guertler of the University of N.S.W. The lecturer is recognised as an authority on this subject and will include the amateur aspect in this lecture.

W.I.C.E.N. NEWS

Arrangements are in hand to hold an exercise in the Orange-Parkes area of Orange district members. Some Sydney members will most likely take part. Details will be given in Sunday broadcasts.

73, Stan 2ZRD.

HUNTER BRANCH

My faith in tinfoil lined jars, columns of mercury and all that has been shattered since I attended the Branch lecture on Friday, 3rd November. According to Barry VKZAG all these have changed and after listening to his discourse on components I'm afraid I must agree. Having done battle with the Department of Main Roads on National Route 1, all blocked with landslides, boulders and the rest, one would have thought that Barry would be loth to enter into discussion with the argumentative types at a Branch meeting—but he did, and he convinced the members and visitors of the quality of his firm's produce in no uncertain manner. We learned which type of capacitor is best for certain applications, which resistor has the best non inductive characteristics, and even which supplier hasn't got a clue about the availability of newly developed bits and pieces.

Much to the delight of all we in this part of the world, news has been received that the Branch, as we have always known it, now exists. The area as shown on the Hunter Valley Research Foundation's map has been accepted by the Division as the true boundary of the Branch. Since the Hunter Branch was inaugurated by the late Jim Corbin, it has been generally assumed that the boundaries of the valley were the limits of the Branch. Now according to word received from Sydney, we are in accord with Divisional thought on the matter, so all is well. I doubt that this move will make my readership grow, but, nevertheless, I can always say I tried.

Now that six metres is coming good again the boys are having an almost continuous field day on this once neglected band. Henry 2ZGK reports the most frustrating experience of having heard all those VK7s nattering away while not being able to reply; and to balance the book, Kev 2ZKW reports the ultimate in timing. Apparently it so happened that Kev had invited some friends who had come from the old dart—not right at that moment you'll appreciate—to visit his shack and see what this Amateur Radio lark was all about. Well, they duly arrived and as Kev says, "Knowing that it's always too noisy, or too dead on the bands to ever have a contact when the visitors arrive, I prepared to tell them the old story of how good it was last night, or on two metres, or whatever, when six came good." Conditions were so good that Kev amazed his friends by having an hour long talk with 5LQ on six metres at 5 and 9 both ways. Kev has every reason to be doubly pleased since only two nights before, his Club, the Maitland Y.M.C.A. Radio Club, had put on a prize-giving night and social for all his hard working students, who were presented with their Y.R.S. and S.W.L. awards. Jack Flynn, VK2 Secretary of Y.R.S., did the honours with the incentive packets for the Elementary candidates and guess who gave out the S.W.L. prizes. Yes, right again, old dial-a-country himself. Only one thing was wrong—too much cake afterwards to re-inflate my newly slimmered 17 stone figure. Oh the temptation!

With typical 2XT ingenuity, Bill from Toronto has devised a new sort of beam called the umbrella quad. Although not sure of whether it's absolutely original, one thing is certain. It works like a beauty! Recently Bill was able to work 23 JAs in succession on 15 without lifting a number 12 fuse, but that's another story. And all this time the beam was only six feet off the ground. What will happen when it gets up to the top of that new pole in the back garden is anybody's guess.

If you ever go across the seas to Hamilton South just look in at the pill punchery of Ian 2ZIF but make sure you've got your binary logics all in order, for there you will see something really new. You thought I'd tell you all about it, didn't you? Well I'm sworn to secrecy just now but I am a friendly news correspondent—I accept bribes. So if you can't get along to see ZIF, a well placed contribution in this direction will bring the desired result.

A horrified look crossed the face of a well known v.h.f. man the other night when he was handed an envelope bearing the words, "You may have the negative of this for —", a large sum of money I can tell you. Great was his relief when he found the picture was of himself quaffing an ale at the recent Bolton Point Field Day—all in technicolour too! From a most reliable source I have it that Belmont Bob, 2BOB, is mobile. Our old bachelor pal,

John 2ZBD, has left the security of his former days and taken unto himself a wife, so they say. So that's what the Army did for him. Up at the Terrace, Mac 2ZMO's beam bearings have had to be water-cooled since the 6 mx season began. John 2XQ has been heard back on the air with a huge signal and I've sent Don 2BAE a QSL. Surely 1968 is having a serious effect on us all.

All you keen chaps who rushed off to the January meeting of the Branch and found no one there are reminded that the next meeting will be on Feb. the two. That's a Friday, by the way, and we hold all general meetings in Room 6 of the Clegg Building, Newcastle Tech. College out at Tigers Hill. Something of wondrous interest has been planned for that night but, since nobody has told me what it is, I'm going along to find out. With a bit of luck I'll be there on time, my New Year resolution being to try to arrive a little earlier. So maybe I'll see you, 73, 2AKX (and it's sure to be great in 68!).

CENTRAL COAST RADIO CLUB

Friday 17th saw the November meeting of the Central Coast Branch, with the topic of the lecture being "Electronic Developments in Civil Aviation." Mr. Vaughan Wilson, 2VW, gave a very interesting outline of the developments in civil aircraft communications, from its infancy in Australia to the present day "revolution". The years have seen the progression from simple communications using Morse, development of distance measuring beacons, to the various sophisticated navigational and communication aids of today. The session closed with an active question time, and a vote of thanks to Vaughan for his talk. 73, 2TS.

VICTORIA

Victorian Divisional Council met on Monday, 27th November. Apologies were received from 3FE and 3ZEL. Visitors to the meeting were the Federal Secretary, 3OR, with his assistant, 31Z, and 3ZPQ.

Once the routine business was finished, Council considered a report on the W.I.C.E.N. vehicles, and a request for additional funds to complete the project. After lengthy discussion, Council voted an additional \$200 to this project.

Noel 3ZPQ then explained that those responsible for the 6 metre beacon at Macquarie Island wished the W.I.A. to approach the P.M.G.'s Department for the allocation of the call sign VK0VF, rather than having to use the call sign of whatever Amateur may be on the station. Noel was given information on what details the Department would require, and once this information is available, the Federal Secretary undertook to approach the Department.

The Federal Secretary reported that the VK2 Federal Councillor had queried the establishment of the W.A.V.N.P. and W.F.A.N.P. by the Victorian Division and how they were affected by the Federal Policy Book. Examination of the Policy Book revealed nothing on the subject and that no infringement of Federal policy had taken place.

The Divisional President reported having contacted various motels in the Bairsdale/Paynesville area and made reservations for the State Convention, as well as with the owners of the Lena Bire (capacity 180 people) for the week-end 9th and 10th March. It was resolved that all zone secretaries be advised immediately that the State Convention will be held over this week-end. This week-end was selected as no zone had intimated that it was holding its Convention at this time.

WANTED URGENTLY A.O.C.P. CLASS INSTRUCTOR

Commence duties third Tuesday in February. For details, remuneration, etc., contact Secretary, Victorian Division, W.I.A., 478 Victoria Pde., East Melbourne, 3002. Telephone 41-3535.

Our Secretary reported on the successful resumption of the 40 metre a.m. broadcast. This broadcast was resumed without any prior announcement and the response to the first call-back was most gratifying, especially from country areas.

The representatives of Federal Executive spoke at length on their proposals for Region III. (see November "A.R."), but as F.E. will be reporting at length on this subject in due course, no report will be made in these notes.

Federal Councillor reminded the meeting that the appointments to Federal Executive have to be made at the December meeting and invited all members of Council to give thought to this matter prior to the next meeting.

The I.T.U. Fund is slowly crawling towards the target figure. Donations have been received from the following: \$10—3AG, 3SS; \$5—2ZOV, 3RM, 3ZX; \$4—3OR, 3DM, 3AUO; \$2.50—3ZVH, 3ZBB; \$2—3JC, 3APG, 3PR, 3KJ, 3ZWW, 3ZNB, 3AUN, 3ZDG, 3AWZ, and 12301; \$1—3AVY, 3AZG, 3AMV, 3EM, 3LC, 3ZVB, 3AVQ, 3AUM, 3DU, and 13258; 50c—3LK and 3ARO.

Membership of the Division continues to grow and the following people were accepted by Council and recommended to the December general meeting: VKs 3ALN, 3AZJ, 3ZAV, 3ZHN, P. L. Beckett, A. T. Doyle, P. H. Lie, S. G. Mizon, R. Muir, K. A. G. Oakley, J. Reynolds and D. van Elk.

As neither Mrs. Bellairs nor Mrs. Mackie is able to attend the office during the school holidays, Council agrees to engage temporary staff for this period. Miss D. Hirst will be in the office during the holiday period, and will do her best to keep the wheels turning. If you do not receive the usual high standard of service please bear with her, as she will come in as "a raw recruit".

WESTERN ZONE

Bill 3ZAX has been caravanning in VK5, operating portable on 6 and 2 mx. Roy 3ZYG is the only zone member known to have worked JAs during a recent short opening. Both Roy and Bob 3ARM worked five States in one day on 6 mx. Lionel 3ZLL has returned from a trip around Australia. Ray Leskie and family are at present enjoying a well earned holiday in VK5, after which they will be returning to Mission work in N.G. for 12 months. Ray will be using a FL200B s.s.b. transmitter with a FL2000 linear and hopes for contacts with Western Zone members.

Roy 3AOS reports good conditions on 10 mx, 5/9 sigs to the U.K., also Denmark and Germany. Roy uses 3 sl. vagi 76 ft. high. Tony 3ZAI is getting mixed up in the film making business—need any extras Tony? Jim 3ZMS is trying to tame a 6/40, so he can get back on 2 mx. Herb 3NN and Gary 3ZOC are pleased that the S.E.C. have started the extension in their area. Passers by in Firebrace St., Hershams, recently were intrigued to see a t.v. antenna on a car. Two spies were listening to the varied comments. "Look t.v.!" "No, it's a telephone!" Roy 3ZYG was attending the Zone Convention. 73, Max 3AR.

EASTERN ZONE

CQ Eastern Zone. The first notes for 1968. The President and I wish all Zone members and other readers the compliments of the season and happiness, health and prosperity for 1968. A good 6 mx DX session was had on Sunday, 24th Nov. east VK4. New Zealand t.v. was seen and heard on evening of 26th Nov. last at 3ZCG's QTH. The Zone has quite a number of S.W.'s; one, Ken, has got his 3rd class commercial ops. cert. We hope to get some of them Associate members of the W.I.A. George 3ZCG is lecturing to the Latrobe Valley Air Cadet Corp every Friday evening. Keep it up Geo. I am interested in the Intruder Watch which is being inaugurated by Federal Council. Sorry no news for the h.f. boys; have been busy on construction of two metre converter, this last month, so have lost touch. That's all there is chaps for this month. 73, best DX for 1968, Albert Cash.

QUEENSLAND

IPSWICH AND DISTRICT RADIO CLUB

Christmas comes but once a year, the old saying goes, and thank heavens, some of our club members have added. By now the elderly gent with the long white beard and red coat will have visited all the club members' shacks, and I hope he has been most generous in what he left. According to what was left in my stocking, I have a reindeer somewhere but a quick check around the shack has not located "Disher" yet.

Several club members attended the Hamfest at Kingscliff last month and a good time was

had by all. A number of VK2s were met and a lot of old VK4 acquaintances renewed. Two old Ipswich identities, namely Bill 4WS and Ross 4ZAT, attended and it is mentioned that both may be present at one of our club meetings in the near future. Ross had a transistorised exciter (6 mx) which attracted a great deal of interest, and Ross used this exciter to contact our club members on the way home. While passing through Tweed Heads, several of our club members contacted VK3s coming in on the break-through.

The club's annual dinner was held on Dec. 13 and approx. 30 members and YLs and XYLs attended. After the dinner, a social evening was held and supper was served. The club will not be going into recess this year as usual, because the majority of members will be about at Christmas so the meetings will be held normally.

Cyril 4CR has now received his call sign and has been giving it a fair airing, believe his first contact on 40 mx was with Andrew 4AT. Andrew must be just about due to qualify for a club certificate, he has contacted almost all our club members.

It is with deep sorrow we report the passing of one of our ex-Ipswich Hams, namely Harold Brown, VK4BH. Although Harold was not a club member, he lived for a number of years in Ipswich and was very active here with his old call sign, 4HG. He moved to Brisbane and acquired his old original call sign, 4BH, which was originally taken off him to be given to a commercial station in Brisbane. To Harold's family, all club members express their deepest sympathy.

Club President Ron 4RG has been busy etching crystals to suit our new 2 mx net of 145.2 Mc.; seems he over stepped the frequency by a few kc. and an attempt to lead it up was not too successful. Ron now has three crystals and none are on the net frequency, also it appears he needs two new crystal holders; they do not need to be as large as the original holder.

The camping fraternity will have a field day over the New Year week-end with a camp out at the river near Ipswich. There is a possibility of some activity if the 240v. generator is finished in time; if not it may be batteries for the power supply.

All members of the Ipswich and District Radio Club have asked me to wish all the readers of "A.R." a Happy and Prosperous New Year, and good DX. 73, Warren 4GT.

SOUTH AUSTRALIA

The monthly general meeting of the VK5 Division for November was held to an average attendance of members and visitors. The heat of the day obviously kept quite a number away. The guest speaker for the night was Mr. Brian Chase, of Phillips Electrical Pty. Ltd., who chose as his subject, the design and manufacture of printed circuit boards. Mr. Chase gave a very interesting and entertaining lecture and produced an endless supply of samples of the craftsman's work to illustrate his point, and all in all, members were given an up-to-the-minute talk on the production of the printed boards by a lecturer who undoubtedly knew his subject, and one who was prepared to answer any questions on the subject. The vote of thanks proposed by Ron 5KS and the applause that followed, was a clear indication of the success of the lecture, and again showed how lucky we have been this year with the standard and entertainment provided.

The business section of the evening then followed and a letter was read from the Electrical Workers and Contractors Licensing Section which made it quite clear that no grade of licence would be available to Radio Amateurs as such, and whilst it is intended to take up the matter of promises already made, it can be safely said that there is not much hope of success. This is a complete somersault from what we were given to believe when we had our interview with the Minister concerned, but it was ever thus! Nevertheless, Council is not going to let the matter drop as yet, although it now appears as a waste of time to get us a grade of licence, try as hard as we like.

No Federal business, and very little general business brought the meeting to a somewhat early close, although when I left the members were still clustered around the samples of printing circuit boards still on display.

Noticed Uncle Joe 5UJ, from Whyalla, at the meeting and he said that he was down on business, and all I can say is that anybody that is shrewd enough to engineer a business trip that coincides with a Divisional meeting night, is sure some business man.

The v.h.f. annual picnic went off with a bang, over 64 call signs attended, and a jolly good time was had by all. Although this

picnic is organised by the v.h.f. gang, judging by the number present, it is almost a W.I.A. picnic, and whilst the group are to be congratulated on their efforts, I believe a special mention must be given to Bob 5ZDX for the hard work that he puts into this annual event.

The attendance at the Associate Members night was doubled, so I am told, and as usual finished up at Geoff's (5TY) QTH for a little refreshment at the close of the meeting. This makes good reading, because with our high Associate membership numbers, some 200 odd I believe, we should do all we can for them, but it is a little hard to do this if we don't hear from them just what they would like us to do. So, go to it boys, say what you want, and Council will try to oblige.

Claude 5CH and his XYL came down on a visit to the City of Culture and called in for a short visit, short from Claude and my reckoning, we never get enough time to discuss everything that should be discussed. I thought I detected a slight leaning towards "The Thing" in his conversation, or should I say a slight leaning towards what appears to be the inevitable to Claude. A sorry state of affairs. Nice to see you both.

Understand that Stuart 5MS is off on a jaunt to W-land, in the near future, to see his daughter who resides over there. I have written to him to see if he wants anybody to carry his bags on the trip, but so far there has been only a dignified silence. The last time I arranged a trip for a certain VK2 YL, I got my husbands mixed up and instead of carrying her bags, I spent a week or so in my hills hide-away waiting for the consequent uproar to subside. Oh dear, oh dear.

One piece of good news for this month. One of my espionage agents from the S.E. tells me that Kevin 5AKR has crossed the border and has become a VK5 resident, and it is even rumoured that he will eventually take out a VK5 call sign. That is one of them that has seen the light, willingly or unwillingly, and it will help to keep Pincott (5AFJ) on his toes.

Gordon Danks, from Mount Gambier, has applied for Associate membership in the VK5 Division, and will be more than welcome. He is as keen as mustard on the hobby of Amateur Radio and when he returns from a projected trip to G-land, he intends to get right down and get his ticket. Good to hear it Gordon. What about a QSO when you come on the air. What's that? Don't you believe it, I am always on the air. Beacon Parsons they call me!

Collin 5XY—my favourite doctor—is off on a notoring holiday to VK2, accompanied by his charming bride, Sally, and upon his return will take up residence at Evandale. The last time I contacted him was when I was at my holiday shack at Oakbank, and I was introduced to Sally at the same time. Best of luck and good wishes for the future to you both. That should get me a free check-over—or something—probably or something!!

Carl 5SS heard dithering about water diving on 7 Mc. the other early evening, apparently he had been looking at the same session on t.v. that I had, and was offering to locate water for anybody, and everybody, anywhere and everywhere, but I notice that he would do the diving, but made it plain that he would have nothing to do with the digging part of it. How shrewd can they get?

Frank 5MZ appeared very interested in the diving lecture mentioned above, but was also quite adamant that he would have nothing to do with the digging part of it. Just how these blokes think they are going to get water without digging for it beats me, anyway, with Frank almost on the brink of giving hard work away and putting his feet up, he certainly won't be interested either in a pick or shovel, unless it is to whack Carl on the boko every time he comes to light with some way or other of leaving the easy chair. See you on 14 Mc. c.w. some afternoon Frank? or will that be too energetic?

Have you heard the story of the Radio Amateur who dreamt that he went to a country convention where, at the door of the hall, all of the visitors were allowed to pick a piece of apparatus from a big box, and what's more, were allowed to keep the said apparatus and take it away with them. Well, it goes without saying that all of the visitors lined up for their pick at the box and our hero well to the fore. The first visitor said he would take the mod. transformer, and was handed this with an extra gift of two bottles of beer. The next one took a brand new receiver, plus two bottles of beer, and this was followed by a third who took a linear amplifier, plus two bottles of beer—and so on, and so on—until it came to our hero who discovered to his amazement that at the bottom of the box was a brand new "Thing". He nearly fell over backwards to pick "The Thing" and

was also handed two bottles of Coke, which caused him to put on a grizzle to all concerned. "What's the idea of this?" he said. "Everybody else gets a bonus of two bottles of beer and I get two bottles of Coke with 'The Thing'." The entire gathering then stood up and loudly sang, "Things go better with Coke"!!!! Okay, okay, I thought it was good, and anyway it gives me an extra paragraph. I have no conscience!

Passing an outdoor fete the other day, which incidentally was being run under the auspices of the Clarence Park Kindergarten, I noticed a vehicle plainly marked with the "Batman" sign, with Batman and Robin in attendance. Doing a little snooping, I discovered that some of the local VK5 boys were lending their aid toward a worthy cause with Max 5GF providing the p.a. set-up, Geoff 5TY was attending to the microphone section of the work, and the "Batman" driver proved to be 5ZEZ. The Kindergarten hall being rented by the Division at times for meetings, apparently somebody was engaged in some public relations, no doubt appreciated by the Kindergarten Committee.

Uncle Tom 5TL has just returned from a fishing holiday at Kangaroo Island, with a good time being had by all. In view of the fact that no samples of his skill have so far found their way to my QTH, I cannot give him a grading in the piscatorial art, but if he tried his wiles on the poor unsuspecting fish in the same manner as he tries to dispose of his W.I.A. publications to the members, then I would have no hesitation in giving him the "A" grade belt!

Understand that at a recent W.I.C.E.N. exercise there was a little confusion due to a mixup in the destination of the opening message. The 146 boys had plenty to do but the 53.1 gang spent plenty of time kicking their heels. I can just imagine the antics of Simon Legree (5TY) as all this went on. I will bet his recent visit to the School of Modern Language paid off!! Anyway, the barbecue following the exercise, assisted to sort out a few things. Always remember fellows, whilst his mouth is occupied chewing, he is as meek as a lamb, or as docile as a sausage. Get it? Meek as a lamb, etc.—barbecue—okay, I thought it was original.

Probably as a result of indoctrination (brain-washing to you), Mos 5TU, close associate of Neil 5WN, is embarked on the project of building "The Thing". As Neil has been on a similar project for some time, the finger of scorn can apparently be pointed right at him!

A little bird tells me that the "Disposals Committee" is thinking of a new title, in view of the fact that disposal items seem to be a thing of the past. This may be so, but they have done such a grand job under that title in the past that I feel the old name should stand. Anyway, as chairman, Gilbert 5GX will come up with an appropriate name. He possesses that happy knack of always doing the right thing. How's that Gilbert? That should get me some more sweet peas!! Or at least some seeds for the XYL.

Incidentally, the VK5 Division has acquired a number of blue transfers of the Institute badge suitable for placing on the rear windows of cars, always providing that they do not obstruct the view of the rear vision mirror. They can be obtained from the Publications Officer, Uncle Tom to you, at a very reasonable price, but don't forget they are a transfer, not a sticker.

Quiet, but thoroughly efficient work is being done for the Y.R.S. activities in VK5 by John 5UL, who makes it his business to contact the leaders of the various clubs during his trips around the different parts of the country. This is much appreciated by the clubs concerned, as visits from the city executives are few and far between, due of course to the distances involved.

Reg 5RR has not been very active of late but appears to have shaken out the spider webs from the gear, repaired the antenna, and a couple of other things, with the result that he is now being heard very nicely thank you. He has tried to operate from his business premises without much luck, mainly on account of it being in the bottom of a gully. By the way, he claims that he is working harder now that he has retired, than he ever did before. More power to you, Reg.

Phil 5NN, the protector of "The Thing" to you, called in to see me the other evening, ostensibly to lend me a couple of R.S.G.B. magazines, but actually to give me a list of newcomers to his realm. I thought he was acting a bit holty-toity, or probably carried away with his success in recruiting to his cause. But all was well, he only had a stiff neck, brought on by too much lawn mowing. We a.m. operators never got a stiff neck!

Heard Col 5RO in contact with a station which was maritime mobile, but in a slightly

different way. The station operator was on board a passenger ship coming home from a vacation somewhere or other. I only came in on the closing stage of the contact and did not hear the maritime station, but would hazard a guess that Amateur Radio aboard a passenger ship was a little out of the ordinary, especially coming from a vacation.

Ken 5IM also heard in contact with Jeff 2AHM and Charlie 2AXL the other early evening, or should I say late afternoon, and he sounded fit and hearty. I have not heard him for some time, although after seeing and hearing the strength of his signal, I am beginning to wonder just why.

Jeff 2AHM was off on one of his Australian stories, this time about a cod which weighed 70 lbs., and cleaned at that, finally capping it all by saying that the river was so clear in parts at the moment that the fishermen are using guns to shoot the fish with the aid of spotlights. Is he fair dinkum, Ken? The last story I heard from him had kangaroos flying around like birds in their thousands!

My information regarding Jim SFO as having gone with "The Thing" turned out to be more than correct. I have even heard him. To show just how far "The Thing" will lead one down the road to destruction, I also heard that he was seen tripping the light fantastic at the Mayoral Ball with a Rae-diant young XYL on his arm. Goodness gracious mell! Why won't they heed the gypsy's warning?

The VK5 Advisory Council has set something of a record, I believe. They have all signed up for another year, and not one was shanghaied, or so they say. I will have to look into this, 'twas not always thus, can I be missing something, are they serving tea and biscuits?

Vic 5JH heard mobile on the way to Perth this week. He called in to see Rex 8HO at Kimba, and I heard Frank 5MZ calling and calling him, but with no success.

Great news greeted me this week in our daily paper, and I quote: "Drinking water from the Yarra—the only river that flows upside down—is not a thought that would appeal to most visitors to Melbourne, but Melbourne householders soon will be receiving a shandy of Yarra water from their taps because of the city's desperate water shortage." Well, Pincott (3AFJ), what do you say about that? No more slinging off about our River Torrens, at least we are not drinking it—YET!!

Well, here we are again, another New Year coming up. May I wish all Divisions a Happy New Year from the VK5 Division. May it bring you all that you desire, and may it be a happy one for you and yours. 73, de SPS—PanSy to you!

WESTERN AUSTRALIA

Happy New Year everyone, may 1968 be the best yet, both as regards Ham Radio and personal matters. It seems rather ironical that although we are concerned with a medium of communication which to a large extent overcomes the barriers of time, I must nevertheless extend seasonal greetings at this time (late November) in order to reach you by January. Ah well, never mind, as long as you eventually receive all the luck I wish you.

It is with deep regret that we note the untimely passing of Bill Wedemeyer, VK6DR, who will be greatly missed by his many friends on 15 metres. Sincere sympathy is extended to his wife and family.

Congratulations to John 6ZW for his win in the 40 metre scramble. Without in any way detracting from John's win, the contest was poorly patronised again this year. Of the very small number of participants, only five completed the debacle by submitting logs. Considering that this is virtually our only local contest, it is a disgrace and should be discontinued. What about a lead from Councillors and Contest Committee who were noticeable by their absence.

At this stage there has been no overwhelming rush of volunteers to take over as Federal Councillor when Roy 6RY relinquishes the position. What about it men? While you are scratching the noodle, see what you can cook up in the way of agenda items in readiness for the big parley at Easter time.

There are not too many Hams who can boast a silver QSL card. Jim 6RU is one who can. At a recent meeting, Jim was presented with a silver replica of his card, suitably mounted, in recognition of 21 years of outstanding service as QSL Officer of this Division. After the presentation, Jim sought permission to carry on with the job for at least another 21 years.

News to hand that the Australia beacon has hitched a ride in a balloon which is intended to ascend to the height of 120,000 feet, hope some of our boys will copy its keyed "HI" on 28.45 Mc.

Also at this time comes news of further transcontinental contacts on 6 metres. A VK7 station was also copied at good strength.

Max 6ZFM, at Bridgetown, has also been worked from Perth, but it is interesting to note the fact that at both ends the beams were pointing East!!

If you aren't lucky enough to strike a break-through to the East, what about bending an ear to the North, where Bruce 6ZBV at Carnarvon is seeking refuge from t.v.i. and listening hopefully for Perth stations.

Did you get a load of "KK" at the meeting the other night? Toting that chick around—a bit of fowl work there if you ask me. Okay, so no-one is asking me—but keep an eye on him, there may be another kind of wild fowl on the menu soon!

And talking of menus—the get-together at the Play House was booked out in very quick time. This should be very heartening to our Social Secretary.

Had a brief visit recently from Peter 63VEU who has just stepped upon these sunny shores. He wasted no time in applying for VK6EU, although his gear was still reclining gracefully on the wharf back in G-land. Peter should, by this time, have taken up residence within QRM distance of Cliff 6NK and Clem 6CW.

Which reminds me, Clem, what is this bedstead antenna that I heard you telling someone about?

Dave 6WT, that keen stalwart of the brass, tells me that his s.s.b. rig is operative on 20 mx, however I'll bet that the key never gets a chance to gather dust in Dave's shack.

South Western spy Hdq. has slipped me the word that Cec 6KK has been seen skimming around the territory on his velocipede and also in company with Mal 6SM.

The "Razor Gang" now in residence on 40 mx have been joined by Wally 6WG. Another new call heard on this net recently was David 6VB.

It is pleasing to see that Aub 6XY is becoming a more frequent visitor to our meetings and on the last occasion managed to bring Max 6ZER with him. I believe this was the first occasion on which Max has been present at one of the meetings.

Bob 6BT has been busy erecting vee beams and must certainly have quite an aerial farm assembled at his QTH. Just in time for those Europeans on 15 mx of an evening Bob!

After one or two minor setbacks (or can losing your final bottle be classed as minor?), Bill 6WY has his Heathkit operative on 20 mx.

Well, that wraps it up for a little while chaps, and may I again extend to you the Compliments of the Season. 73, Ross 6DA.

HAMADS

Minimum 50c for thirty words.
Extra words, 2c each.

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BORROW or hire for a fortnight: 230v. petrol generating set to deliver half amp. or thereabout. The unit would have about six hours use. I propose to cross Nullabor desert in second half of February 1968, would like to operate on 40 mx on two evenings between Pt. Augusta and Norseman. But need 230v. at half amp. Security for safe return of the unit provided. Bob Boase, VK3NI. Phone 34-9491 (Melb.).

FOR SALE: AMR200 (Super Pro) Receiver, 1.2 to 30 Mc., prod. det., etc., p.s., spkr., in mint cond., \$90. 35 ft. Lattice Tower, all fittings, \$20. Command Tx's, 4-5.3 and 5.3-7, \$10 ea. 522 Tx, \$10. 20 mx Tx, 3 stage, 100TH final, prof. built, \$20. 850 volt 1/2 amp. trans., \$10. 6 and 10 mx Conv., very sensitive, \$15. 6 ft. Cabinet Rack, \$10. Also many transformers and parts at bargain prices. Offers accepted on any above. VK3AXR. Phone 57-5303 (Melb.).

FOR SALE: Davco DR30 Transistorised Communications Receiver, mechanical filter, crystal calibrator, noise limiter, complete with power supply/speaker, as new, \$400. J. G. MacIver, 21 Hurd Tce., Morningside, Brisbane. Phone 95-2541.

FOR SALE: Drake TR3 Transceiver with RV3 remote v.f.o., a.c. and d.c. power supplies. Excellent condition. \$900. T Huntley, 6 Raymond Rd., Glenbrook, N.S.W., 2773. Phone Glenbrook 7-1755 or Penrith 77-4101.

FOR SALE: Galaxy 3 Transceiver and power supply, handbook, etc., \$375. Hallcrafters HT37, 240V. a.c. Transmitter, s.s.b., d.s.b. and c.w., five bands, Cardloid mike, s.w.r. bridge, antenna tuner, and handbook, \$300. Hallcrafters SX101A Receiver, a.m., c.w., s.s.b., five bands, 240/110v. transformer, speaker, Dow Key ant. change relay and handbook, \$220. Frequency Meter, BC221-AG and p.s., handbook, \$40. Scope Iron 6E. 50 ohm Co-ax. \$10. Details VK3AKS, Phone 38-3421 or 719-7283 (Melb.).

FOR SALE: "Gelosio" G222TR Transmitter, six bands 3.5 to 28 Mc., a.m. phone and c.w., 65 to 75 watts, no alterations to circuit, clean condition; complete with plugs. "Gelosio" manual, spare new R.C.A. 6146 valve, original packing case, \$125. F.O.R. Katanning. C. W. C. Sirl, VK6XG, Katanning, W.A.

FOR SALE: Professionally built s.s.b. rig, 80-10 mx, 9 Mc. McCoy filter, 7360 bal. mod., 200w. p.e.p., 8238 p.a., c/w. h.d. power supply, xtal mike. Coat \$350 for parts, will take \$200 the lot. VK3ZX, H. M. Everett, 69 Moore St., Traralgon, Vic.

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WANTED: S.s.b. Transceiver. Wanted: Circuit diagram for "Radameta" Valve Tester. P. Engelman, 26 Almar Rd., Glen Waverley, Vic., 3150; phone 560-0645 (Melbourne).

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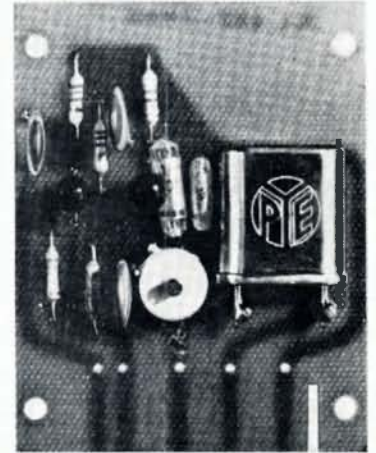


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amateur radio

Vol. 36, No. 2
FEBRUARY
1968

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"AMATEUR RADIO"

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by the Publications Committee.

★

Members of the W.I.A. should refer all enquiries
regarding delivery of "A.R." direct to their
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Non-members of the W.I.A. should write to
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W.I.A. OFFICIAL BROADCASTS

NEW SOUTH WALES		QUEENSLAND	
VK2WI, Sundays, at 1100 hrs. E.A.S.T.		VK4WI, Sundays, at 0900 hrs. E.A.S.T.	
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7146 Kc. a.m.	146.000 Mc. f.m.	7146 Kc.	144.38 Mc.
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VICTORIA		SOUTH AUSTRALIA	
VK3WI, Sundays, at 1030 hrs E.A.S.T.		VK5WI, Sundays, at 0900 hrs. C.A.S.T.	
1825 Kc. a.m.	144.500 Mc. a.m.	3.5, 14, 52 and 144 Mc. bands.	
3600 Kc. s.s.b.	145.854 Mc. f.m.	WESTERN AUSTRALIA	
7146 Kc. a.m.	432.500 Mc. a.m.	VK6WI, Sundays,	
53.032 Mc. a.m.		TASMANIA	
		VK7WI, Sundays, at 1000 hrs. E.A.S.T.	
		3672 Kc., and re transmitted by representative stations on—	
		7148 Kc.	144.1 Mc.
		53.032 Mc.	432.6 Mc.

W.I.A. SECURES MORSE SPEED REDUCTION

Last Easter, in Hobart at the annual Federal Convention of the W.I.A., motion 5.2 that "requirements to pass the morse code examination for the A.O.C.P. be reduced to 12 words per minute" was discussed, and eventually amended to: "That requirements to pass the morse code examination for the A.O.C.P. be reduced." This left the matter up to the Federal Executive to prepare a case and negotiate with Central Office of the P.M.G.'s Department to secure as favourable a reduction as possible.

This was done, and in part of the submission, Executive pointed out that the minimum code speed required of Commercial operators was ten words per minute for the third class Commercial operator.

In the light of that, it was indicated that Executive felt it was not inconsistent to reduce the requirement for the Amateur Service to the level required by the third class Commercial operator's certificate. In addition, it was pointed out that a speed of ten words per minute seemed quite effective as a means of non-commercial communication.

Other points were raised in the detailed written submission and also at the conference between representatives of P.M.G. Central Office and W.I.A. Federal Executive. We are pleased to be able to release the full text of a letter recently received from the P.M.G. Department on this matter:—

Letter dated 5th January, reference 320/5/51, above the signature of Mr. R. Davies, Acting Controller, Radio Branch, addressed to Mr. J. B. Battrick, Federal Secretary, Wireless Institute of Australia.

"I refer to your letter of 24th July, 1967, and subsequent discussions concerning the question of the speed of the morse code test in the examination for the Amateur Operator's Certificate of Proficiency.

"I am pleased to be able to inform you that the Wireless Telegraphy Regulations have now been amended as required to provide for a reduction in the speed of the test from fourteen to ten words a minute.

"Accordingly the telegraphy section of the examination to be held on 20th February, 1968, and subsequent examinations will be conducted at the lower speed.

"The new conditions have been incorporated in the new Handbook which should be available shortly. [The new Handbook is now available.—Ed.]

"In the meantime, however, it would be appreciated if you would be good enough to arrange for the matter to be publicised through the normal channels of the Institute, please.

"Opportunity is taken to point out that with the reduction in the speed of the telegraphy test the marking arrangements for this section of the examination, as shown in paragraph 19 of the draft copy of the Handbook, which was forwarded to the Institute on 25th September, 1967, have also been altered. Enclosed is a copy of an extract from the revised section of the new Handbook."

An implication of this revised section 19 is that the comment published in the January issue of "A.R." on page 18 will have to be amended. Previous-

errors or less for a pass, and the 10 w.p.m. sending section will require four errors or less for a pass.

Paragraph 19 summarises the pass conditions for telegraphy in a table which indicates that the receiving test is of 50 words in length, of a duration of five minutes, with the maximum number of errors permitted being seven; it also indicates that the sending test is of 25 words in length, of a duration of 2½ minutes, with the maximum number of (uncorrected) errors permitted being four. In both tests, a "word" averages five letters, and each figure counts as two letters as was the case before.

Executive is pleased to announce a successful achievement of this motion 5.2 which was voted upon in the affirmative by all Divisions in Hobart last Easter. The negotiations were at all times conducted in a cordial atmosphere, and Executive wishes to thank the officers of Central Office P.M.G.'s Department who have agreed to this request from the Amateur Service as expressed through its national society, the W.I.A.

JOHN B. BATTRICK, VK3OR,
Federal Secretary, W.I.A.

FEDERAL COMMENT

ly, with the 14 w.p.m. test of 5 minutes duration, a standard of accuracy of ten errors or less was required for a pass in the receiving section, and the 2½ minute sending test required a standard of accuracy of five errors or less for a pass.

Now, with the test at 10 w.p.m., the receiving section will require seven

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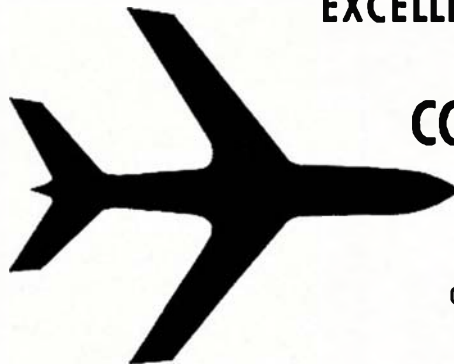
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AUSTRALIS OSCAR "A" — USERS' GUIDE

BACKGROUND

THE Melbourne University Astronautical Society was formed at a time when the image of space research was dominated by a spirit of adventure. Today, much of the popular interest has subsided, but the potential of the spacecraft is being rapidly revealed. The satellite is an indispensable tool in many fields of research; its use in communications, navigation and meteorology is commonplace. The matter of communications, which received major publicity in 1962 with the success of Telstar 1, had already attracted the attention of Amateur Radio operators in the U.S.A.

At present the h.f. bands are overcrowded, but the traffic increases daily. One obvious solution is to move to higher frequencies. The early problems of noise and instability no longer haunt the v.h.f. bands, but propagation characteristics severely limit the capabilities of v.h.f. Global communications may be achieved by such methods as moon-bounce, but perhaps a neater solution is the artificial satellite. This has been accomplished, but still the Amateurs are tied to the h.f. bands for international communications.

During 1965, the Melbourne University Astronautical Society began to investigate the problems of satellite construction. With the co-operation of Oscar, Project Australis was formed. Australis, like Oscar, aims to build communications satellites for use by Amateur operators in all parts of the world. In contrast to its American counterpart, Australis has no local background of satellite technology. This situation contributed to the difficulty in initiating the project. Financial limitations have also restricted progress. The result is that the first satellite is a relatively simple test vehicle, carrying two telemetry transmitters, a command system and a magnetic attitude control system. All electrical power is supplied by batteries which are expected to have an operating lifetime of about two months.

The satellite does not carry a repeater or translator.

It will be known as **Australis Oscar "A"** until it is placed in orbit around the earth. Once in orbit, it will be given the next number in the Oscar series to replace the "A".

The package construction, the command system, the antenna array and the magnetic attitude stabilisation system could all be classed as experimental. The rest of the satellite provides the platform on which the experiments may be conducted.

However, when the experimental data must be recorded at a distance, the techniques of information transmission are added variables in the system.

For Amateur operators and short wave listeners there are opportunities to practise the art of tracking satellite signals in both the ten metre and two metre bands. The behaviour of the ten metre signal will illustrate long range propagation characteristics in the band.

● This article contains full instructions for all wishing to track the satellite. Since the success of the project depends on the support of a large number of tracking stations, the organisers are anxious to enlist the co-operation of suitably equipped radio operators, short wave listeners and v.h.f. enthusiasts everywhere. Any enquiries or requests for more detailed information will also be welcomed by:

Project Australis,
Union House,
University of Melbourne,
Parkville, Vic., 3052.

In addition, there is a secondary objective. The project requires an efficient ground communications system to disseminate orbital figures and to collect data recorded by operators in all parts of the world. So far, the information channels have been organised, but the reliability of such a system has yet to be proved.

The final point illustrates the dependence of the project on human, as well as technical factors. Mechanical strength may be measured; electronic reliability has been improved with technology; for your assistance and co-operation we can only ask.

A TECHNICAL DESCRIPTION

The obvious essentials are the two transmitters (10 metres and 2 metres) carrying the eight-channel telemetry. To conserve battery power, a command system allows ground stations to control the operating time of the h.f. transmitter. A timetable will be published before the launch.

A brief technical description of the spacecraft follows.

Hi Keyer

The hi keyer generates the Morse code identification. Although it operates continuously, producing the synchronisation pulses for the telemetry encoder, its signal is transmitted for only 6½ seconds of each telemetry cycle.

Telemetry

Temperature, spin rate and battery performance are relayed to earth by the eight-channel telemetry. Two temperature readings—one at the inside surface of the aluminium case, and the other from the insulated electronics compartment—are effected by thermistors.

Three phototransistors sensitive to reflected radiation from the earth are mounted on orthogonal axes. The output from each will indicate its orientation, and the rate of variation of all three is a measure of spin velocity.

The channel sequence is:—

- 0—Hi identification.
- 1—Current drain.
- 2—X axis horizon sensor.

- 3—Battery voltage.
- 4—Y axis horizon sensor.
- 5—Internal temperature.
- 6—Z axis horizon sensor.
- 7—Skin temperature.

In every case, the parameter is specified simply by the audio frequency. Unlike Oscar 1 and Oscar 2, the hi channel carries no telemetry data.

A continuously operating switch ("encoder") samples each sensor for about 6½ seconds in the 52-second cycle. The voltage output is fed to an audio oscillator which modulates both transmitters. The audio frequency may vary from 400 cycles to about 2,000 cycles.

V.h.f. Transmitter

A 50 mW. crystal controlled transmitter operates continuously on 144.050 Mc. It is amplitude modulated by the telemetry.

H.f. Transmitter

The only ground commandable equipment is the 250 mW. h.f. transmitter. It is crystal controlled on 29.450 Mc. The modulation is identical with the v.h.f. signal, except for a 180 degree phase difference. In each case the modulation index is 0.90.

Command System

Commands from earth are detected by a double change superhet receiver. The audio output is fed to the decoder which determines the validity of the command. When a correct signal is received, the decoder produces a control voltage to switch the h.f. transmitter.

Battery

Power is supplied by 28 alkaline manganese cells wired in two identical 20-volt series "strings". Each string supplies one transmitter, and the rest of the electronics run from both strings through an arrangement of protective diodes. If one string fails by short circuit or open circuit, then one transmitter is cut out, but the rest of the system operates. The diodes ensure that a short circuit in one string cannot impose an excessive load on the other.

Stabilisation

To limit signal fading, and to maintain the antennae in a favourable orientation, some form of attitude control is necessary. Spin may be introduced at ejection, or by the prolonged action during the satellite lifetime, of microscopic perturbing torques. The energy associated with spin is removed by magnetic hysteresis loss in an array of permalloy wires, and by eddy current loss in the aluminium alloy case. A bar magnet brings the X axis of the satellite into line with earth's magnetic field.

Package

The electronics modules are mounted on an aluminium frame which is built around the battery compartment. A layer of thermal insulation separates all of this from the outer case. The aluminium alloy used for the case contains 1.0% magnesium, 0.6% silicon,

0.2% copper and 0.2% chromium. A paint pattern on the outside surface is designed to maintain a fairly stable internal temperature by regulating heat radiation.

All antennae are made of flexible steel tape.

TRACKING INFORMATION FOR AUSTRALIS OSCAR "A"

Regional Directors

For the purposes of disseminating tracking information, three regional directors have been appointed. Each director is responsible for distributing information within a specified area.

When Australis Oscar "A" has been launched, Project Oscar will obtain orbital data and distribute them to the regional directors who will send them to local co-ordinators. Local co-ordinators will complete the distribution to all tracking stations within their area.

Areas and Regional Directors

North and South America: Project Oscar Inc., Foothill College, Los Altos Hills, Calif., U.S.A., 94022.

Asia and Australasia: Project Australis, Union House, University of Melbourne, Parkville, Vic., Aust., 3052.

Europe and Africa: W. Browning, G2AOX, 47 Brampton Gr., Hendon, London, N.W.4, U.K.

Data Distribution within Asia and Australasia.—The local co-ordinators within the Asian and Australasian area act as links between the regional director and amateurs who are tracking Australis Oscar "A". The co-ordinator will have the following responsibilities:

- He will have equipment to provide two-way h.f. communication with the regional director for the reception of tracking information and the transmission of urgent data about the satellite condition.
- He will distribute orbital predictions to amateurs within his area.
- He will provide telemetry forms to tracking stations and return completed forms to: Project Australis (Telemetry), Union House, University of Melbourne, Parkville, Vic., Aust., 3052.
- He will keep up-to-date information on the operation of Australis Oscar "A" and will be able to provide this information to tracking stations and the press.
- He will ensure the best possible press coverage, as present and future Oscar projects rely upon public support. All information within this Users' Guide may be released to the press.

Local Co-ordinators

Local co-ordinators for the Asian and Australasian area are as follows:

New South Wales: A. Swinton, VK-2AAK, P.O. Box 1, Kulnura, N.S.W., 2251.

Victoria: W. M. Rice, VK3ABP, 54 Maidstone St., Altona, Vic., 3018.

Queensland: L. Blagborough, VK-4ZGL, 54 Bishop St., St. Lucia, Qld., 4067.

South Australia: B. Tideman, VK-5TN, 33 Ningana Ave., Kingspark, S.A., 5034.

Western Australia: D. Graham, VK-6HK, 42 Purdon St., Wembley, W.A., 6019.

Tasmania: P. Frith, VK7PF, 181 Punchbowl Rd., Launceston, Tas., 7250.

Japan: Kenso Sano, JA1EC, 11-16 Misaki-2, Kofu, Japan.

Malaysia: C. W. C. Richards, 9M2CR, Telecommunications Training Centre, Jalan Gurney, Kuala Lumpur, Malaysia.

New Zealand: B. Rowlings, ZL1WB, Mason St., Onerahi, Whangerei, Northland, New Zealand.

Orbital Data and Predictions

In order to obtain good v.h.f. telemetry records from Australis Oscar "A", it will be necessary to use moderately directive receiving antennae which must be pointed towards the satellite throughout the pass. This section describes the tracking data to be distributed by Project Australis and explains how to use it.

Using the Orbital Predictions.—Throughout this section it is assumed that the satellite is in a circular orbit at a height of 500 statute miles, and with an inclination of 70 degrees to the equator.

Once the height and inclination of the orbit are known, the position of the satellite during a particular pass can be specified by the time and longitude of the previous northbound equator crossing of the satellite. The times and longitude of these northbound equator crossings will be predicted by Project Oscar and distributed to local co-ordinators. A typical set of northbound equator crossings is given in Table 1.

Ascending Nodes for Australis Oscar "A"				
Date	Orbit	Time	West Longitude	
31 Jan. '66	0000	0526	356	
31 Jan. '66	0001	0707	20	
31 Jan. '66	0002	0848	44 ***	
31 Jan. '66	0003	1029	70	
31 Jan. '66	0004	1210	96	

Table 1.

Each local co-ordinator will be provided with a set of standard antenna pointing angles, giving at two-minute intervals, the satellite azimuth and elevation angles and the number of minutes since the previous northbound equator crossing. These pointing angles will be supplied for a number of standard longitudes of the northbound equator crossing. A set of pointing angles for a standard pass is shown in Table 2.

To obtain antenna pointing angles for a particular pass, choose the standard set which has a northbound equator crossing as close as possible to the actual longitude of the northbound equator crossing for the pass. This actual longitude will be given in the orbital predictions, such as those in Table 1. Add the number of minutes given in the left-hand column of the set of standard pointing angles (Table 2)

Standard Orbit Coordinates			
For Station VK3ATM, Melb'ne, Aust. 215° West, 37° South.			
Ascending Node, 45° West.			
Add			
Minutes	Azimuth	Elevation	
84	171	3	
86	165	9	
88	159	15	
90	144	19	
92	131	15	
94	123	10	
96	119	5	

Table 2.
This is a sample computer output.

to the time of the northbound equator crossing for the actual pass (given in the predictions, such as in Table 1), obtaining the time for which the satellite is at the given azimuth and elevation angles.

For example, if orbit number 0002 of Table 1 is to be tracked at Melbourne, first obtain the longitude of the northbound equator crossing from Table 1 (44W.). Then choose the closest standard orbit, for which the longitude of the northbound equator crossing is 45W. (shown in Table 2). To give the actual time, add the equator crossing time to each time in the left hand column of Table 2. Thus at 0848 GMT + 84 minutes = 1012 GMT the satellite azimuth will be 171 deg. and elevation will be 3 deg. The azimuth and elevation angles are similarly calculated every two minutes, giving the pointing angles shown in Table 3.

Calculated Pointing Angles for Orbit Number 0002			
Time GMT	Azimuth Deg.	Elevat'n Deg.	
0848 + 84 = 1012	171	3	
+ 86 = 1014	165	9	
+ 88 = 1016	159	15	
+ 90 = 1018	144	19	
+ 92 = 1020	131	15	
+ 94 = 1022	123	10	
+ 96 = 1024	119	5	

Table 3.

As a rule, tracking stations will be able to observe two northbound passes about 100 minutes apart, followed about 12 hours later by two south-bound passes about 100 minutes apart. This pattern will be repeated each day.

Schedules.—As a rough guide, the equator crossing predictions are accurate for as long after issue as the satellite has been in orbit when the predictions are issued. For example, predictions issued three weeks after launch will be accurate for about another three weeks.

Each local co-ordinator will receive tables of Standard Pointing Angles and Northbound Equator Crossings as described below.

- Several months before launch, a set of Standard Pointing Angles for the expected orbit, and a set of typical Northbound Equator Crossings (for demonstration purposes only) will be issued.

(b) As soon as possible after the launch, a list of Northbound Equator Crossings will be issued. This list will probably be accurate for only a few days. If the actual orbit is greatly different from that expected, a new table of Standard Pointing Angles will be issued.

(c) Throughout the satellite lifetime, lists of Northbound Equator Crossings will be issued by both mail and Amateur Radio, sufficiently often to keep local coordinators well informed, probably at fortnightly intervals.

USING AUSTRALIS OSCAR "A"

Australis Oscar "A" will transmit telemetry continuously at a frequency of 144.050 Mc., and at a frequency of 29.450 Mc., when the transmitter has been commanded on.

All tracking stations are requested to obtain telemetry data from either transmitter whenever possible, since telemetry reception and reduction is one of the major purposes of this project.

The following sections give an outline of the minimum equipment needed to receive telemetry from Australis Oscar "A".

Receiving Antennae

V.h.f. Antenna.—It is desirable to use a circularly polarised receiving antenna to reduce fading caused by changes in satellite attitude. This antenna should have a gain of at least 10 db.

One suitable antenna is a crossed yagi (two yagi antennae pointing in the same direction, one with vertical and the other with horizontal polarisation), one being connected through an extra quarter wavelength of cable, giving a 90-degree phase shift between the two driven elements. Another suitable antenna is a helix, such as the one described in "QST" for November, 1965.

To receive good signals while the satellite is at high elevations the antenna should be steerable in elevation as well as in azimuth.

If measurements of the satellite spin rate are to be made, a horizontally or vertically polarised antenna should be used.

H.f. Antenna.—If a linearly polarised antenna is used to receive the h.f. signal, fading will occur because of both satellite spin, and ionospheric Faraday rotation. Thus it may be difficult to determine the satellite spin using the h.f. signal, unless the operator is capable of separating the two variations.

For reception of the h.f. telemetry, a pair of crossed, horizontal dipoles, mounted one quarter wavelength above ground, will give a reasonably good omni-directional, circularly polarised pattern.

Converters

To obtain a good signal to noise ratio, the v.h.f. converter should have a noise figure of about 4 to 8 db. Most h.f. receivers should be adequate to receive the h.f. telemetry although some older receivers may need a pre-amplifier.

Receivers

Both transmitters are amplitude modulated, with maximum modulation fre-

quencies of 2,000 cycles, so that receivers should have i.f. bandwidth of about 4,000 cycles. Except for initial acquisition of the signal, a b.f.o. should not be used, as the telemetry information will be lost.

Telemetry

Most of the information required about the satellite is derived from the audio telemetry, which has eight sequential channels. Each channel is transmitted for about 6½ seconds and the whole cycle lasts for 52 seconds.

The hi channel consists of a 1.6 sec. tone followed by a 1.6 sec. hi, all repeated once again. The hi is transmitted not as m.c.w. but as a.f.s.k. Thus the tones do not key on and off, but switch between two tones of different frequency. The actual frequencies contain no telemetry information.

The hi channel is followed by seven tones, each 6½ sec. long and each sending information about one of the channels. By measuring the audio frequency and using the calibration graph for the channel, the quantity concerned can be determined. During telemetry decoding, the time should be watched carefully, as the frequencies of two adjacent channels may be similar and the transition from one to the next may not be audible.

The sequence of the telemetry channels have been previously mentioned.

To enable the telemetry reports to be evaluated by computer, all tracking stations are requested to enter their observations on a special telemetry coding form.

Telemetry Decoding

One convenient method for decoding the telemetry is to use Lissajous figures. The received audio signal is applied to the vertical input of an oscilloscope and a sine wave from a calibrated audio oscillator is applied to the horizontal input. The frequency of the audio oscillator is adjusted until a stationary ellipse is seen, indicating that both frequencies are the same.

If the oscilloscope timebase has been calibrated, a set number of cycles can be displayed and the period of each cycle determined, and hence the frequency. If the timebase is free-running, as little sync. as possible should be used to avoid changing the timebase calibration.

If an oscilloscope is not available, the frequencies of the received telemetry and of the audio oscillator can be matched by ear. Even with poor signal to noise ratios, this method gives results accurate to within about 10 cycles at 2,000 cycles.

Another method, which in many cases can give better accuracy than any previously described, is to match the tone with a piano note. However, confusion of octaves must be carefully avoided.

Lastly, if the signal to noise ratio is good, the best method is to use a direct-reading frequency meter or digital counter.

If a tape recorder is used to record data, its speed should be accurate to within five per cent., at worst, or else results will be seriously in error. Otherwise, operators are advised to practise measuring the frequency of an audio tone in less than seven seconds. It

should be pointed out that inaccurate results are worse than none at all—an accuracy of at least ten per cent. is needed.

Readability and Signal Strength

The readability and strength of the received signal will be used in deciding the weight given to the decoded telemetry.

Telemetry Coding Form

Having decoded the telemetry for a pass, please select those results which you think are the most reliable. This will often mean rejecting wildly inconsistent results which may arise when the telemetry is decoded directly, rather than from a recording. Where a large number of consistent results are obtained, all should be entered on the telemetry coding form, since this is an ideal indication of the reliability of the information.

Please write clearly, with only one character in each column. All dates and times must be in GMT.

The following information is required:—

- Call sign of tracking station. (If no call sign, write ZZ1, followed by the operator's initials.)
- Orbit number.
- Month and day.
- Time of acquisition of signal (A.O.S.) and loss of signal (L.O.S.), and readability and strength for each transmitter.
- Hi keyer operation: the letter A for normal and F for failure, which should be described on a separate sheet.
- Battery current drain in milli-amp.
- Battery voltage in volts.
- Internal temperature in degrees Centigrade.
- Skin temperature in degrees C.

All data entered on these sheets will be stored in a computer at Melbourne University. The form is in fact a replica of a computer card.

Reports on horizon sensor data should be treated differently. Since we are concerned only with eight "light" or "dark", the actual frequency of the sound is of no interest. Each change in frequency corresponds to a transition of the field of view of a sensor between different states of illumination. The length of the higher frequency (bright) periods, depends on the spin rate, and on the nature of the traverse across the bright source. For example, a short period could correspond to a single sweep across a short chord, or to a much faster sweep across a near diameter of the earth's disc. The sun and moon will also appear as bright sources against the dark background of space. However, they subtend such small solid angles at the satellite that the sensors will rarely sweep across them. Both would produce short high-pitched signals in the appropriate telemetry channels (Nos. 2, 4 or 6).

Now because the package may be rotating about three axis simultaneously, the spin rate on any single channel may not sound regular, except over a very long time. It is impossible to determine the spin rate directly. In fact

(Continued on Page 12)

TRI-BAND BEAMS

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THE SHOEBOX II. LINEAR*

JOHN J. SCHULTZ, W2EYJ1



Front view of the Shoebox II. Linear. Although similar in concept to the earlier Shoebox Linear, the Mark II. features more flexibility of operation and ease of construction. Inexpensive 6HF5 tubes are used in parallel to deliver as much power as the builder desires.

THE original Shoebox Linear appeared in an earlier issue of "CQ". Basically, it was designed as an easy-to-build project using only hand tools. The original linear used rather old-fashioned 837 tubes which the "CQ" staff suggested changing to 12DQ7 tubes. After hearing from various Amateurs who built a linear along the Shoebox lines, I decided to build another one incorporating some of their suggestions and some ideas of my own to improve the unit. The resulting Shoebox II. is even easier to build than the original, uses modern low-cost tubes, lower plate voltage, has variable output loading and offers several drive and power level options to suit almost anyone's needs.

The unit uses 6HF5 tubes which have become probably the most popular t.v.-gone-linear tube judging from its wide use in home-brew and commercial designs. With 800 volts plate voltage, the recommended maximum, each tube can handle about 200 watts p.e.p. or

150 watts c.w. input. The linear can be built with anywhere from 1 to 10 of these tubes in parallel, depending upon the power level desired. This wide range of tube quantities can be accommodated with relatively minor changes in the basic design.

The power transformer must be capable of supplying the filament power of 6.3 volts at 2.25 amperes per tube and a high-voltage winding VA rating (taking the total secondary voltage) of about 50 watts per tube (60 mA. for an 800 volt secondary). The p.i.v. rating of the diodes in the bridge rectifier remains the same and diodes of various current ratings differ very little in price. The size of the filter capacitors remain the same. This would not be the case if a doubler circuit were being used as with the original Shoebox since the capacitor size would then have to be increased with increased current drain. The other components that must be chosen for the number of tubes used are the plate choke (current rating) and the pi-network coil.

LINEAR CIRCUIT

Fig. 1 shows the schematic of the linear using four tubes as constructed by the author. A grounded cathode circuit is used and the grid input circuit can either be untuned or tuned. Most s.s.b. exciters will supply sufficient drive so an untuned input circuit can be used. Approximately 10 watts of drive per tube is required. The untuned circuit is preferred not only because it eliminates a tuning control but because of increased amplifier stability. The load resistor used in the grid circuit must be an r.f. non-inductive type. (It should not be a wire-wound power resistor labelled "non-inductive".) A suitable 50 ohm 30 watt unit can be constructed from 2 watt composition resistors as shown in the photograph.

If an exciter unit is used which will not supply sufficient drive for an untuned input circuit (such as a 10A or 20A unit) the tuned input circuit shown in Fig. 2 can be used. Only a watt or two of r.f. will be required for drive. However, care must be taken to properly isolate the input and output circuits. The input circuit should be enclosed in a Minibox inside the main enclosure. A neutralisation voltage tap is available from the multi-band circuit shown in Fig. 2. Normally, it should not be needed but, if it is, a metal tab of 1/2" x 3" placed near the plates of the tubes should suffice.

The pi-network coil shown in Fig. 1 should be adequate for five or possibly six tubes. However, beyond this, the output capacity of the tubes adds up to such a value that on 10 and 15 metres a coil of the required low inductance becomes touchy to build. Placing a variable capacitor in series with a larger inductance, as shown in Fig. 3 (as is done in the Galaxy linear which uses ten 6HF5s) solves this problem nicely although care must be taken to isolate

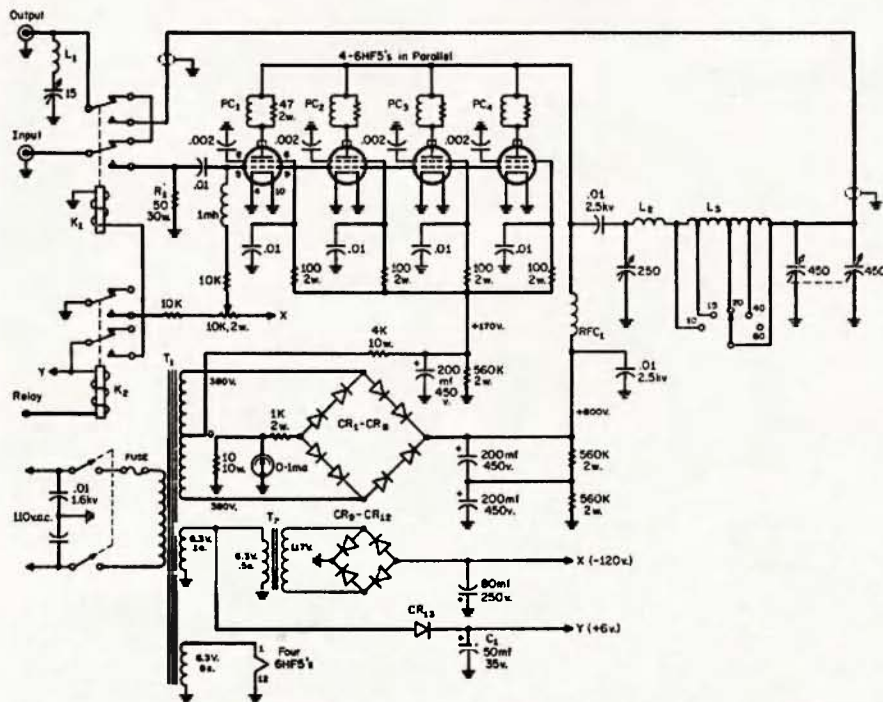


Fig. 1.—Circuit of the Shoebox Linear II. using four tubes in parallel. All resistors are 1/2 watt except where noted. All capacitors greater than one are in pF.; capacitors less than one are in uF. except where noted. Control grids of each tube are paralleled directly with heavy wire or 1/4 inch flat copper strip. Relays K1 and K2 can be a.c. types and CR13 and C1 eliminated. If d.c. types are used, however, the relay operation is quieter.

CR1 to CR8—750 mA., 800 p.i.v. diodes.

CR9 to CR12—200 mA., 400 p.i.v. diodes.

CR13—1 amp, 100 p.i.v.

K1, K2—D.p.d.t. relay 6v. a.c. or d.c. coil, or one 4 p.d.t. relay (see text).

L1—7t. 16 g. enamel, 1/2 in. diam., spaced 1/16 inch between turns for Channel 2. Reduce the number of turns for higher channels.

L2—4t. 8 g. tinned, 1 inch diam., 1 inch long.

L3—36t. 14 g. tinned, 2 inch diam., 8 t.p.l., 4 1/2 inch long. Polycoll No. 1770 or Air Dux No. 1608T. 15 mx tapped at 2t., 20 mx tapped at 4t., 40 mx tapped at 7t.

PCI—10t 18 g. enamel, closewound on 47 ohm 1 watt composition resistor.

RFC1—1 mh., 600 mA. National R154U or equiv.

T1—TV type power transformer, 380-0-380v. a.c. at 250 mA., 6v. at 9a., 6v. at 1a.

T2—Filament transformer, 6v. a.c. at 1/2 amp. connected backwards.

A MOBILE POWER SUPPLY

Incorporating a Handy Stationary Parked Adaptor

DOUG. J. PANNELL,* VK6EP (VK6SP MOBILE)

RECENTLY I went walk-about (civilised-style) complete with a caravan. Maybe it wasn't that peaceful either, I had the XYL and two harmonics along as well. Anyway I was mobile around central Western Australia and the Swan is a powerful bird to build a mobile supply for cheap. Several low power S.S. Switchers purred along nicely for me if I didn't load them.

Up came a suggestion from VK6XY that he remembered a W commenting on the possibility of using the alternator some modern mobile shacks have for standard equipment. Now this is a bit much, breaking into a nicely sealed JA type three-phase alternator. I found all hands and the XYL out one Saturday afternoon, so into it I went. I had to remove it completely and open it up to get at the point of take off before the diodes.

Beware of the two slip-ring brushes, take the precaution of lifting them. Eventually I got the unit back in its appointed place and there were three 40/007 shielded leads coming from a bushed hole in the casing. I started the prime mover, and proceeded to find the voltage flow, E E E and it was 10 volts come idle or flatout. Now here was a point to start, and start I must, because events at the top of this page are two months old. Time had fled, leave was around the corner.

The months had dwindled to two weeks and no mobile supply was in evidence, so, to the grindstone. First I ordered 3 lb. of e.c. 16 s.w.g. to carry the 10a. maximum alternator output.

* 20 Hare Street, Kalgoorlie, W.A., 6430.

Next I sorted my core stocks and found enough for three cores of 50 watt capacity at 50 c.p.s. (N.B.).

Put all this information on the shelf because here I learned about a rummage disposal of superceded equipment by an organisation to take place the following Saturday. I brought away three ancient transformers manufactured by an amalgamated group pre-war, 3½" square by 4" high, labelled 410v. 40 cyc. 10v. 1 5a. along with other bits. On brushing the dust off, horror, there appeared a point (.) between the 1 and 5 rating!!!

Here my school changes the 10v. winding becomes the primary and the 410v. the secondary! Obviously we must check the capacity of this 10v. winding, so I placed an ammeter across the 10v. primary and loaded the 410v. secondary through a Variac until 9 amps. showed on the meter. Half an hour later I casually tested the case temperature with the tip of a finger. It was barely warm!!! Hastily I switched off the power lest any harm should befall these valuable pieces of equipment. They had been subjected to much more than ever to be encountered in actual use.

A chassis, a piece of 12g. 3½" cad. channel, 11" long, was located in the junk box and the three transformers bolted to it. These have terminal posts set in each base so point to point wiring aided by two 3" strips either side of the centre were all that was required.

The alternator is connected in Star "Y" and the star point floats so I brought out the three phases, fused them at 20 amps. and terminated them in a plug-base.

Now the three primaries I connected in Delta and wired a plug-top on the three incoming leads. The secondaries are wired in Star, all as shown in the diagram, and h.t., med. h.t., bias, and ground all terminate in a four-pin Jones plug-base.

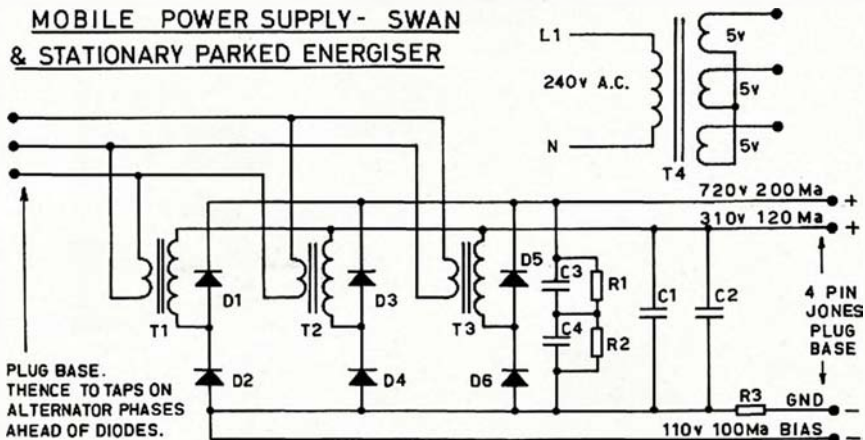
My unit is mounted on the bulkhead up front alongside the radiator, and the four power leads run in shielded cable to the 350. There is a relay operated by the on-off switch mounted on the power unit which opens two phases as well as cutting the heaters when not required.

Watch your soldering! as this unit comes in for its share of vibration and you could lose a badly soldered joint. Know what happens when your bias open circuits? I do!!!

The reason for the three-pin plug, besides access, is to enable the alternator to be unplugged when stationary operation for long periods adjacent to mains occurs. Now T4 (a 300 watt Star secondary transformer) can be substituted for the alternator and save long idling operation.

The voltage stability requires comment. After switching the heaters on and allowing a brief warm-up, as soon as cranking commences, up runs the signal meter and the receiver comes to life even before the engine fires. Measurements made indicate stability at 10 volts from cranking speeds to full engine revs., the efficiency increases as revs. go up and if poor iron is used, so will heat, so watch your selection. Don't build one for a turns iron ratio at above 50 cycles. I yak a lot at idling speed and I like the convenience of my SP adaptor.

MOBILE POWER SUPPLY - SWAN & STATIONARY PARKED ENERGISER



C1-C4—32 uF. 600 v.w.
D1-D6—8Y100.
R1-R2—20K 1w.
R3—1K 40w.
T1-T3—10-410v. at 50 cycles.
T4—240-10v. Star at 50 cycles.

T1-T3 Data for 50 cycles, as text.
50va. cores: 1 sq. Inch c.s. area.
1 sq. Inch cross sec. area:
7 t.p.v.
Prim. 1: 10a. on peak, 16 s.w.g. x 70 turns.
Sec. 1: 60 mA. peak, 33 s.w.g. x 3000 turns inc. 5%.

T4 Data—
400 v.a. core: 3.5 sq. Ins. at 50 cycles for 2.33 turns/volt.
Prim. 1: 1a. on peaks, say 25 s.w.g. x 560 turns.
Sec. 1: 10a. on peaks, so two 16 s.w.g. wires x 12 turns for each of three (pseudo star) 5v. windings connected as shown.

THE SHOEBOX II. LINEAR

(Continued from Page 8)

each setting of the bandswitch to check for parasitics by noting any change in cathode current. If any are noted, the plate parasitic suppressor coil should be adjusted until they disappear.

With drive applied (c.w.), a cathode current of about 175-200 mA. per tube (approximately 750 mA. for four tubes) should be obtained with the output circuit resonated. The cathode current meter swing with s.s.b. modulation depends upon the meter movement characteristics, but will be about 100 mA. per tube. The allowable meter swing for maximum output without distortion can only be checked properly by a two-tone test or careful on-the-air check using a receiver with a panoramic adaptor.

Thanks are certainly in order for those who wrote about the original Shoebox article. Hopefully, this article has further clarified some of the construction procedures used and by use of improved design made the linear more appealing as a relatively simple construction project.

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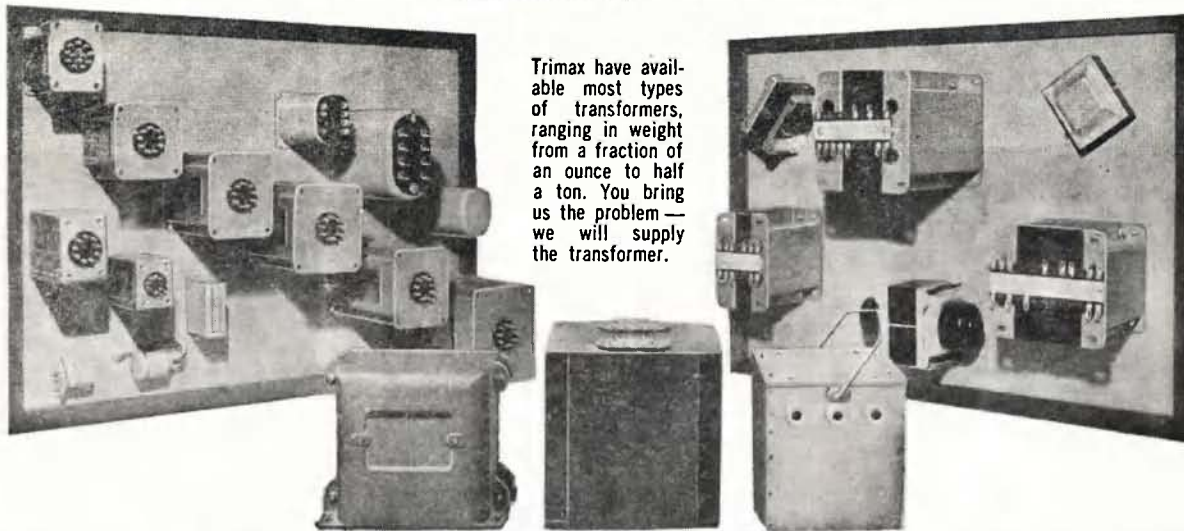
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L.M. 51

The Stability of Transistor Variable Frequency Oscillators*

A. D. MacDONALD, B.Sc., Assoc.I.E.E.

TRANSISTORISED v.f.o.'s are still generally considered to be less stable than valved ones, and considering some designs, there is justification in this belief. However, transistors can perform well, and it is the purpose of this article to decide how to go about achieving the highest possible stability without introducing too many complications.

There are three causes of instability: (1) Supply variations, (2) Temperature effects, and (3) Loading effects.

SUPPLY FLUCTUATIONS

A change in the supply voltage to a transistorised oscillator results in a change in the base to collector capacitance, which affects the total capacitance across the tuned circuit, and so the frequency alters. As this change of capacitance can easily be 0.5 pF. for a voltage change of 9 to 8 volts, the effect of it makes it practically essential to use a stabilised supply, and a Zener diode stabiliser is usually sufficient.

TEMPERATURE

Temperature effects are many and varied. First consider the transistor. An increase in temperature increases the gain, reduces the base to emitter voltage drop, and results in a greater current flow.

This in turn alters the parameters of the transistor, and once more appears as a change of capacity across the tuned circuit. The cure? If the stability of the operating point is improved, the frequency stability of the operating point is improved, the frequency stability will likewise improve, and this necessitates the use of low resistance bias potential dividers, and possibly a compensating diode, as shown in Fig. 1. The diode should have the same voltage drop as the transistor base to emitter voltage. The effect of temperature on a germanium transistor is, incidentally, likely to be less than silicon in a good design.

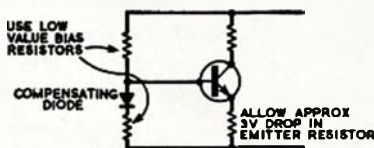


Fig. 1.—Use of a diode to compensate for variations in ambient temperature.

What about the tuned circuit components themselves?

Considering coil formers first, the temperature coefficient of all plastics is large, and thermoplastics like polystyrene are particularly high. Bakelite is better, and will probably be favoured owing to its availability. However, ceramic formers are vastly superior and it is worth seeking the smaller types.

The list of temperature coefficients (Table 1) includes pyrex for a good reason. As it is so stable, it makes an excellent coil former, and is available in the form of a pyrex test tube, easily cut to the right length.

Whatever former is used, it is important that the coil is wound tightly on it, for otherwise sudden small movements can occur. Actually all sorts of problems arise, because the wire has a different coefficient of expansion from the former, but if a strong glue is used, and the wire is thin, the former should be the controlling factor.

Polystyrene	80 p.p.m.
Bakelite	25 p.p.m.
Glass	9 p.p.m.
Ceramic	3 p.p.m.
Pyrex	1 p.p.m.

Table 1.—Coefficients of Expansion.

Do not use wave or pile-wound coils, which are not likely to be stable, and mount the coil well clear of any metal, as the metal can easily move with temperature. Finally, under no circumstances should magnetic core materials be used.

For a well constructed coil, the temperature coefficient of the inductor should be about the same as the coefficient of expansion of the former material.

Next we attend to the capacitors. Normally the variable part of the total capacitance is small, so the temperature coefficient is not too important, but make sure that the capacitor has bearings at both the front and the back, so that its capacity will not vary with the pressure of the hand on the tuning knob.

For the fixed capacitors, mica is usually the most stable, polystyrene has a negative coefficient, and ceramic can be obtained with a wide range of coefficients.

Mica	+35 p.p.m.
Polystyrene	-130 p.p.m.
Ceramic	+100 to -750 p.p.m.

Table 2.—Temperature Coefficients of Capacitors.

The choice is not easy to make. Certainly most of the capacity should be mica, with some negative coefficient added to balance, but ceramic capacitors are sometimes prone to humidity troubles, and polystyrene capacitors are readily available though in fewer values. On balance, ceramic capacitors of -750 p.p.m. coefficient are probably the best to use for compensation, but only a few per cent. of the total capacity should be of this type. The old idea of fixed value, variable coefficient capacitors was very useful under these circumstances, but such components are not so easily come by now.

One more point which affects stability is the by-pass or d.c. blocking capacitor

usually associated with the oscillator coil. This is effectively in series with the tuning capacitors, as in Fig. 2.

The types of capacitor usually used in these by-pass positions have a high temperature coefficient, maybe 1,000 p.p.m., so in a quite typical circuit where the tuning capacitances add up to 2,000 pF., the by-pass capacitor is 0.1 uF., or 2 per cent. of the total. Thus this capacitor adds 20 p.p.m. to the co-efficient, and the choice should be restricted to a low coefficient type, or a much larger value, for instance 1 uF. If 20 p.p.m. sounds small, remember that for a 10°C. change, a 14 Mc. signal changes by 2.8 Kc.

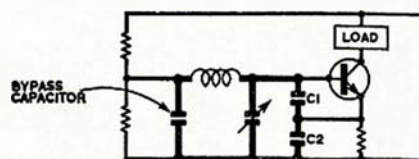


Fig. 2.—A typical transistor oscillator with the by-pass capacitor discussed in the text.

INFLUENCE OF THE OUTPUT LOAD

So much for components, what about varying load? Because of the internal feedback from collector to base, changes in the load caused by tuning or keying later stages will result in an apparent change in the oscillator tuning capacitance, producing frequency shift.

The easiest way of reducing loading effects is to operate the oscillator at a sub-harmonic of the desired frequency, as much of the feedback will then be at the wrong frequency to have much effect. Even better is to have two oscillators and mix their outputs to get the required frequency, as the feedback is then not even harmonically related. However, a small degree of frequency shift can still occur.

As the feedback appears as a change of impedance, the resistive part is relatively unimportant to the tuned circuit, but the reactive part is the main concern. By making the capacitors C1 and C2 in Fig. 2 large, they tend to swamp the changes fed back to the base. The only other thing to do is to use a circuit configuration which allows very little feedback. The three possible configurations are shown in Fig. 3.

Fig. 3(a) is considered by many to be poor, as common emitter stages are known to have poor isolation. How-

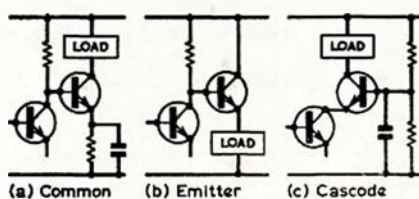


Fig. 3.—Transistor configurations considered for isolation of the tuned circuit from the output connection.

* Reprinted from R.S.G.B. Bulletin, Sept. 1967.

ever, because of mismatch, this gives a very much better performance than is often anticipated.

In Fig. 3(b), alterations in the load are directly reflected by the emitter follower, so the configuration should not be used. Remember that the input impedance of an emitter follower is β times the load.

It is becoming fashionable to use transistor cascodes, which are reputed to have extremely good isolation, and it is not usually fully realised that the cascode uses two transistors, and so comparison should only be made with other two-transistor configurations, when it can be seen that the common emitter pair is similar in isolation to the cascode. The conclusion? Use it

parallel tuned circuit of enormous C/L ratio. To achieve the fairly large percentage bandwidth usually required, the load is arranged to reduce the Q to a sufficiently low value: wide-band couplers are more trouble than they are worth.

Example: Allow 75 ohms collector load. Frequency 1.8 to 2.0 Mc. Load presented by next stage: 100 ohms.

Use $Q = 8$ for response about 2 db. down at edges.

$Q = \omega CR$ $R = 100$ $\therefore C = 6,800$ pF., so a foot or two of co-ax makes no difference.

Turns ratio = $\sqrt{75 \div 100} = 1:1.15$. Use a primary of 17 turns, and a secondary of 20 turns on a $\frac{1}{4}$ " diam. former, with a ferrite core.

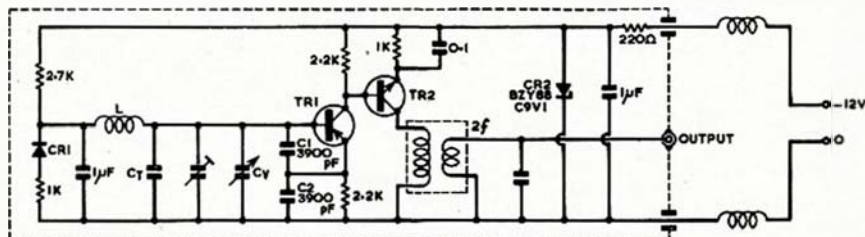


Fig. 4.—A practical Two-Transistor Oscillator. TR1 can be an OC171, in which case TR2 is a 2N706 and CR1 is an OA47; but if TR1 is a 2N706, TR2 is an OC170 and CR1 is a 1N914. Using the latter configuration, the polarities of CR1, CR2 and the supply should be reversed. The OC171 and OA47 are manufactured by Mullard, while the 2N706 and 1N914 are produced by Texas Instruments. C1 and C2 should be mica capacitors, and CT is an N750 ceramic, 150 pF. with a bakelite former or 75 pF. with a pyrex former. C1 and C2 have been chosen so that oscillation only just occurs, but if desired, they can be halved in value, together with CT, which will improve reliability of starting. A suitable arrangement for the output circuit can be evolved from details provided in the text.

as long as it is not an emitter follower. Remember, though, that a transistor pair will still have an effective feedback capacity of say 0.02 pF., which does not compare favourably with a single pentode valve.

FINAL PRECAUTIONS

The vital requirement of the output circuit is that it does not allow the output transistor to saturate. Saturation means that the transistor acts as a short circuit, losing its isolating properties. To present a low impedance to the collector, use a tapped coil, or a transformer with tuned secondary, or a

Finally, we will consider feedback due to strays and common coupling. If the oscillator components are grouped close together, there is less chance of magnetic feedback, and of course they should all be in a thick aluminium box. It must be thick, not for screening (silver paper would do), but for stability resulting from the rigidity.

Power supply leads should be run close together, so that pick up on one is the same as the pick up on the other. Twin screened lead would be excellent, with feedthrough capacitors and r.f. chokes for supplying the oscillator

box. The stabiliser circuit should also be in the oscillator box.

That concludes this short survey of oscillator stability problems, and suggests that a circuit as in Fig. 4 is the best answer, coupled with a careful (or lucky) layout.

AUSTRALIS OSCAR "A" USERS' GUIDE

(Continued from Page 5)

it is a job for a computer, but this would require the recording of several telemetry cycles at various times. As far as individual operators are concerned, we would only expect a comment on the length of the sweeps across the earth. In this case, "fast" might be about one second; four seconds would be "slow". An average statement for each of the three axis is necessary.

Since computers do not take kindly to scientific information expressed in these terms, no columns have been provided on the telemetry form. A few words could be fitted in at the bottom of the sheet.

When the form is complete, please return to: Project Australis (Telemetry), Union House, University of Melbourne, Parkville, Vic., 3052.

Station Details

Stations tracking Australis Oscar "A" are requested to supply the following information about their station:

- Name and postal address of the operator.
- Call sign or station identification.
- Station latitude and longitude.
- Brief description of v.h.f. equipment such as antenna, pre-amplifier, converter and receiver.
- Brief description of h.f. equipment.
- Brief description of method used to decode the telemetry.

Please send these details to the above address, and send amended information whenever a major change is made in your equipment, together with the date of the change.

ACKNOWLEDGMENTS

Project Australis gratefully acknowledges the kind assistance of the following organisations. Without their help the construction of the satellite would not have been possible.

- Acme Engineering, Melbourne—Radio Frequency Connectors.
- Cannon Electric Ltd., Melbourne—Resistors and Connectors.
- Ducon Condensers Pty. Ltd., Sydney—All Capacitors used in the satellite.
- Fairchild Australia Pty. Ltd., Melbourne—All Semiconductors used.
- Melbourne University Union—A generous grant for ground equipment.
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- The Potter Foundation, Melbourne—Travel grants for two persons to Project Oscar.
- Pye Pty. Ltd., Melbourne—All Radio Frequency Crystals.
- Rola Co. (Aust.) Pty. Ltd., Melbourne—M.A.S.S. magnet.
- Sample Electronics, Melbourne—Circuit boards.
- Turner Industries Ltd., Melbourne—Satellite antennae.
- Union Carbide Australia Ltd., Melbourne—Flight and Back-up Battery packs.
- Wireless Institute of Australia—A generous grant for running expenses.

Thanks are also extended to the Meteorology Department of Melbourne University and the Bureau of Meteorology, Melbourne, who have been most helpful during the construction of the satellite.

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 VK3AZW—T. Lelliot, 15 Owen St., Boronia, 3155.
 VK3ZGA—T. D. Gregory, 25 Cross St., Newborough, 3828.
 VK3ZUQ—B. R. K. Smart, 19 Hyslop Fde., East Malvern, 3145.
 VK3ZWN—P. Ramsay, 15 Vincent St., Oak Park, 3046.

VK3ZWC—W. A. Adams, 74 Spring St., Sandringham, 3191.
 VK3ZXP—P. E. Martin, 17 Stevens Pde., Black Rock, 3193.
 VK4JD—J. L. Thomason, 21 Joan St., Southport, 4215.
 VK4LR—L. R. Newsome, Flat 1, Loyola Court, Highview Tce., Toowoong, 4066.
 VK4WE—W. L. Shaw, 19 Fairmeadow Rd., Nambour, 4560.
 VK4ZFB—D. F. Blanch, 109 Grevillea St., Biloela, 4715.
 VK5LJ—J. K. Carter, P.O. Box 8, Elizabeth, 5112.
 VK5WY—J. F. Westley, 21 Brighton Pde., Blackwood, 5051.
 VK5ZRN—P. M. Reed, 22 Launceston Ave., Warradale, 5046.
 VK6CO—C. A. Smith, 21 Leura St., Hollywood, 6009.
 VK6LA—L. C. Allen, 189 Lockhart St., South Como, 6152.
 VK6ZBF—R. L. Holman, 364 Bagot Rd., Subiaco, 6008.
 VK6ZED—R. C. Tolchard, 49 Vidler St., Cloverdale, 6105.
 VK6ZFL—R. F. Lester, 44 Douglas St., Carnarvon, 6701.
 VK6ZFY—R. V. Pine, 46 Zenobia St., Palmyra, 6157.
 VK6ZGL—J. L. Lewis, 111 Churchill Ave., Subiaco, 6008.
 VK7CB—Club 43 South, 13 Wilmot St., Hobart, 7000.
 VK7ZBY—B. Yeoman, Flat 6, 7 St. Georges Square, Launceston, 7250.
 VK7ZHW—H. H. E. Westerhof, Flat 2, 57 King St., Sandy Bay, 7005.
 VK7ZMB—M. J. Boyd, 20 Ormond St., Bellevue, 7018.
 VK8AG—L. R. Burston, 18 Billeroy Rd., R.A.A.F. Station, Darwin, 5793.
 VK9FS—A. Freitas (Bro.), Station: Catholic Mission, Mongop, N.G.; Postal: P.O. Kavieng, N.G.
 VK9LR—R. H. Leskie, Station: Lutheran Mission (N.G.), Madang, N.G.; Postal: Lutheran Mission (N.G.), P.O. Box 56, Madang, N.G.
 VK9ZAK—A. Kildston, Station: Section 25, Lot 4, Bampton St., Port Moresby, P.; Postal: C/o. B.N.G. Trading Company, Port Moresby, P.

CANCELLATIONS

VK1AQ—N. M. McLeod. Not renewed.
 VK2BAA—G. S. Radford (Wing Cmdr). Now VK1GR.
 VK2ZEB—W. N. Hodges. Not renewed.
 VK2ZHH/T—D. Horton. Now VK2BDH/T.
 VK2ZJA—N. H. Stanley. Now VK2BNS.
 VK2ZOG—M. W. O'Grady. Now VK2BMO.
 VK3AKR—K. L. O'Rorke. Not renewed.
 VK3ARY—R. E. Yeats. Now VK2BRY.
 VK3ZBR—B. Yeoman. Now VK7ZBY.
 VK3ZJP—S. E. Buswell. Not renewed.
 VK2ZOG—M. W. O'Grady. Not renewed.
 VK3ZWP—W. B. Pywell. Now VK1ZWP.
 VK4GU—J. G. Kaarsberg. Transferred Antarctica.
 VK4ZRJ—R. C. Harris. Not renewed.
 VK5ZMZ—R. M. E. Olesnick. Ceased operation.
 VK6LK—C. J. Kosina. Transferred to South Australia.
 VK6RH—R. Haslett. Not renewed.
 VK7XX—D. B. McKelvey. Ceased operation.
 VK9ZAF—A. Freitas (Bro.). Now VK9FS.

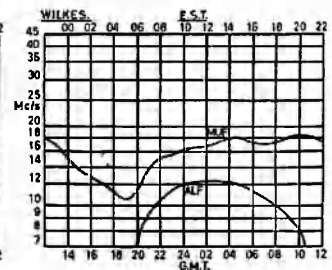
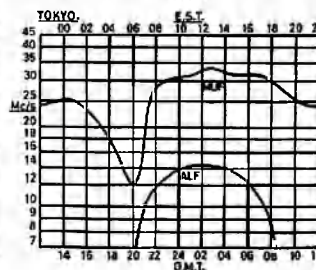
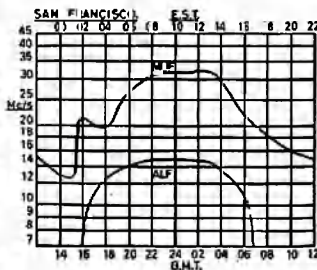
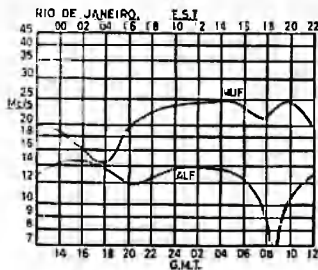
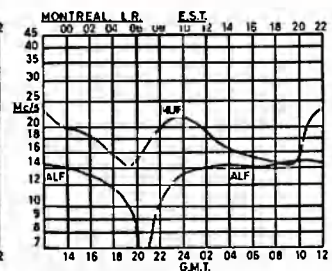
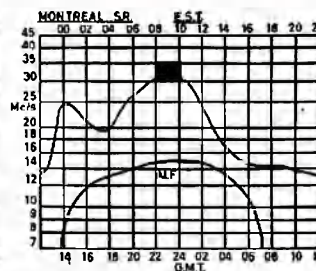
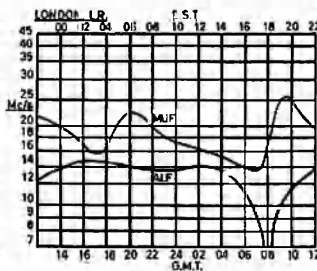
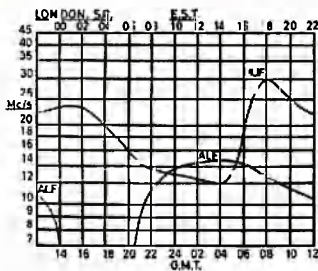
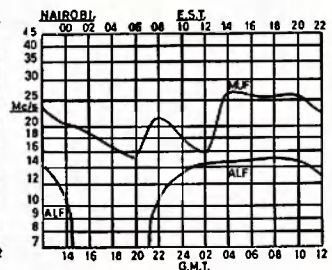
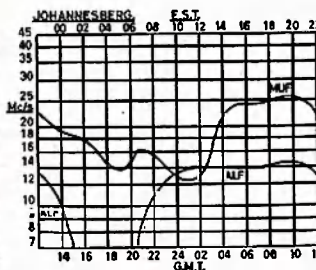
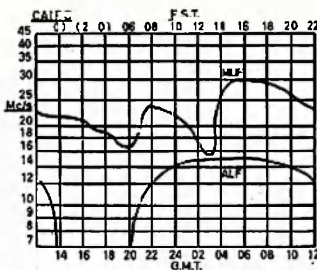
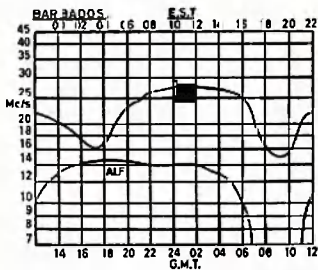
ADVERTISERS PLEASE NOTE!

Closing date for all advertisements has now been advanced to the first day of the month preceding date of publication. Copy should be sent direct to Richmond Chronicle, Shakespeare St., Richmond, Vic., 3121.

Remember, closing date for copy is 1st of each month.

PREDICTION CHARTS FOR FEBRUARY 1968

(Prediction Charts by courtesy of Ionospheric Prediction Service)



W.I.A. PLANNING I.A.R.U. CONGRESS IN SYDNEY

The Federal Council of W.I.A. holds its annual Convention in each State in rotation. This year it is the N.S.W. Division's turn to be hosts to the other Divisions over Easter 1968. However, this year N.S.W. have been requested by Federal Executive of W.I.A. to cater for a different form of Convention from that usually undertaken. That is, the W.I.A. Convention and an I.A.R.U. (International Amateur Radio Union) Congress will be held concurrently and jointly in Sydney this Easter. All Divisions have agreed that such a Congress is desirable, and a majority of Divisions have agreed that the venue should be Sydney.

This I.A.R.U. Congress move was made by Federal Executive some months ago when F.E. member David Rankin, VK3QV, indicated that he was off on a world trip on business. He was accredited as an official representative of the W.I.A., letters of introduction were sent to many overseas societies, and David was able to "sound-out" the possibility of their sending representatives to such a Congress if held. As a result of this personal contact, David was able to ascertain that in all probability representatives of A.R.R.L., R.S.G.B., N.Z.A.R.T., J.A.R.L., K.A.R.L. and other Amateur Societies would consider coming to Australia.

Accordingly, in view of this response, Federal Executive has sent invitations to I.A.R.U. headquarters (A.R.R.L.); Region 1 and 2 Executives, and the R.S.G.B.; and the following Amateur Societies in Region 3: N.Z.A.R.T. (N.Z.), J.A.R.L. (Japan), K.A.R.L. (Korea), M.A.R.T.S. (Malayasia), P.A.R.A. (Philippines), B.A.R.T.S. (Burma), R.S.C. (Ceylon), A.R.S.I. (India), P.A.R.I. (Indonesia), H.A.R.T.S. (Hong Kong), R.A.S.T. (Thailand), P.A.R.S. (Pakistan), A.R.S.I. (Iran), R.C.O. (French Polynesia). Also Amateurs in Singapore, Laos, Nepal, Afghanistan, Okinawa, New Caledonia, Fiji, and New Guinea have been circularised. It is hoped that those Societies that said they could send a representative do so, and that others can. It is realised though that many of the countries in South-East Asia will not be represented due to the smallness of the Amateur population, and because of currency restrictions, etc.

The stated aims of the I.A.R.U. Congress are:—

- (a) Ultimate Aim.—To establish and maintain continual liaison between Region 3 countries with a view to presenting a united front at future I.T.U. conferences, and to maintain a programme of assistance to developing countries.
- (b) Immediate Aim.—At Sydney in 1968, to establish an administrative and organisational framework to enable the achievement of (a) following perhaps the pattern of Regions 1 and 2.

The countries of Region 1 I.A.R.U. have had an Executive Committee since 1950, and at present the office-bearers are: Chairman, Lt. Col. Per-Anders Kinnman, SM5ZD (Sweden); Vice-Chairman, Roy Stevens, G2VBN (England); Secretary, John Clarricoats, O.B.E., G6CL (England); Treasurer, Ir. W. Dalmijn, PA0DD (The Netherlands); Members, H. Picolin, DL3NE (Germany), Janes Znidarise, YU1AA (Yugoslavia).

Region 2 organisation is similar, with its office-bearers: Chairman, Antonio Pita M., XE1CCP (Mexico); Vice-Chairman, J. Italo Giammattei, YS-11M (El Salvador); Secretary, Gustavo Reusens, OA4AV (Peru); Treasurer, N. B. Eaton, VE3CJ (Canada); Members, Bob Dennison, W0NWX (U.S.A.), Miguel A. Czych, LU3DCA (Argentina).

Our Region 3 (South-East Asia and Oceania) has no such organisation, but it is considered necessary to the preservation of Amateur frequencies by Amateurs in the other Regions, that such organisations be maintained. The last I.T.U. Conference at Geneva discussed frequencies on a world basis—it is expected that future I.T.U. Conferences will be held on a regional basis! So, W.I.A. feels that Region 3 must prepare for this, hence, in Sydney this Easter we hope to crystallise this feeling into a formal organisation of Region 3 Societies, with the help of our friends in Regions 1 and 2, and in co-operation with our neighbours in Region 3.

The overseas representatives will be the guests of Federal Executive of W.I.A. over the Congress period, so additional expense will not be incurred by Divisions, and the arrangements are in the hands of a joint committee of F.E. and the VK2 Division—notably Pierce Healey, VK2APQ, the VK2 Federal Councillor. Some W.I.A. Convention sessions will be held, but mostly the three days will be given over to discussion of I.T.U./I.A.R.U./Region 3 matters, both as they affect Australian Amateurs and Amateurs in Region 3 generally.

Over the past few years, W.I.A. has achieved agreement on its own internal re-organisation, viz. the new Federal Constitution; it has succeeded in gaining a clearly-stated and liberal set of operating conditions for Amateur operators, viz. the new Handbook; it has attempted to improve the Amateur's image by public service activities, viz. W.I.C.E.N. and Y.R.S., etc.. Now it feels that consideration should be given to aspects of international Amateur Radio, especially Region 3 liaison and assistance.

This I.A.R.U. Congress planning is a little like saying to friends and neighbours, "If we have a party, will you come?" They say, "Yes, very probably." You then set about organising it and send out invitations, and then sit back and hope they come! If they do, then Sydney will be the venue of the first Congress of its kind held by Radio Operators in South-East Asia.

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THE NEW HANDBOOK

This is the third and last, of the articles on the changes made in the new Handbook. It deals with a miscellany of minor points which, whilst not of major importance, will, at some-time or other, be necessary knowledge.

REPLACEMENT OF LOST CERTIFICATE OF PROFICIENCY

The "old" Handbook stated that if a certificate was lost it was necessary to obtain a Statutory Declaration from a Justice of the Peace or other authorised person before a new certificate was obtained. This is no longer a requirement and the new Handbook states:—

"Paragraphs 25-26.—In the event of an operator's certificate being lost, mutilated or destroyed, a duplicate certificate may be obtained by the holder making written application to the Superintendent Radio Branch, in the State in which the operator resides. If replacement of a mutilated certificate is involved that certificate should accompany the application. If, however, a certificate has been lost or destroyed, the applicant is required to furnish with his application a written statement summarising the circumstances under which it was lost or destroyed, and, if lost, an undertaking to return either the original or duplicate certificate if the original is located at any time."

BROADCAST AND T.V. LICENCES

Previously the need for licensed Amateurs to possess separate broadcast or television licences was not made very clear. The new Handbook now states:—

"Paragraph 31.—An amateur station licence does not authorise the operation of broadcast or television receivers. Equipment capable of being used for the reception of broadcast or television must be covered by an appropriate licence issued under the Broadcast and Television Act."

LOG BOOK

Until recently a Log Book was supposed to record, amongst other things, "the nature of the experiments carried out". In keeping with the recognition of the Amateur Service as such, and not merely a body of licensed experimenters, this provision has been re-drawn and paragraph 85 sets out the requirements as follows:—

"Paragraph 85.—The licensee of an amateur station shall keep a log book or other suitable record in which must be entered—

- (a) A chronological record of all transmissions;
- (b) The frequency and type of emissions used;
- (c) The station or stations with which messages have been exchanged;

- (d) The address of the temporary premises or if operated in a portable or mobile capacity, the locality in which operated."

ADVERTISING/THIRD PARTY TRAFFIC, ETC.

In the past, statements of what constituted advertising were most ambiguous and in order to be quite sure he was not transgressing in this regard, the Amateur has tended to avoid even the use of proprietary names. Just one example of this is "Australia's Own Car" instead of Holden. In addition, the old Handbook specifically prohibited the use of Call Signs on letter-heads. The latter prohibition has now been withdrawn and the statement of what an Amateur may not say on the air is set out quite simply as follows:—

"Paragraph 80.—The operator of an amateur station is not permitted to transmit—

- (a) Messages or visual images on behalf of third parties;
- (b) Matter which is profane, obscene, or otherwise objectionable;
- (c) Any message or image in consideration of payment in cash or kind;
- (d) Music (except for single audio tones or tests of short duration) or other form of entertainment;
- (e) News of or on behalf of, or for the benefit or information of any industrial, commercial, political, social or religious organisation or any one other than the operator or the person with whom he is in communication."

RECORDING AND RELAYING TRANSMISSIONS

Prior to the issue of the new Handbook it was necessary to have Departmental permission before a recorder could be used to take down other Amateur's transmissions. Further, the actual recorder to be used had to be specified or inspected before such permission was granted. The new requirements are considerably less onerous and paragraph 110 states:—

"Messages addressed to an amateur station by any other licensed amateur station with which the licensee is in communication may, with the concurrence of the originating station, be recorded and transmitted, provided that the re-transmission is intended for reception by that originating station and that the call sign of the latter is not included in the re-transmission. The call sign of the station playing the recording shall be announced in the prescribed manner before and after such re-transmission."

CALLS AND TESTS

Call Signs.—The current requirement for station identification is that the full call sign of the amateur station and that of the station he is working be given at the beginning and end of each QSO, and at least every five minutes during the QSO. This is set out quite clearly in paragraph 112 where the word "session" can be translated as "QSO".

"Paragraph 112.—The operator 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 session and not less frequently than once in every five minutes during the session. Stations transmitting radio teleprinter signals shall employ either the international Morse code using A1 or F1 emissions or telephony for identification purposes."

On the Air Tests and Unmodulated Carriers.—The situation covering tests and carriers is given in paragraphs 113 and 114 as follows:—

"Paragraph 113.—Except for brief tests for adjustments not exceeding 30 seconds, the licensee shall not cause a carrier wave to be emitted from his transmitter in authorised bands below 52 megacycles unless such wave is subjected to intelligible modulation. When it is necessary to make test Morse transmission the test signal shall be composed of a series of vees followed by the call sign of the sending station. On no account should an unmodulated carrier be allowed to remain on the air on such frequencies. For tests exceeding 30 seconds an artificial aerial should be used."

"Paragraph 114.—In bands above 52 megacycles the use of an artificial aerial is not necessary for each test provided adequate means of station identification are used."

It is to be hoped that the situation on the v.h.f. band is now quite clear. Unmodulated carriers are permissible, provided that the station gives full identification every five minutes. The practice of running unmodulated carriers without identification for long periods is not permitted, indeed it never was.



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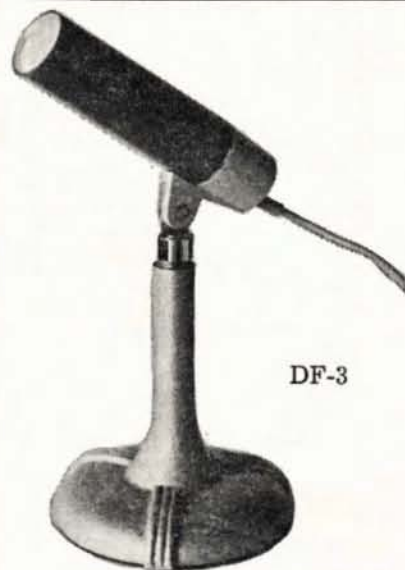
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FIFTY AND OVER

"VK3ZFC, VK3ZFC, VK3ZFC. This is VK3ZOM calling you, Bert . . . Oh, there you are. This is VK3ZOM in duplex cross-band contact with VK3ZFC. VK3ZFC on two metres, VK3ZOM on six. And how are you, Bert? Anything new your end? No. I haven't been on six metres for the last few days. I've been too busy.

"Was I doing the garden? Oh no, Bert, nothing like that. I've been communicating. Yes, that's right. That's what I said. Communicating. And it's really all your fault. You see, it all started when you lent me those overseas amateur radio magazines. They were full of CQ contests, DX-peditions, WAC awards and all the rest. And then those advertisements. I couldn't even get over the fence until I bought my new Deadduck Super Snifter Seven Thousand. And the kilowatt rigs and the aerial farms . . . Oh boy . . .

"What's that, Bert? You thought I was interested in radio, not in talking? That's true. But this kind of thing gets you hypnotised. Like drink or drugs I suppose. Anyway, the more I read the more I decided I'd have to get some DX award to stick up on the wall. I just had to. Couldn't sleep for thinking about it. So there you are.

"Going to get a full ticket? Oh no, Bert, nothing like that. Even if I gave up radio and studied Morse I'd still have to go s.s.b. All the advertisements say it's the only thing nowadays. And they all say you can't build anything like their super sniffers and so I'd have to buy one. Then I'd have to get in the rat race, put up an aerial farm, subscribe to the DX-peditions and I wouldn't even have time to look at a resistor for the next ten years.

"Well I had that five hundred dollars that Auntie Florrie left me last month so I just waded in and spent most of it.

And I haven't had much sleep for the last week. But it's been worth it. I'll get my certificate. I've worked all States, worked all continents, logged over a hundred different countries and best of all, I've got it out of my system. Don't want to have another overseas contact for the next ten years.

"Mind you, Bert, it wasn't easy. I had to wait until four in the morning before I could contact anyone in Tibet. Funny hours they seem to keep there. Europe was easy and I got on to G-land and Eire straight away. Venezuela was hard and Alaska took a bit of getting. Oh yes, and I had a contact with a YL in Timbuktu. I always wanted to talk to Timbuktu. Mind you, Bert, when I say 'talk' I didn't really say anything. No time. Just 'how are you?' readability and strength report, and time check for the log. I couldn't stand too much of that kind of thing. Drive a bloke nuts it would.

"What power was I using? Well to be honest, Bert, I don't quite know. You see it was all commercial gear. But the gear was okayed by the P.M.G. so it ought to be all right. Did I do it by using somebody else's call sign? Oh no, Bert. That's not legal. You know I wouldn't do a thing like that.

"You still don't understand? Well I figured it this way. The main thing is to prove that you've talked to all these countries. It doesn't matter what gear you use or whether you've built it yourself. Nobody does anyway, according to the advertisements. Now you know the rent-a-car service? If you want a car just for a day or two, you don't have to buy one. Instead of paying five thousand dollars to buy a fancy car you pay fifty dollars and hire one. So that's what I did with the gear. I hired it.

"What about a licence? Oh you automatically get one while you hire the gear. That's what makes it so easy.

"Kidding? No, Bert, of course I'm not kidding. Where did I hear about it? Why out of that big fat book everyone has. Of course you have one. In the hall. That's right, the telephone directory.

"What do you mean, Bert? It isn't radio? Of course it's radio. I made sure that every call was put over on a radio telephone link. I wouldn't book one unless they told me it was. Really, Bert! I don't see the need for language like that. Specially over the air. Maybe you wouldn't be satisfied but I am. I've worked all continents, over a hundred countries—including Timbuktu—and all States; and I'll bet that not many blokes use a rig as expensive as the one I used. So now I can relax and forget about it and look at my certificate. What's that? Of course I'll get a certificate. The itemised phone bill of course. Nobody's going to be able to argue with that . . .

"Well that's about it from this end, Bert. I guess I'll go to bed early and get some rest. Cheers Bert. See you later.

"This is VK3ZOM concluding a duplex cross-band contact with VK3ZFC and having a quick look round the two metre band. Local contacts only please chaps! No more DX. I've had it."

—Roy Hartkopf.

AMATEUR RADIO IN TURKEY

Amateur Radio is illegal in Turkey at the present time and has been so for many years. The general opinion is that it is only a matter of time before a law is passed to make Amateur Radio legitimate, but that there are at the moment far more important matters to be considered by the legislature. Consequently all Amateur Radio operators are "under cover" and could be imprisoned if their activities are detected. It is thought, though, that the authorities are aware of the present situation and are prepared to tolerate it so long as the Amateurs do not interfere with other services or provoke complaints from the public.

There is undoubtedly great interest in short wave radio in Turkey and the Turkish Radio Amateur Club, with headquarters in Istanbul, runs a monthly magazine which has a circulation of around 4,000 copies! It is difficult, of course, for the editor of the magazine to get articles—the editor of "Monitor" has exactly the same trouble!—and photographs and descriptions of shacks for publication. Should any League members wish to help in this matter, they may send photographs and details of their equipment to myself and I will forward them. They will be very welcome.

Because of the "cloak and dagger" nature of the operations, the identity of most TA Amateur stations is known only to themselves. At least fifty calls have appeared in recent years and there is of course no definite proof that all of these stations have been in Turkey. The League will forward all QSL cards to a central address in the country, which could produce replies, but which might on the other hand not do so. Even if the Amateurs receive the cards, they will not be able to reply with cards bearing their addresses. It is all very complicated and since there seems no reason why Amateur Radio should be forbidden in Turkey, it is to be hoped that before very long this medium of international goodwill will achieve its rightful place in that country.

(The Editor of I.S.W.L. Magazine, "Monitor," August 1967.)

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TECHNICAL ARTICLES

Readers are requested to submit articles for publication in "A.R.," in particular constructional articles, photographs of stations and gear, together with articles suitable for beginners, are required.

DX

Sub-Editor: ALAN SHAWSMITH, VK4SS
35 Whynot St., West End, Brisbane, Qld., 4101

By the time this reaches your mail box the New Year will be just another fading memory. The resolutions made will have already, quite likely, been broken, and somehow instead of the big things planned you are back in the grip of that one unchangeable facet of our existence—the daily grind. Well if the rut seems deeper and the salt mound higher, try a little escapism into DXing. 1968 promises to be big in rare ones. No one will deny that working a new one "makes" the day.

Let's first take a glance at how the bands are performing—and "nicely" is the right word for them at the moment.

Ten Metres: Almost nightly around 1000z Europeans are workable. A few Asians put in an appearance sometimes a little before this. All U.S.A. can be contacted, usually between 2200 and 0200z.

21 Mc. is good and steady to Europe from 1030 and often lasts for several hours. Some rare calls are beginning to appear on it. During each day openings occur to Central America at 0200 and the Ws are constantly audible even from 1700z. It is in fact open almost 24 hours each day.

20 metres seems a little quiet, but always has some worthwhile DX on it. From 1600z many African calls appear on the SR and at big signal strength.

7 Mc.: This old faithful still lets an odd DX call through around the times of 1030, 1630 and 1900z. However, the band is but a shadow of its former self when it was possible to W.A.C. daily.

80 metres: Very little besides Asians and the U.S.A. Some solitary calls to appear have been VQ9JW, KL7FA, 9VINV and CX8F. All close to low end.

NOTES AND NEWS

Yemen: It is reported that HB9KV is still QRV using the call 4WIKV. 28605 0800z. 14240 a.m. 1800. QSL via HBB Bureau.

Greenland: These are active as of now: OXs 4AA, 4AB, 4AC. All 14 c.w. 2300.

Licchenstein: HB0AG is a permanent resident in this tiny country. Gives his activity as 14, 21, 28 Mc. and all modes.

Swaziland: The now familiar ZD5X is up on 80 mx looking for VK. Try around 1830z, 1100 end.

Liberia: EL8D on 14 and 3.5. QSL SM3BNV. (The above by favor of "Air Waves," J. Coote, G3JUT).

Easter Is.: CE0AC 14115 0630. CE0AE 21345 1430.

Chlorseuses Is.: FR7ZQ/G 14097 1600.

Indonesia: Several are active: PK8YBC, PK8YAK, PK8YFE, PK8YZZ all 14 s.s.b. 1100. Also PK1SH 14030 1300.

South Orkney Is.: VP8JD 14135 1900. QSL VE3ACD.

Bouvet Is.: 3Y0EB—Overseas Bulletins report that this call will be valid from 1/1/68 and not before this. The call 3Y0AB was held by Don Miller but this call expired on 1/1/67. 3Y0EB is expected to be QRV for five months.

Marlon Is.: As reported before, his mode is 14140-160 a.m. 1630.

Rio de Oro: EA9EJ has a big sig here 14080 1830. Also 14132 2100.

Rhodes: SV0VY 14035 1700-2000. P.O. Box 66, or via WIRPW.

Crete: SV0WL 14120 1800 and later. QSL to W2CTN.

South Georgia: VP8JQ 14025 2300.

Bonair: PJ5BC 21357 1216, 14200 1900. QSL K0GZN.

Turkey: TA2BK and others QRV 14 c.w. 1700 approx. TA2BK also sometimes on 14102. QSL to DJ2PJ.

Bahrain Is.: MP4BGE 14193 1500. Also MP-4BRA 14 c.w. 1800.

Tanzania: 5H3KJ 14190 and 21293 2250. QSL P.O. Box 9070, Dar-Es-Salaam.

Montserrat: Dick VQ2MO 15214 2230 and 14 c.w. 1930. QSL WA8RWU.

Iran: EP2CA 14196 1400. EP3AM 14192 1500.

Mauritius: VQ8CC 14196 and 14 c.w. 1600.

Monaco: 3A2MJC 14230 1500. This is a Club station.

Kuwait: 9K2AM 14195 1500. 9K2AB 14350 1600.

Tunisia: 3VBZ 21351 1600.

Antarctica: VP8JL 14205 0000.

Malawi: 7Q7EC 14227 1510. Will be QRT in a few weeks. Also worked here 14035 2000.

Ghana: 9G1ED 21307 2215. 9G1FF 21281 1600.

Angola: CR6FX 21345 1700.
Palmyra Is.: Reported activity by K6CAA who has the call KP8AP. 14 c.w./s.s.b.
Malagasy Rep.: 5R8AM 14035 1700. Also others active.

Marcus Is.: KG6LF still workable on 14 c.w. and s.s.b. 14260 0700.

Mariana Is.: KG6SA Saipan, 14210 0630.

St. Paul Is.: Worked here on a.m. FB8ZZ 0300 14110.

Cuba: CO8MN 14198 2200. QSL to QTH in CB.

Sierra Leone: 9L1JJ 21310 1700.

Canary Is.: EA8FG 14135 1800.

Dominica: VP2DI 14187 2030.

Faroe Is.: OY7ML 14225 1300.

Laos: Several active: XW8BJ, XW8BP, XW-8CA, XW8CAL, etc. On 14 and 21 Mc. c.w. and s.s.b. 1000.

Brunei: VS5MH reported back on the air on 14 c.w./s.s.b. Try 1100. (VK4UC)

Tahiti: FO8BS 14115 0500. FO8BU 14100 c.w. 0600. FO8BV 14048 0300. (ZL2AFZ)

Spitzbergen: JW7YF 14080 1500. QTH Svalbard.

Zambia: 9J2JT 28550 1800. 9J2WR 28410 and 28590 1800. Also try 0600.

Finland: OH5UQ 7005 1900. A regular on this band, Paul is seeking a VK6 QSO on 40 at this time or around 2030. Other EUs workable at this time.

Mozambique: CR7AE 21245 1500z. Also CR7Z comes up on 14 c.w. around 1900. Will come up on 7005 if a s.ked sig is required.

Rwanda: 9X5FX 14102 1900. 9X5AA 14232 1600. 9X5MW 14190 2300.

San Felix Is.: CE0XE, 21015 Kc. at 1500z, also on 14008 at 1300z. QSL to KE1NZ.

Saint Maarten: Jose PJ2MI 14172 s.s.b. Can be broken with c.w. and will listen on phone band as requested, 2200z. QSL via VE3EUV.

Chad Rep.: T8AG 14044 at 2240z. QSL via W4DQS.

Senegal: 6W8DQ 14193 0000. QSL P.O. Box 571, Dakar.

Svalbard: JW5YQ in Spitzbergen, 14238 at 1711z, via long path.

Kenya: Fred 5ZAKO 14207, long path, at 1433z, also Andre 5ZAKL 14180 0330z. QSL to Box 30035, Nairobi, Kenya.

Ethiopia: Dick ET3REL 14192 at 1455z. Note: 9E3USA new prefix for ET3USA.

Cyprus: ZC4RB on 14216 long path at 1705z.

Cape Verde Is.: Julio CR4BC 14225 at 2208z.

Algeria: Harry TX0AH 14198 at 1624z. On all bands.

Trinidad and Tobago: 9Y4VT on 14210 1145z.

Namib: Cyril, QSL to W3DJZ.

Kazakh SSR: Jalley UL7YA 14109, listening 14230 Kc.

Gibraltar: Jack ZB2BC 28555 at 1730z. QSL via ZB2A.

Jersey Is.: Eric G2CFMV 28570 at 1530z.

Revileo Gigeo: XE boys are rumoured to be planning an XE4 DX-pedition.

Fanning and Christmas Is.: Ed de Young, K6CAA/KH6, KP6AP/KH6 has a tentative trip planned to Fanning Is. with a University of Hawaii Scientific Study Group some time in February '68.

Syria: YK1AA 14205 s.s.b. 1300z-1400z. Also 1407z.

Cameround: Gus TJ1AJ 14055 2130z.

South Rhodesia: ZE3JU continues active, recently on 21303 at 1558z.

Gambia: ZD3D 14105. QSL via W8JVF.

Nauru: VK9RU plans to go to Nauru 15th February.

South Georgia: VP8IE on 14195 at 0200z, working VP1.

Gabon Rep.: TR8AI c.w. on 14040 at 2300z.

Also Guy TR8AG 14150 at 2300z.

ACTIVITIES

Dud VK4MY seems to have been busy this month as indicated by the following list:

UT5UK 14030, TX0AH 14010, UF8ACR 28060, KR8EA 28070, XW8BP 14020, ZSSLE 14050, ZD5X 14040, 4S7DA 14040, DL8ML 28010, PJ3CC 28010, UW0SX 28010, HM5BF 21050, DU7SV 21040, UA9OV 14020, TG0AA 14030, TR8AJ 14070, CM2QN 14065, T1GSA 14030, TAI4V 14008, UN1BR 14050, EA8FJ 14010, VP6PJ 14040, CT3AS 14030, VF1DM 14060, HF1LE 14060. On s.s.b.:

K5eCL 21330, PK8YCE 14170, VU4UK 14130, UB5ID 14185, VK0GF 14180, VP8AQ 14170, CP-1GD 14185, 9G1FF 14180, CR5SP 14190, PK8YZZ 14185, K6CJL 13215, 5H3KJ 14150, 5ZAKL 14170, UB5SR 14140, CO8MN 14160, CO2NR 14190, VP-8HZ 14120, VP2MO 14190, ZP5KN 14110, 9U5BB 14170, CE3UF/R 14110, CESZN/Q 14100, FR7ZZ 14200, FR7ZD 14050, VQ8BZ/R 14230. Mainly between 0700 and 1400z.

Ken VK3TL comes to hand with his usual choice ones and reports one or two new prefixes. So apt is Ken at picking the "cherries" that I'm beginning to suspect he uses some added secret gimmick, akin to the "olfactronics box" which is an electronic "sniffer" for faint odours. 14 Mc.: CE3UF/R (Juan Fernandez), also CE0PK, CN8AP, CR8IS 1500, EL0A 1400, FH8C 1400, FR7ZC, HC4BS, HM5CL, PK8YAK, TG5HC, UG8JJ, VQ8CBN, VQ9B, 4L3A, 5ZARS,

9J2LK. QSLs received: VS0HRV (Kurja Muria), LX1ISD, YU8BG, 3BIBD, CX1OP, FW8AC, CX-3BBD, VP5RS, EL2T.

Chas VK4UC, temporarily exclusively s.s.b., notched these "niceies". Has also made s.s.b. D.X.C.C. these past few weeks. Reports conditions as good, particularly to Central America around 1100 on 14 Mc.: KG6SA, K8NHW/KV5, VP2MO, FW8RC, TZCAP, KZ5FN, 9Y4VT, PZ2MI, PZ1BV, YS1JJ, 9M6MW, 9Y4AR, ZP5JB, VP8JI, 5HQ3J, FY7YM, CE3ZN/O, P2JCE, VQ-8CBN, VQ8DH, VP6NS, VQ8GG, 9U5BB, FH8CD, VP2AZ, FO8BV, VP1PV, PZ1BF, VQ8CA/A, HS1CH, VP2AA (Antigua), VP2GBC (Grenada), 7Z3AB, 7Q7EC, PK8YJO, M1B, VK0IA (Macquarie), VS6DJ, ET3REL, OD5FA, 6Y5DW, SW1AT, VS8CO, ZF1GC, VS8MB, AP2NR. Chas reports activity from W. Samoa as SW1AT, 5W1AS. The former is ex-ZK1AR. New prefix for the VP8 boys is 8F6. (Thanks Chas OM)

STOP PRESS—NEW ONE. 1st UP. RED HOT

Exotica.—Where, where is it? Easy, just close your eyes, lean back and relax. Allow your mind free imaginative rein. Follow your fancy where it listeth. If you like, to some sub-arctic barren rock, where the icy ground is yet virginal to the defilement of a Ham antenna—or if you prefer the warmer climes, take out the world map and settle for some spot tropic and erotic.

Romantic, huh? Well, you can bring it true. Just be practical enough to pick some place acceptable for DXCC, and I've got the operator who will go.

All that is needed is the cash for the trip, all the gear, some pocket money (just in case), someone to print the QSLs and a manager who will see that he gets an s.a.s.e. plus 3 I.R.C.'s for every card sent out—and you are in business.

Exciting isn't it? Could anything be more in the fraternal spirit of Shamateurism (pardon my spelling).

P.S.—I suppose it doesn't really matter if the operator goes to Exotica or not, so long as your call is in his log and it counts for DXCC. It's only a matter of mental association. Don't let the small matter of a permit deter you either!

SOME QTHs

5H3KJ—P.O. Box 9070, Daar-es-Salaam.

EA8FG and EA8EX—P.O. Box 215, Tenerife, Canary Is.

TT8AR—P.O. Box 466, Fort Lamt.

UA1CK/7J1—P.O. Box 88, Moscow.

6W8DD—Noel Le Gall, P.O. Box 190, Dakar, Senegal. (VK6OV—Tks. Ingo.)

7Q7EC—P.O. Box 207, Zomba, Malawi.

TA1AV—SMOKY. FM7WQ—W4OPM.

VP8FJ—W2BKP. SU7AL—W4WHF.

VP6AO—VE3DLC. TU2CA—YASME.

K6CJL—W2RDD. FY7YJ—W3AYD.

VP2MO—W8ARWU. CE0PC—DL9KRA.

9Y4VT—W8DJZ. CE0PC—W6GGOV.

VR1L—K6UJW. TG5HC—WA8LST.

913AB—W8BAF. PJ2MI—VE3EUV.

K86CF—W4ZXI. 3A2JM—3A2EE.

601BG—W1YRC. VP2AZ—W0NGF.

ZE5JL—W8BAF. VP6WR—W4OPM.

BYSPP—VU2LM. XW8BQ—WA4ZTW.

VP5AA—WIWQC. VP1PV—Box 17, Cayo.

PZ1BV—VE3EUV.

The following stations have the address of P.O. Box 7388, Newark, N.J., 07107, for their QSLs: CN8FF, CN8FP, CR5SP, G5AAM, HK-0AI, IIRB, IIRBJ, DL8OT/LX, OK4CM, OY-2GHK, VQ8DR, VK6XI, VP7CX, VP7NY, VP-8IE, VQ9G, VY9AA, ZD8AR, ZD8BE, 7Q7BFD, 9J2BK, 9X5GG.

AWARDS

WVDXC—Willamette Valley DX Club Special Achievement Award.—This club will award an attractive certificate attesting honorary membership to any DX station having QSOed ten or more club members. Contacts must be made after 1/1/56. Usual requirements apply. Send a double certified list to P.O. Box 555, Portland, Ore., U.S.A. Any band, any mode.

Some WVDXC members are W7s AC, AMX, BTH, CWE, DAA, DIS, DJY, DLR, DZL, ECI, ENW, FB, GBW, GHE, GJ, GXA, HIA, HQT, IAM, IYW, KSA, MGT, MCV, OCL, PB, QON, QY, TMF, TML, VEU and others.

SOME SNIPPETS FROM HERE AND THERE

Norway.—Now has reciprocal licensing with U.S.A., only as yet. This is the first Scandinavian country to take the step.

M.I.A.E.—Marshall Island A.R. Radio Club. Operated by five U.S.A. Corps Ops., 14245 0900. Looking for QSOs.

Southern Ocean Boys.—FB8XX, FB8ZZ, and FB8WW have a daily four-way to W8BRC 14140 0300. QSL manager for FB8WW, W4MYE.

Zone 23 can be determined by the letter Y after the UA0 prefix. Such as UA0YE, who is QRV 14037 0130.

(Continued on Page 18)

Rules for the Heard All VK Call Areas S.W.L. Award

OBJECTS

1.1 This award was created in order to stimulate interest in the logging, by overseas Short Wave Listeners, of the various Call Areas of the Commonwealth of Australia and its Territories and to give successful applicants some tangible recognition of their achievements.

1.2 This award, to be known as the H.A.-VK-C.A. Award, will be issued by the Wireless Institute of Australia to any Short Wave Listener in the world who is a member of an affiliated society of the I.A.R.U. who satisfies the following conditions. No S.w.l. resident in Australia or its Territories will be eligible for this award.

1.3 A certificate of the award will be issued to the applicants who show proof of having logged stations in all of the Australian Call Areas as listed in the Appendix. No endorsements are available.

REQUIREMENTS

2.1 Verifications are required from all the Call Areas of Australia and its Territories as shown in the Appendix. In all, 22 verifications are necessary.

2.2 The commencing date of the award is 1st January, 1946. All loggings made on or after this date may be included.

OPERATION

3.1 Loggings may be made of Australian stations using any authorised frequency band or type of emission permitted to Australian Amateurs.

3.2 Credit may only be claimed for logging stations using regularly-assigned Government Call Signs.

3.3 Loggings of ship or aircraft stations in Australia or Australian Territories will not be eligible, but land-mobile or portable stations may be claimed, provided their specific location at the time of logging is clearly shown on the verification.

VERIFICATIONS

4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that specific loggings have been made.

4.2 Each verification submitted must be exactly as received from the station logged, and altered or forged verifications will lead to the disallowance of those items and may lead to the disqualification of the applicant.

4.3 Each verification submitted must show the date and time of transmission, type of emission and frequency band used and the location or address of the station at the time of loggings.

4.4 A check list must accompany every application setting out the following details:—

- 4.4.1 Applicant's name, S.w.l. number, if any, and address;
- 4.4.2 Name of affiliated Society (see Rule 1.2);
- 4.4.3 Details of each logging as required by Rule 4.3.

APPLICATIONS

5.1 Applications for membership shall be addressed to the "S.w.l. Awards Manager," G.P.O. Box 2611W, Melbourne, Victoria, 3001, Australia, accompanied by the verifications and the check list (Rule 4.4). Sufficient International Reply Coupons (I.R.C.) must be enclosed to cover return postage of the verifications to the applicant.

5.2 Where a reciprocal agreement exists between the W.I.A. and the applicant's Society, the appointed officer of that Society may carry out the check and if correct, may forward a written application for the award on behalf of the applicant. The list (Rule 4.4) must also be forwarded.

5.3 Applications will be examined by the S.w.l. Awards Manager, who will arrange for the award to be forwarded either direct, or through the applicant's Society as required.

5.4 In all cases of dispute, the decision of the S.w.l. Awards Manager, and two officers of the Federal Executive of the W.I.A., in the interpretation and application of these rules, shall be final and binding.

5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the W.I.A. reserves the right to amend them as necessary.

APPENDIX

Territory	Call Area	QSLs Req'd.
Australian Antarctica	VK0	1
Heard Island		
Macquarie Island		
Australian Capital Territory	VK1	1
Lord Howe Island	VK2	3
State of New South Wales		
State of Victoria	VK3	3
State of Queensland	VK4	3
Thursday Island		
Willis Island		
State of South Australia	VK5	3
State of Western Australia	VK6	3
Flinders Island	VK7	3
King Island		
State of Tasmania		
Northern Territory		
Admiralty Islands	VK9	1
Bougainville Island		
Christmas Island		
Cocos Island		
Nauru		
New Britain		
New Guinea		
New Ireland		
Norfolk Island		
Papua Territory		

Note: In areas above, where more than one confirmation is required, loggings may be made with any or all of the Territories listed in brackets.

W.I.A. H.A.-VK-C.A. AWARD (S.W.L.)

Listed below are details relating to those Overseas Short Wave Listeners to whom this certificate has been awarded.

Cert. No.	Call	Date Awarded
1	SM0-2086	9/11/66
2	UA0-29108	21/11/66
3	UA9-9849	11/2/67
4	W2-6893	27/2/67

Okinawa Beacon Station.—Continuous operation on 29000. Call is KR6TAB. Reports are solicited via the bureau.

Surinam.—P20AA is a special licence call. 14200 2300. Also 0000.

YL International SSB'ers Inc.—In reply to many enquiries seeking more information on this great organisation, might I suggest that you tune into the VK-ZL system which is controlled by ZL2JO. Each Saturday at 0300. Thelma will be glad to answer any questions.

AHC-DX Award Hunter's Club.—An s.a.e. to VK4SS will bring you all information and details you require. Also details of "XL" Ops Club.

LIDXA.—Long Island DX Club. This club runs a yearly DXCC Contest. This association with up-to-date ideas on the totem pole, issues certificates to each country winner. Now's the chance to see what you can do for VK. All information can be had from secretary W2FGD, P.O. Box 74, Massapequa Park, N.Y., 11762.

SUMMARY

Information for this column is received from several overseas sources: LIDXA, Fla. DXer, K8BX publications, I.A.R.J.S., Air Waves, Geo Studd, ZL2AFZ, DX Editor "Break-In," etc.

My gratitude also to all VKs who already in 1966 have taken the time to put pen to paper re DX information.

Oceania DX activity is badly needed now pse. 73 DX, good hunting, Al VK4SS.

DX-ER OF THE MONTH



G2FFO—DICK JOHNSTON

Dick's QTH is 1 Oremrod House, Higher Red Lees, Cliviger, Burnely, Lancs., U.K. He is active and always keen to work VKs on any band. He is on 7, 14 or 21 Mc. when the bands open. He is a member of F.O.C., T.O.P.S., C.A.C., C.H.C., R.N.A.R.S., R.A.O.T.A., O.T.C., etc.

The following awards have been claimed: DXCC 275 plus, USA-CA, WBE, WAZ, BERTA, DDXA, AAA, WFX, WAE, DUF-4, WAVKCA, WAS and many minor ones.

Dick was first licensed in 1938 at the age of 15 years with a G artificial licence. He served in the R.N. in World War II, and was in the Australian States about that time en route to VS6 land.

A real nice bloke and a credit to Amateur Radio. Give him a shout if you hear him.

PROVISIONAL SUNSPOT NUMBERS FOR OCTOBER 1967

Dependent on observations at Zurich Observatory and its stations in Locarno and Arosa.

Day	R.	Day	R.
1	72	16	41
2	69	17	36
3	96	18	50
4	89	19	62
5	98	20	83
6	92	21	80
7	88	22	86
8	76	23	101
9	80	24	93
10	82	25	114
11	90	26	125
12	66	27	125
13	55	28	156
14	64	29	133
15	47	30	133
		31	100

Mean equals 86.5.

Smoothed Mean for April 1957: 81.5.

Predictions of the smoothed monthly Sunspot Numbers for the coming six months:

November 99	February 105
December 101	March 107
January 103	April 109

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OTL/76

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Victorian Division**

**A.O.C.P. CLASS
(Theory only)**

commences

**TUESDAY, 20th FEB., 1968
from 8 to 10 p.m.**

Persons desirous of being enrolled should communicate with Secretary W.I.A., Victorian Division, P.O. Box 36, East Melbourne, 3002 (phone 41-3535, 10 a.m. to 3 p.m.) or the Class Manager, Tuesday evenings.

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**VICTORIAN NATIONAL
PARKS AWARD**

As a result of activities over the Xmas holiday period, we have progressive scores as listed below:—

Worked From All Victorian National Parks

VK3AFQ	..... 18	VK3LCL	..... 1
VK3APD	..... 15	VK3YQ	..... 1
VK3ATN	..... 2		

Worked All Victorian National Parks

VK3XB	..... 20	VK3AFJ	..... 10
VK3LCL	..... 15	VK3OM	..... 7
VK3YQ	..... 15	VK3AOM	..... 8
VK3ARZ	..... 11	VK3ACS	..... 5

A full report from Harold VK3AFQ will be published at a later date. It is known that many other stations have worked a number of parks, and they are requested to forward their progressive scores to the Secretary, VK3 Division, for listing.

FEDERAL QSL BUREAU

VK2, 3 and 5 Hams were pleased to meet Mort Brewer, W6JU and XYL Marion during a short visit to Australia in December. Mort is offside to John Knight, W6YY, in N.B.C. t.v. circles in Los Angeles. Mort is spending all January in ZL.

The only Amateur in the 1968 Macquarie Island team is Dave James, VK0IA (ex VK3IA, not yet published, and VK3ZPO). Dave states he has a QSL manager but at time writer contacted him on 14 Mc. c.w. Dave could not remember his manager's name or call! Until this information is available all QSLs for Dave to this Bureau please.

Dates for the 1968 B.E.R.U. Contest are March 9 and 10—usual duration. F.O.C. members also please note the new dates for the annual Marathon are 23rd and 24th March, 0001z to 2359z.

VK3 Amateurs were pleased to meet VK-6WT, Dave Couch, on a visit to his parents in Sandringham during December/January. Dave is a Victorian by birth, but now seems to have been brain-washed by his long sojourn in VK6.

Results of the 1967 V.E.R.O.N. P.A.C.C. Contest shows the only VK listing as VK2AVE with almost a check log score. The 1968 P.A.C.C. Contest is scheduled from 1200z April 27 to 1800z April 28. All bands, all modes, cross bands and cross modes are permissible. Full details from this Bureau.

Good to hear from that globe-trotter, Jack Elliott, ZL3CC. Jack's most recent tour was to South America. He is active again on 14 Mc. and states "I have not resumed employment since my return from S.A. I will be 80 years next April." Jack has been a vegetarian for the past 40 years—there must be something in it!

No mail damaged in the fire in the Melbourne Mail Exchange on 27th November has been received at this Bureau. Any QSL despatches must have either escaped the blaze or were entirely consumed. Surface mails

AMATEUR FREQUENCIES:

**ONLY THE STRONG GO ON—
SO SHOULD A LOT MORE
AMATEURS!**

GOSFORD FIELD DAY

SUNDAY, 25th FEBRUARY, 1968

at GOSFORD SHOWGROUNDS

Trade Exhibits, Fox Hunts and Scrambles, Ferry Trip and Bus Tour, Lunch, Morning and Afternoon Tea supplied.

BRING YOUR QSL CARD

from ZA, ON, OK, OZ, OH, G, DL, PA, HA, I, OD, ZL, LA, SP, HB and YU were affected. QSL totals for the eleven months Feb.-Dec. 1967 reached 88,234 cards—the highest handling ever recorded. However, with the new set-up gradually taking place, a vast reduction is expected in the current year.

Writer was handed a lemon this year by Father Xmas, as on Xmas day a broken left leg was suffered. Had I been a phone man, am sure the vet. would have shot me right away, but knowing c.w. sires are at a premium these days, he decided to preserve me for that purpose. Will all concerned please bear with any delays as am only ten per cent. mobile for the remainder of January and part of February.

—Ray Jones, VK3RJ, Manager.

HAMADS

**Minimum 50c for thirty words.
Extra words, 2c each.**

Advertisements under this heading will be accepted only from Amateurs and S.w.'s. The Publishers reserve the right to reject any advertising which, in their opinion, is of a commercial nature. Copy must be received at P.O. Box 36, East Melbourne, Vic., 3002, by 5th of the month and remittance must accompany the advertisement.

COLLINS KWM1 Transceiver, 14 to 30 Mc., continuous coverage. VOX, ALC, S Meter, Cal., etc. Excellent performance and condition. \$250. P.O. Box 20, Goulburn, N.S.W.

FOR SALE: Bendix LM12 Freq. Meter with original pwr. supply, as new, \$90. Eddystone 504, 2 r.f., S meter, double xtal filter, \$95. VK2JJ, 28 Highworth Ave., Bexley, N.S.W., 2207. Phone 50-7928.

FOR SALE: Geloso G209 Receiver, O multiplier OF-1, preselector, 160 metre converter, \$250 or offer. Wm. F. Stevers, 132 Orrong Rd., Toorak, Vic., 3142. Phone 24-4154.

GRID DIPPER wanted, commercial or good home made. Full particulars to Clem Schmidt, P.M.B. 3, Hampden, S.A., 5370.

SELL: Modified 522 Rx with E88CC front end, \$10. Unmodified BC733 Rx, \$8. Various large professionally made 19 in. Panel Cabinets, from \$6. P/S 500v. at 1/2a., \$8. (3) P/S's built onto back of 19 in. Cabinets, ideal for Test Equip., \$8 ea. AR8 Rx front end, \$3. (2) V.h.f. Panadapter Rx's, incomplete, with 2 turret tuners, \$6 ea. (1) Radar Unit minus display indicator in rack-cabinet 5 ft. x 4 ft. with sliding plug-in chassis units, unmodified, \$15. (1) 7 ft. x 19 in. x 2 ft. professionally built Equip. Cabinet, door at rear, \$14. Small Spy Rx, B/C—15 Mc. with AC/DC p.s., \$10. Plus many chassis with good parts, transformers, 813, 2E26, 3Z7A, 4E27 and other tx tubes, meters, etc. Open to offers all units. VK3YA and VK3AVP, Tel. 729-1724, or Fern-tree Gully 361 (Vic.).

SELL: Professionally bound gold embossed back issues "QST" to best offer single or preferably the lot: Jan.-June '62, July-Dec. '62, Jan.-June '63, July-Dec., '63, Jan.-June '65, July-Dec. '65, Jan.-June '66, July-Dec. '66, Jan.-June '67. Roth Jones, 1 Albert Rd., Melbourne, Vic., 3004.

WANTED: Commun. Receiver in A1 condition, for s.s.b. and c.w. Good bandspread, Ham bands. Details tuning range, sensitivity, selectivity, to VK6ZO, 3 Head St., Melville, W.A., 6156.

WANTED: Galaxy V. Transceiver with power supply and handbook. L. Schmidt, 2 Ward St., Ashburton, Vic., 3147. Phone 25-4678.

WANTED: Geloso V.f.o. 4/103 model (144 Mc.). Grip Dip Oscillator and Signal Generator. Price and particulars to VK4HH, 57 Somers St., Nudgee, Brisbane, Qld., 4014.

WANTED: Tri-Band Beam TH3, etc., in good condition. VK3WW, Phone 465-2991 (Vic.).

WANTED TO BUY: High power Modulation Transformer UM3 or similar, also 2 power transformers approx. 600 volt at 250 mA. each, for 6/40 rig and modulator. Contact Howard VK3ZVH at 325 Waverley Road, Mt. Waverley, or phone 277-1207 after 6 p.m.

WANTED TO BUY: Pre-1927 Radio Sets and parts, especially bright emitter and early tx valves, neodyne rx's. Also magazines (not Listener in) and A.R.R.L. Handbooks, pre-1934. F. K. McTaggart, VK3NW, 37 Ryeburn Ave., Hawthorn East, Vic., Phone 82-1141.

A LARGE RANGE OF TRANSMITTERS, RECEIVERS, TEST GEAR, AND DISPOSALS RADIO PARTS AVAILABLE

● TECH T03 3" OSCILLOSCOPE

Specifications.—Vertical Axis: deflection sensitivity, 0.1v. p-p/cm.; freq. characteristics, 1.5 c/s. to 1.5 Mc.; input impedance, 2 megohms, 25 pF.; calibration voltage, 1v. p-p/cm. Horizontal Axis: deflection sensitivity, 0.9v. p-p/cm.; freq. characteristics, 1.5 c/s. to 800 Kc.; input impedance, 2 megohms, 20 pF. Sweep Osc., 5 ranges: 10-100 c/s., 100 c/s.-1 Kc., 1 Kc.-10 Kc., 10-80 Kc., 50-300 Kc. Synchronisation: Internal (negative or positive), external, or line. Cathode ray tube, 3KP1F. \$136.00.

● TECH TE40 MILLIVOLTMETER

AC volts: 0.01, 0.03, 0.1, 0.3, 1.0, 3, 10, 30, 100, 300. Accuracy: 5 c/s. to 1.2 Mc. ± 2 db. (db. scale $+2$ to -25 db.); 10 c/s. to 1 Mc. ± 1 db.; 20 c/s. to 250 Kc. ± 0.2 db. db. scale: -40 , -30 , -20 , -10 , 0 , $+10$, 20 , 30 , 40 , 50 dbm. \$59.25.

● TECH TE65 V.T.V.M.

DC volts: 1.5, 5, 15, 50, 150, 500, 1500. AC volts: 1.5, 5, 15, 50, 150, 500, 1500v. r.m.s.; 1.4, 4, 14, 40, 140, 400, 1400, 4000v. p-p. Resistance: $R \times 10$, 100, 1K, 10K, 100K, 1M, 10M. Decibel: -10 db. to $+65$ db. £50.00.

● MILLER 8903B 455 Kc. PRE-WIRED I.F. STRIPS

Comprises two i.f. stages, diode detector, in-built a.v.c. 55 db. gain, NPN silicon transistors. DC requirements, 6 v.d.c. 2 mA. Size, $1\frac{1}{2}'' \times \frac{1}{2}''$. \$8.70 inc. tax.

● STAR SR700A AMATEUR-BAND RECEIVER

Freq. coverage: 80 mx, 3.4-4.0 Mc.; 40 mx, 7.0-7.6 Mc.; 20 mx, 14.0-14.6 Mc.; 15 mx, 21.0-21.6 Mc.; 10 mx (A), 28.0-28.6 Mc.; 10 mx (B), 28.6-29.1 Mc.; 10 mx (C), 29.1-29.7 Mc. Triple conversion: 1st i.f., 3.4-4.0 Mc.; 2nd i.f., 1650 Kc.; 3rd i.f., 55 Kc. Sensitivity: a.m. less than 1 μ V. for 10 db S+N/Noise Ratio; c.w./s.s.b. less than 0.5 μ V. for 10 db. S+N/Noise Ratio. Selectivity: 0.5 Kc., 1.2 Kc., 2.5 Kc., 4 Kc., all at -6 db. In-built 100 Kc. Crystal Calibrator (crystal supplied). \$461.50.

WANTED TO BUY

Communication Receivers, Test Equipment, etc. Call, write or phone. Equipment inspected and picked up at your convenience any night or week-end.

● STAR ST700 SSB TRANSMITTER

250w. p.e.p. Employs high efficiency AB2 final. Incorporates vox, p.t.t., mechanical filter for max. suppression. Freq. coverage: 80 mx, 3.4-4.0 Mc.; 40 mx, 7.0-7.6 Mc.; 20 mx, 14.0-14.6 Mc.; 15 mx, 21.0-21.6 Mc.; 10 mx (A), 28.0-28.6 Mc.; 10 mx (B), 28.5-29.1 Mc.; 10 mx (C), 29.1-29.7 Mc. Emission: CW, LSB, USB, AM with carrier injection. In-built c.w. sidetone monitor. Clickless keying with unique tone osc. system (no keying of relays). \$519.20 inc. tax. Note: SR700A and ST700 couple together for complete transceiver operation.

● VALVE SOCKETS, P.T.F.E.

7-pin complete with can, 20c ea.; 9-pin complete with can, 50c ea. Ideal for 144 or 432 Converters or Tx's.

● ELECTROLYTIC CONDENSERS

50 μ F., 125v.w. pigtail type. Late manufacture. 20c ea.

● A111 9 Mc. SSB EXCITER

A fibre-glass printed circuit board, the finest German crystal filter, diode ring modulator, and solid state circuitry all contribute to make the A111 the finest SSB Exciter available. Specifications: Sideband suppression, 80 db.; carrier sup., 65 db.; audio freq. response, 350 to 3,000 cycles; mic. input, 1 mV. on 5K ohm load. Incorporates vox amplifier and relay amp. Price with KVG. XF9B Filter, \$240.

● A112 5 Mc. VFO

Freq. coverage: 4950 to 5550 Kc. Freq. stability better than 100 c/s. over 12 hrs. long term; better than 8 c/s. over 10 mins. If enclosed in suitable box. Output: 350 mV. on 220 ohm load. Price \$22.

● EICO 753 TRI-BAND SSB TRANSCEIVER KIT

180w. p.e.p. on SSB or CW, 80w. on AM. 5.2 Mc. crystal filter. Sideband sup., -40 db.; carrier sup., -50 db. Receiver sensitivity: 1.0 μ V. for 10 db. signal to noise. Receiver selectivity, 2.7 Kc. at 6 db. 10 Kc. receiver off-set tuning. Printed circuit i.f. strip. Pre-aligned xtal filter. Freq. coverage: 80 mx, 3490-4010 Kc.; 40 mx, 6990-7310 Kc.; 20 mx, 13890-14410 Kc. (LSB 80 and 40 mx, USB 20 mx). Price \$328.78.

● PETERSEN RADIO PR100 CALIBRATORS

Comprising 1 transistor 100 Kc. crystal oscillator, 1 transistor emitter follower, fibre-glass printed circuit board, trimmer on crystal for zero beat with WWV. Crystal accuracy 0.005%. Power requirements, 15v.d.c. 14 mA. Price \$22 inc. tax and plus postage.

● K109 SWR METERS

75 ohms or 52 ohms input and output. SWR 1:1 to 1:10 $\pm 3\%$. 100 micro-amp. meter. \$18.50.

● CO-AXIAL CABLE

UR70, $\frac{1}{4}''$ diam., 72 ohms, supplied with Belling Lee Connector. 27 yards \$2.00. Post and packing 75c.

● RESISTORS

Wide range of values available in $\frac{1}{4}$ watt, $\frac{1}{2}$ watt or 1 watt. Welwyn, I.R.C., Ducon, and Erie. \$2.00 per 100.

● CAPACITORS

Miniature 600v.w. pigtail type: 0.001, 0.005, 0.0002, 0.0005. Also Ceramic. \$2.00 per 80.

● POTENTIOMETERS

Wire-wound, 100 ohms to 100K ohms, 1 watt to 3 watt. 40c ea. Carbon, 100 ohms to 5 megohms, 20c ea.

● VALVES

New Philips: QB/250 (813), \$10; 815, \$1; 807, \$1.50; TZ40, \$1.50; 416B, \$4; VR150/30 and VR105/30, 75c ea. or 3 for \$2; ECC33 (6SN7), 40c.; 6AM5, 50c; 6AC7, 20c or 12 for \$2; 6K8, 75c or 3 for \$2; 6J7, 40c or 6 for \$2; 6J6, 50c or 5 for \$2; EF50, 20c.

● TELEMAT 775 FREQUENCY METER

85 to 1,000 Mc. Heterodyne type with 5 Mc. internal standard. VHF version of BC221. Immaculate condition. \$150.

● PANEL METERS, P25 TYPE

100 μ A., \$6.95; 500 μ A., \$5.25; 1 mA., \$4.50; 10 mA., \$4.50; 50 mA., \$4.50; 100 mA., \$4.50; VU meter, \$6; S meter, \$4.80.

ALL ITEMS FREIGHT EXTRA

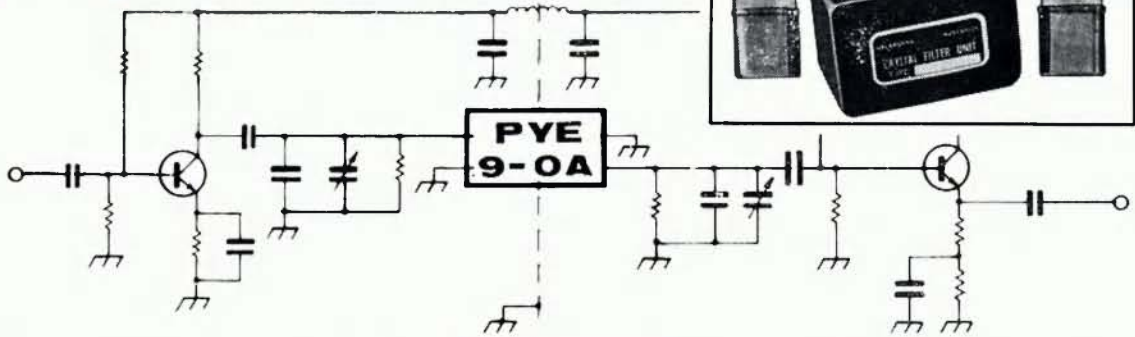
UNITED TRADE SALES PTY. LTD.

280 LONSDALE ST., MELBOURNE, VIC. (Opp. Myers)

Phone 32-3815

9 Mc. SSB CRYSTAL FILTER

PYE TYPE 9-0A



The PYE 9 Mc. S.S.B. FILTER PACKAGE UNIT consists of:

- 1 PYE Type 9-0A Crystal Filter Unit.
- 1 PYE Type Q12A 9002 Kc. Crystal Unit.
- 1 PYE Type Q12A 8998 Kc. Crystal Unit.
- 2 PYE Type D Crystal Sockets.

Also Typical Schematic Circuit Diagram and Application Notes. The crystal frequencies represent the upper and lower sidebands.

NEW PRICE
\$20.83
PLUS TAX
Write for details

SPECIFICATIONS 9-0A:

6.0 db. Bandwidth	.....	3 Kc. min.
40 db. Bandwidth	.....	6 Kc. max.
Pass Band Ripple	.....	2 db. max.
Insertion Loss	.....	4.5 db. max.
Input Termination	.....	150 Ω plus 150 pF.
Output Termination	.....	150 Ω plus 120 pF.
Physical Dimensions	.....	2" x 1.375" x 1.125"

PYE PTY. LTD.
CRYSTAL DIVISION
Q.C.B. APPROVED ORGANISATION



CLARINDA ROAD, CLAYTON, VICTORIA

P.O. BOX 105, CLAYTON, VIC., 3168

Phone 544-0361

TELEGRAMS: "PYTRONIC" MELBOURNE



DYNAMIC MICROPHONE & STAND

★ LOW PROFILE ★ COMPACT ★ STABLE

SPECIFICATIONS:

- Impedance: 50 ohms, 50K ohms
- Frequency Range: 80 to 12 Kc.
- Output: -55 db. (0 db. = 1V./dyne Cm²)
- Switch: D.P.D.T. P. to T.
- Housing: Angle adjustable



TYPE 45

ROBUST BASE STATION P.A. MICROPHONE

ZEPHYR PRODUCTS PTY. LTD.

70 BATESFORD ROAD, CHADSTONE, VIC., 3148

Phone 56-7231



Manufacturers of Radio and Electrical Equipment and Components

W.A.— S.A.— Tas.— N.S.W.— Qld.—
Agents: D. K. Northover & Co.; Neil Muller Ltd.; Homecrafts (Tas.) P/L; Jacoby, Mitchell & Co. P/L; T. H. Martin P/L.



amateur radio

Vol. 36, No. 3
MARCH
1968

Registered at G.P.O., Melbourne, for
transmission by post as a periodical

30c

VERNIER DIALS

Ratio 8 to 1 Reduction, Scaled 0-10.

Type T 501	1 1/2 inch diameter	\$1.75
T 502	2 inch diameter	\$2.20
T 503	3 inch diameter	\$2.80

FERROCART POCKET MULTIMETER

MODEL PT34



300 uA. movement.
AC and DC voltages:
0-10, 0-50, 0-250, 0-500,
0-1,000 volts.
Current ranges (mA.):
0-1, 0-100, 0-500 mA.
Ohms range: 0-100,000.
Size: 3 3/4 x 2 1/2 x 1 1/4
inches.
PRICE \$5.75. Complete with leads.

BATTERY SAVER or A.C. ADAPTOR

A & R TYPE PS64

- Unlimited operation of Battery operated Transistor Equipment from 240 volt AC Mains at negligible power cost.
- Ideal for 6 or 9v. Transistor Radios, Tape Recorders, Transistorised Small Amplifiers, and Test Equipment.
- Approved by Electric Supply Authorities.
- Maximum voltage limited to 7.75v. or 11v. at low current to protect transistors and capacitors.
- Filtered to ensure hum-free operation.
- 6 or 9v. (nominal voltage) selected by external switch.

SEMICONDUCTORS

TRANSISTORS

AC107	\$1.90
AC125/OC70	90c
AC126/OC75	90c
AC127	\$1.00
AC128	95c
2-AC128	\$2.25
AD149/OC26	\$2.25
AF114N/OC171	95c
AF115N	95c
AF116N/OC170	90c
AF117N/OC169	90c
AF118N	\$2.00
AS220/2N370	90c
AT126/AC126	90c
AT130 Silicon	95c
AT311 Silicon	95c
AT312	98c
AT313	\$1.00
AT314	90c
AT315	95c
AT316	95c
AT113A/OC35	\$3.25
BC107	\$1.00
BC108	30c
BC109	\$1.30
BF115	90c
OC26/AD149	\$2.25
OC30	\$4.10
OC35/AT1138A	\$3.25
OC44N	90c
OC45N	90c
OC70	\$1.18
OC71/2N215	75c
(or three for \$2)	
OC71	\$1.25
OC72	\$1.25
OC74N/AC128	95c
OC202	\$3.00
2N370/AS220	90c
2N410	85c
2N278 Delco	\$3.00

GERMANIUM SILICON

BA100	45c
BY100	\$1.55
OA5	70c
OA79	30c
OA90/OA80/1N34A	30c
OA91/OA81	30c
OA200	70c
OA202	75c
OA210/1N1763/1N3194, HR25, 400P1V, 400 mA.	85c
OA211/BY100/S1A82, 1000P1V 1 amp.	\$1.60
OA605/1N3193	55c
OA650	\$1.10
OAZ200	\$1.50
OAZ202	\$1.50
OAZ203	\$1.50
OAZ205	\$1.30
OAZ208	\$1.25
OAZ212	\$1.25
OAZ213	\$1.25
OAZ222/BZ14	\$2.00
OAZ222/BZ16	\$2.00
OAZ225	\$2.00
ORP12 Light sens.	
1N3194, OA210	85c
1N3193/OA605	55c
1N3491 50P1V, 18e.	95c
1N3491R	95c
1N3492 100P1V 18e.	\$1.29
1N3492R	\$1.20
1N3493 200P1V 18a.	\$1.30
1N3660 100P1V 25a.	\$1.35
1N3660R	\$1.55

CHASSIS—ALUMINIUM

Type 1:	5 in. x 3 in. x 2 in.	75c
.. 2:	6 in. x 4 in. x 2 in.	80c
.. 3:	8 in. x 5 in. x 2 1/2 in.	\$1.00
.. 4:	10 in. x 6 in. x 2 1/2 in.	\$1.25
.. 5:	11 in. x 8 in. x 2 1/2 in.	\$1.50
.. 6:	13 in. x 7 in. x 2 1/2 in.	\$1.50
.. 7:	13 in. x 10 in. x 2 1/2 in.	\$1.75
.. 8:	17 in. x 8 in. x 3 in.	\$2.15
.. 9:	17 in. x 10 in. x 3 in.	\$2.46
.. 10:	17 in. x 12 in. x 3 in.	\$2.62

(Pack and Post 40c)

WELL KNOWN GERMAN MAKE

RECORDING TAPE

In Round Plastic Pack.		Professional Quality		
3 in.	300 ft.	\$1.65	5 3/4 in. 1200 ft.	\$4.00
3 in.	450 ft.	\$2.75	5 3/4 in. 1800 ft.	\$6.25
4 in.	900 ft.	\$4.30	5 3/4 in. 2400 ft.	\$8.40
5 in.	900 ft.	\$2.40	7 in. 1200 ft.	\$4.20
5 in.	900 ft.	\$3.50	7 in. 1800 ft.	\$5.50
5 in.	1200 ft.	\$4.50	7 in. 2400 ft.	\$7.50
5 in.	1800 ft.	\$7.20	7 in. 3600 ft.	\$13.00

Tape Cups 8c each

CO-AXIAL CONNECTORS

AMERICAN TYPE:

PL259 Co-axial Plug	95c
4087-1 Co-axial Plug (PL259, PTFE)	\$1.45
SO239 Co-axial Socket (suit PL259)	90c
4802-1 Co-axial Socket (PTFE)	\$1.47
C32-14 Co-axial Double Ended Female Cable Joiner (PTFE)	\$1.75
UG175U Adaptor for PL259 to suit 1/4 in. cable	28c
C32-17 Co-axial "T" Piece, suit PL259	\$2.32

BNC SERIES:

UG88 CU Co-axial Plug (PTFE)	\$1.58
UG290/U Co-axial Socket (PTFE)	\$1.25

BELLING LEE TYPE:

Co-axial Plug, suit 1/4 in. Cable	40c
Co-axial Socket	35c
Co-axial Socket (flush mount)	35c
Co-axial Cable Joiner (female)	40c

ROBLAN BROADCAST GANGS

RMG1 Single Gang, 10-50 pF.	/1.85
RMG1 Single Gang, 10-415 pF.	1.85
RMG2 Two Gang, 10-415 pF.	2.50
RMG3 Three Gang, 10-415 pF.	3.35

(Pack and Post 20c)

ELECTROLYTIC CAPACITORS

Subminiature, P.V.C. Sheath, Pigtail & Chassis Type			D.C.		
uF.	W.V.	Price	uF.	W.V.	Price
1	350	30c	50	150	60c
2	12	25c	50	350	70c
4	350	40c	50 plus 50*	350	\$1.35
4	500	45c	100	6	30c
5	6	25c	100	12	30c
5	12	25c	100	15	30c
8	350	45c	100	25	45c
8	500	50c	100	50	55c
10	6	25c	100*	200	85c
10	12	25c	100	350	\$1.45
10	25	30c	200*	350	\$1.70
16	350	45c	250	6	30c
16	450	55c	250	12	45c
16	500	65c	250	15	50c
24	350	50c	250	25	50c
24	500	80c	250	50	85c
25	25	30c	500	6	45c
25	50	35c	500	12	55c
30	6	25c	500	15	65c
30	12	25c	500	25	70c
32	350	65c	500	50	\$1.15
32	500	95c	1000	15	85c
50	6	30c	1000	25	\$1.20
50	12	30c	1000	60	\$1.25
50	15	30c	2000	15	\$1.00
50	25	40c	2000	25	\$1.35
50	50	40c			

* P.V.C. can type

VIDEO PEAKING CHOKES

MINIATURE PIGTAILS, IRON CORE

Sizes available:	15 uH., 22 uH., 27 uH., 33 uH., 39 uH., 47 uH., 56 uH., 68 uH., 82 uH., 100 uH., 120 uH., 150 uH., 180 uH., 220 uH., 270 uH., 330 uH., 390 uH., 470 uH., 560 uH.
Price 40c. Postage 10c.	

S.W.R. METERS, Model KSW-10

Specifications: Standing Wave Ratio: 1:1 to 1:10. Accuracy: Plus or minus 3% scale length. Impedance: 52 ohms and 75 ohms. Meter 0-100 DC microamperes. Price \$9 inc. tax.

BEZALS AND NEON INDICATORS

Sato 3280 6-8 volt subminiature: red, green, and blue	45c
NEZ Neon Indicator, 65 volt, flying leads	30c
230 volt red Neon Bezel	65c

SPECIALS

NEW VALVES IN STOCK TO CLEAR	
6AC7	50c ea., 5 for \$2
6AG5	25c ea., 10 for \$2
12SR7	50c ea., 5 for \$2
7E6	35c ea., 8 for \$2
7A8	35c ea., 8 for \$2
6SH7	50c ea., 5 for \$2
7C5	50c ea., 5 for \$2
7W7	35c ea., 8 for \$2
6HG8T	20c ea., 12 for \$2
954	50c ea., 5 for \$2
807	51 each
6J7	50c ea., 5 for \$2
EA50	10c ea., 12 for \$1
958A	50c ea., 5 for \$2
6U7G	50c ea., 5 for \$2
2C26	50c ea., 5 for \$2
6C6	75c ea., 3 for \$2
RL10	75c ea., 3 for \$2
6S17	50c ea., 5 for \$2
866A	\$1.25 ea., 3 for \$3
100TH	\$3 each

CATHODE RAY TUBES

5BP1 5 inch CRT, \$5

Please allow for Postage and Packing.

PLUGS AND SOCKETS

Octal Plug	35c each
Octal Socket	15c each
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"AMATEUR RADIO"

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THE UNIJUNCTION TRANSISTOR

ROGER L. HARRISON,* VK3ZRY

PERHAPS you have seen this rather unusual name in overseas (and some local) technical journals. Perhaps you have seen an odd-looking symbol (see Fig. 1) in a circuit in the very same technical journals. Perhaps you have wondered what this little device does—with its symbol that vaguely resembles that of a conventional transistor—but behaves much differently. The thing looks (and behaves?) like some weird paradox—it has an emitter in the wrong place and two (yes two!) bases—which, incidentally, gives us its other name—the **double base diode**—which tends to confuse matters even further.

Well, what is this little device and what can you do with it?

The unijunction transistor (hereinafter referred to as U.J.T.) is a semiconductor device possessing quite unusual electrical characteristics. Its construction and operation is markedly different to the conventional two-junction transistor.

CHARACTERISTICS

Fig. 1 shows its symbol and the conventions for current flow in the device. Fig. 2 shows a simplified equivalent circuit. Now, referring to Fig. 2, R_{B2} and R_{B1} represents the resistance between B2 and B1. This is known as the interbase resistance, R_{BB} , and is generally in the range 4K to 12K ohms. This is the resistance of a bar of N-type silicon with two contacts at either end. Now another contact of P-type material is placed somewhere between B2 and B1 on the N-type silicon bar and this forms a rectifying or diode contact called the emitter (E).

(η) is called "the **intrinsic standoff ratio**". The ratio is approximately 0.5 to 0.8 for all types of U.J.T.s. Mathematically, the following equation will accurately define η .

$$\eta = \frac{R_{B1}}{R_{B1} + R_{B2}}$$

PEAK POINT EMITTER VOLTAGE

If the emitter voltage, V_E , is less than ηV_{BB} the emitter diode is reverse biased and only a small leakage current will flow. As V_E is raised towards ηV_{BB} and just above, emitter current will flow as the emitter diode becomes forward biased. The result is that R_{B1} will suddenly decrease its resistance. Consequently I_E will suddenly increase and V_E will drop.

The point at which R_{B1} suddenly decreases is called the "peak point" and the emitter voltage at this point is called the "peak point emitter voltage" and is labelled V_P .

The diagram in Fig. 3 illustrates the peak point and V_P a little more clearly. These are the static emitter characteristics and you will note that V_P is dependent on V_{BB} (the interbase voltage). The lower curve ($I_{B2} = 0$) is the emitter to B1 diode curve when B2 is disconnected.

From these curves an approximation to η can be calculated very easily. Simply divide V_P (for a certain value of V_{BB}) for that curve. For example, take the topmost curve—

Now $V_{BB} = 30v.$, let's say $V_P = 16$ volts, at this point $\eta = V_P \div V_{BB} = 16 \div 30 = 0.534$.

To be more accurate at lower values of V_{BB} , use the equation—

$$\eta = \frac{V_P - V_D}{V_{BB}}$$

where V_D = emitter diode voltage, = 0.6 volts.

PEAK POINT CURRENT

This is marked as I_P in Fig. 3. I_P is the minimum current necessary to trigger the U.J.T. It can be measured using Fig. 4 with some changes. Disconnect the meter (v.t.v.m., etc.) reading V_E . Replace the meter reading I_E (0-50 mA.) with a 0-50 uA. meter. At each setting of V_{BB} , slowly increase the emitter potentiometer until the meter jumps suddenly. The point just before the jump in emitter current is the value of I_P .

VALLEY VOLTAGE

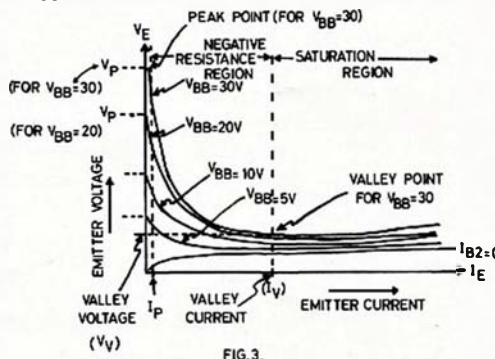
This is marked as V_V on Fig. 3. It is the emitter voltage at the valley point. V_V increases with increase in V_{BB} you may notice.

VALLEY CURRENT

This is marked as I_V on Fig. 3. It is the value of emitter current at the valley point, this also increases with increase in V_{BB} .

STATIC INTERBASE CHARACTERISTICS

These characteristics are a series of curves that relate V_{BB} and I_{B2} . They can be plotted by breadboarding the circuit in Fig. 5. With the emitter disconnected at first, a reading of I_{B2} for every step in V_{BB} is taken. The steps in V_{BB} should be at 5v. intervals. Then, connecting the emitter, increase the emitter pot. until the U.J.T. fires and set I_E at 5 mA. or 10 mA. and, keeping this constant, take readings of I_{B2} at every step in V_{BB} .



These curves can be plotted for any U.J.T. by breadboarding the circuit in Fig. 4. Set V_{BB} to convenient voltages in 5v. or 10v. steps, and for each setting of V_{BB} vary the emitter pot. to find V_P first (sudden increase in I_E) and then vary I_E in suitable steps (about 1 or 2 mA. steps), reading V_E at each step. You can then plot the static interbase characteristics like that in Fig. 3. Disconnecting B2 will allow you to plot the curve for $I_{B2} = 0$.

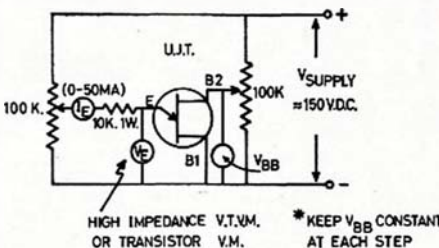


FIG. 4.

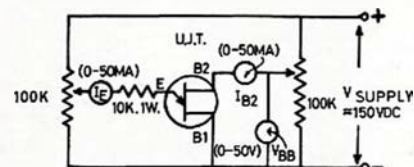


FIG. 5.

Take another set of readings for I_E at say 10 or 15 mA. Continue this for steps of I_E at 5 or 10 mA. intervals, stopping at $I_E = 50$ mA. or so. Plotting the results will give a set of curves like those in Fig. 6.

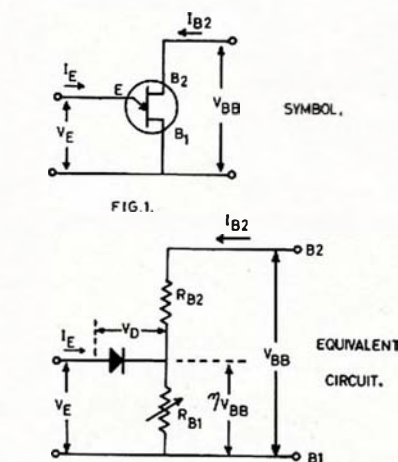


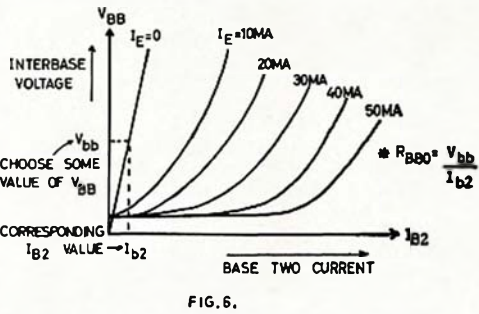
FIG. 1.

FIG. 2.

INTRINSIC STANDOFF RATIO

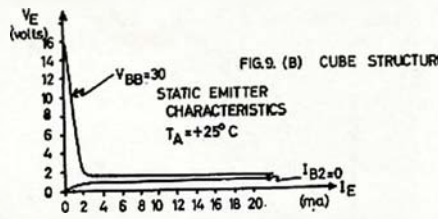
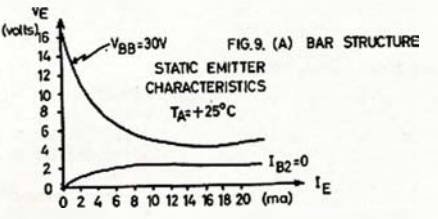
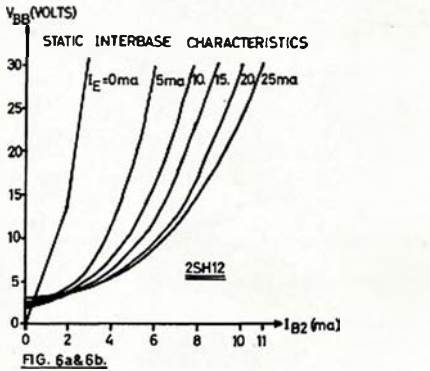
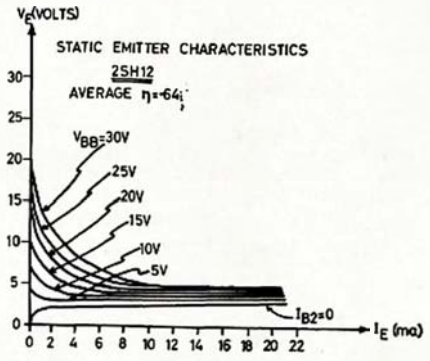
If a variable potential is connected between B2 and B1 with the positive on B2 and negative on B1 (E not connected) the device acts just like a voltage divider and a certain fraction, η , will appear at the emitter (E). This fraction

* 1 Mary Street, North Balwyn, Vic., 3104.



a TO-5 or TO-18 case and all leads are electrically isolated from the case. The cube construction is shown in Fig. 8. The cube of N-type silicon is mounted on its base-two contact and the base-one contact is a thin wire alloyed into the top of the cube. The emitter is alloyed into the side of the cube and a PN junction formed. This type of construction is usually mounted in a TO-18 package.

This type of construction gives different characteristics to the bar type. Owing to the small contact area and shape of B1 a higher intrinsic standoff ratio (η) can be achieved with much smaller spacing between E and B1. This produces a lower I_P , short turn-on time, lower valley voltage, and permits operation at reduced voltages. Unfortunately cost is generally higher. Fig. 9(a) and 9(b) illustrates the different static emitter characteristics of typical bar and cube structure U.J.T.s.

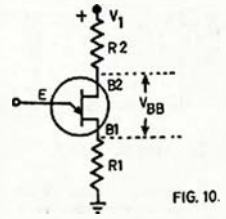


U.J.T. CIRCUITS

Seeing as most types of available U.J.T.s. are of the bar construction type, I will only consider these in the following discussion.

BIAS CIRCUITS

The various parameters and characteristics of a U.J.T. are subject to temperature variation; some more so than others. Now V_P will vary with temperature and is principally due to variation in V_D (see Fig. 2). This effect is usually compensated for by a resistor (R_2) in Fig. 10. As the temperature increases, so will R_{BB} ; V_{BB} will increase owing to the voltage divider action of R_2 , R_{BB} and R_1 .



The resistor R_2 can be chosen from the following equation:—

$$R_2 \approx \frac{R_{BBO}}{2 \eta V_1}$$

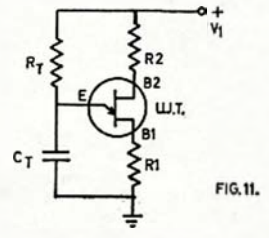
(for R_{BBO} see Fig. 6)

This equation is only approximate and some juggling of R_2 might improve the compensation, but generally it will be close enough for a wide range of U.J.T.s. Also, for the circuit in Fig. 10, V_P is given by: $V_P = \eta V_1$.

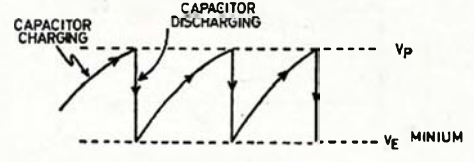
The resistor R_1 should generally be kept below 100 ohms as it controls the valley voltage (V_V) and valley current (I_V) (see Fig. 3). Use what you have on hand (33 ohms or 47 ohms usually work okay).

RELAXATION OSCILLATORS

The relaxation oscillator shown in Fig. 11 can be used for many applications. For example, tone oscillator, timing circuit, pulse generator, sawtooth generator or a trigger circuit.



When V_1 is applied C_T appears as a short circuit and thus E is reverse biased and does not conduct. As C_T charges through R_T the emitter voltage rises exponentially towards V_1 . When the voltage reaches V_P the emitter suddenly conducts and C_T discharges through E and B1 via R_1 . The emitter then ceases conducting and the whole process begins again. The waveform produced is shown in Fig. 12.



The approximate frequency of oscillation is given by:—

$$f \text{ (c.p.s.)} \approx \frac{1}{R_T C_T L_N \left(\frac{1}{1 - \eta} \right)}$$

The equation holds providing R_1 and R_2 are small, i.e. $R_1 < 100$ ohms, and R_2 from previous equation but less than 1,000 ohms.

To save calculation in many instances a nomograph (Fig. 13) will assist in the design of a relaxation oscillator using a U.J.T.

Two frequency scales have been given. One for a value of $\eta = 0.55$ and another for a value of $\eta = 0.65$. Use the scale appropriate to the value of η for the U.J.T. you are going to use. An example for a practical circuit is given later.

A WIDE RANGE RELAXATION OSCILLATOR

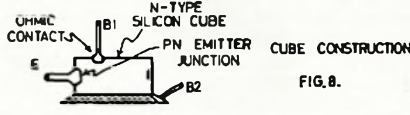
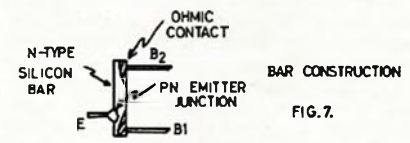
The circuit in Fig. 14(a) shows a practical circuit built and tested by the author. I used a Japanese U.J.T., the NEC-2SH12. It performed very well,

A set of curves (Figs. 6a and 6b) was plotted, using the above methods, for a type 2SH12 U.J.T.

CONSTRUCTION

The U.J.T. is constructed in two basic forms known as the bar and cube structures. Most U.J.T. types are of the bar construction form.

The bar construction is shown in Fig. 7. A small bar of silicon has two ohmic contacts (not junctions) unplanted at opposite ends of the bar. A junction (the emitter) is implanted on the opposite side of the bar between B1 and B2. This junction is somewhat closer to B1 than B2. The unit is generally mounted on a ceramic disc inside



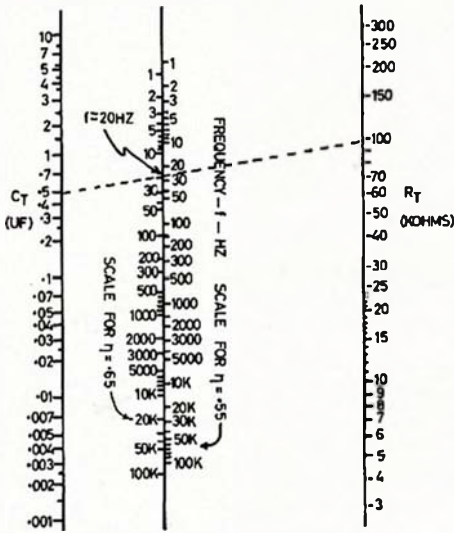


FIG. 13. FREQUENCY NOMOGRAPH

the frequency range being 500 to 1. I inspected the waveforms with a Hewlett-Packard c.r.o. and the results are shown in Fig. 14(b) and 14(c). The circuit would not oscillate below 1 Kc. as the timing resistance R_T was too great to allow the emitter to "fire". The frequency is easily lowered by increasing C_T .

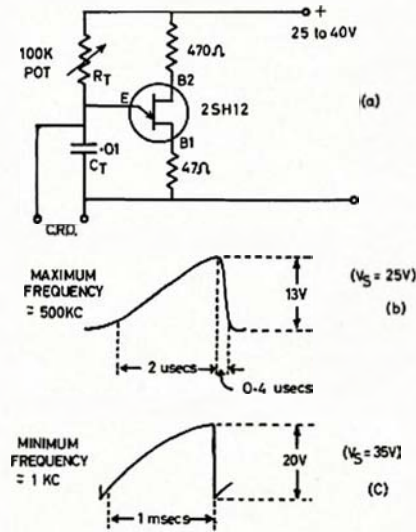


FIG. 14.

This circuit has a great potential for the sweep generator in a c.r.o., r.f. sweep generator or panoramascope. Unfortunately the output has a non-linear rise as can be seen in Fig. 14(b) and (c). This can be overcome in two ways. Fig. 15(a) shows R_T returned to a higher voltage supply. This is okay and gives reasonable linearity providing a higher voltage supply is available. It suffers from a disadvantage though—the frequency is not as stable as it would be with a single supply.

In Fig. 15(b) a transistor, connected in a common base circuit, uses the

high output impedance of the circuit to maintain a relatively constant charging current for the timing capacitor C_T .

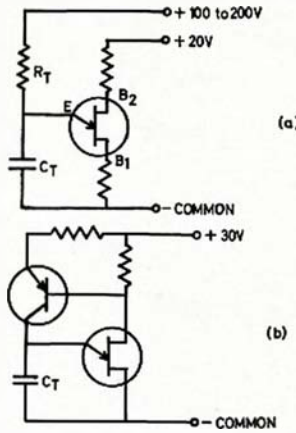


FIG. 15.

PULSE GENERATORS

A current pulse will flow in the emitter, base-one, and base-two circuits each time the emitter conducts in a relaxation oscillator. Thus, a relaxation oscillator can be used as a very efficient pulse generator giving either positive or negative output pulses at various impedance levels. Several circuit configurations are shown in Figs. 16(a), (b) and (c).

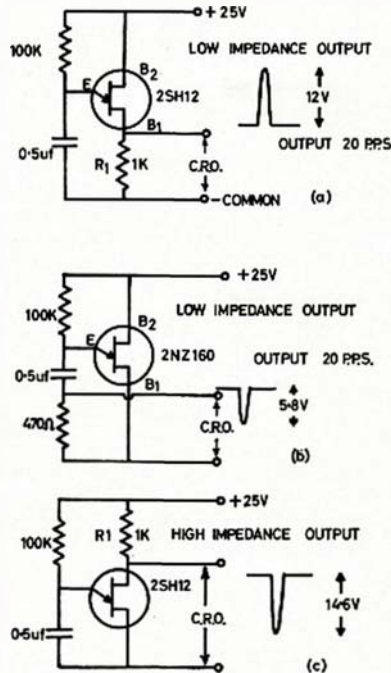


FIG. 16.

SEE FIG. 13 TO OBTAIN VALUES OF R_T AND C_T IN ABOVE CIRCUITS

The output pulse from these circuits has a relatively fast rise time and quite a slow fall time compared with the length of the pulse. A significant improvement in this state of affairs can be made by using an inductance in the

B1 circuit. A transistor can be used to invert the output pulse (see Fig. 17).

The approximate inductance can be found from $L = 0.4T^2 \div C_T$, where C_T is the desired pulse width. The answer will be in Henries.

A pulse generator can be designed by using the nomograph of Fig. 13 and picking the circuit configuration you desire from Fig. 16.

The resistor R_1 shown in the circuits (a), (b) and (c) of Fig. 16 can be chosen by the "um-now-let-me-see-what-have-I-got" method. Juggle its value and the supply voltage to obtain the output voltage you want.

For more critical applications the circuit in Fig. 17 can be used. The width of the pulse is determined by the inductance in the emitter (L). The frequency of the pulses (or number of pulses per second) is determined by R_T and C_T . The rise and fall times will be quite short, typically one-twentieth to one-fiftieth of the pulse width "t".

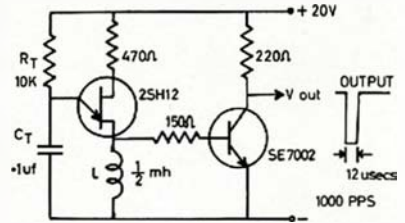
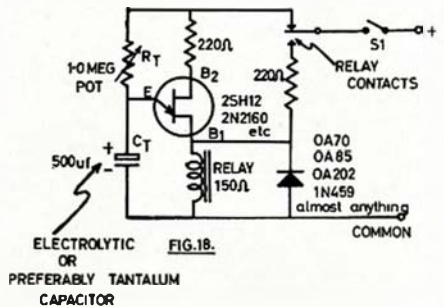


FIG. 17.

U.J.T. TIMERS

A timer can be designed using the relaxation oscillator principle. Referring to Fig. 18, when S_1 is closed, C_T charges to the peak point voltage at which time the U.J.T. "fires" and the capacitor C_T discharges through the relay which promptly closes. One set of (changeover) contacts holds the supply from the U.J.T. Opening S_1 returns the circuit to its original condition. This circuit is useful for periods up to 15 or 20 seconds.



The best way to design a circuit like this is to haywire it together and juggle R_T and C_T until you achieve the desired result.

I found this method reasonably fast and calibrating the pot. is quite easy. Note that the relay should be physically small so that it has low operating power. A huge 600 or 3000 type relay just won't work (I tried).

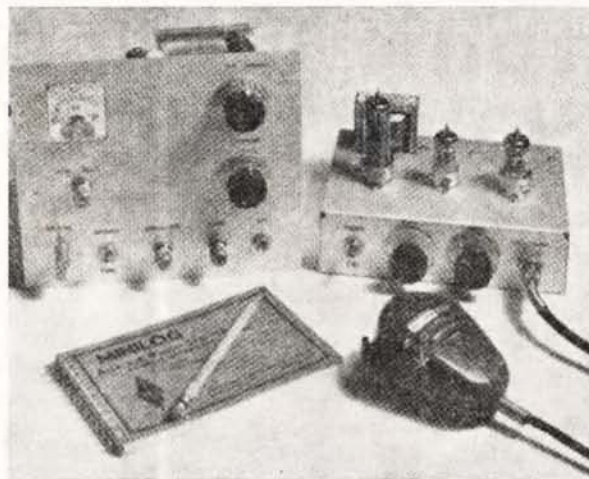
Have a look in the G.E. Transistor Manual for more timer circuits.

(Continued on Page 15)

"Das Softenboomer 160"

A LOW COST RIG FOR 160 METRES

DOUG DE MAW, WICER



● Here's a straightforward 160 metre transmitter that will make possible many hours of enjoyable hamming, at moderate cost, on the "top band". Why not make that long-promised debut on 160 now?

If you haven't tried 160, you've missed an interesting facet of Ham Radio. Since high power operation is not permitted on 160, the little rig described here will hold its own while competing with like-power stations across the country.

[In Australia, 150 watts input to the final is permitted on 160 metres. Also the Amateur Service is the secondary service in this band of 1800-1860 Kc.—Ed. "A.R."]

The 160 metre band offers the DX man who likes to do things the hard way a proving-ground for his operating skill and perseverance. Ground wave coverage on 160 is excellent, making it a useful band for ragchewing and mobile work. Signals in the 1.8 to 2.0 Mc. region are not seriously affected by land masses, such as hills and mountains. A few watts of power will do a creditable job of spanning the continent, provided an effective antenna system is used. All of these features contribute to making the band interesting and useful.

"Das Softenboomer 160" will run 50 watts on c.w. and 30 watts on a.m. In areas where higher power levels are permitted it can be used to excite a linear amplifier.

The power supply can be made from salvaged components taken from a junked t.v. set, making the overall cost of the transmitter a bit more attractive than it would be if new parts were used. Since the balance of the components are readily available from most supply houses, procurement should be no problem to anyone wishing to build the little rig.

THE R.F. CIRCUIT

Two tubes are used in the r.f. section of the transmitter. A 6CL6 serves as

the crystal-controlled oscillator and the p.a. stage uses a 6HF5 t.v. sweep tube. The 6HF5 was chosen because of its high plate dissipation rating, high permeance, and low screen voltage requirement. These features make it ideal for operation at low plate voltage where moderate power output is desired.

Constant-carrier screen grid modulation is used for a.m. operation.¹ Because the 6HF5 screen grid operates at

¹ Amplitude Modulation Methods, The Radio Amateur's Handbook, chapter 8.

low voltage, 100% modulation requires but little audio power from the modulator. For a.m. operation the unmodulated screen voltage is about 75 volts. When operating c.w., 150 volts is supplied to the 6HF5 screen circuit.

Output from the oscillator, Fig. 1, is varied by the drive control, R1. An r.f. choke, RFC2, is used in the plate circuit of the 6CL6. The p.a. grid circuit hookup, C1L1, makes possible the inclusion of C2, the neutralising capacitor. Although the transmitter did not show any outward signs of instability without neutralisation, considerable r.f. feedthrough was apparent in the p.a. stage when the plate and screen voltages were removed with drive applied. This problem was resolved by the addition of the neutralising network, C2, RFC3, and the 0.001 uF. capacitor, at the junction of L1 and RFC3.

The output tank, C3/L2/C5, is a pi network designed to work into a 50 ohm load. There is sufficient flexibility in its tuning range to permit it to match nonreactive loads between 30 and 75 ohms. If other impedances are to be dealt with, a transmatch should be used between J1 and the load.

Both stages of the transmitter are keyed for c.w. A 2 uF. capacitor is used between the keying bus and ground to provide a shaped keying characteristic. The c.w. note is clean and chirp-free when active crystals are used at Y1.

Grid and plate current metering of the amplifier is made possible by meas-

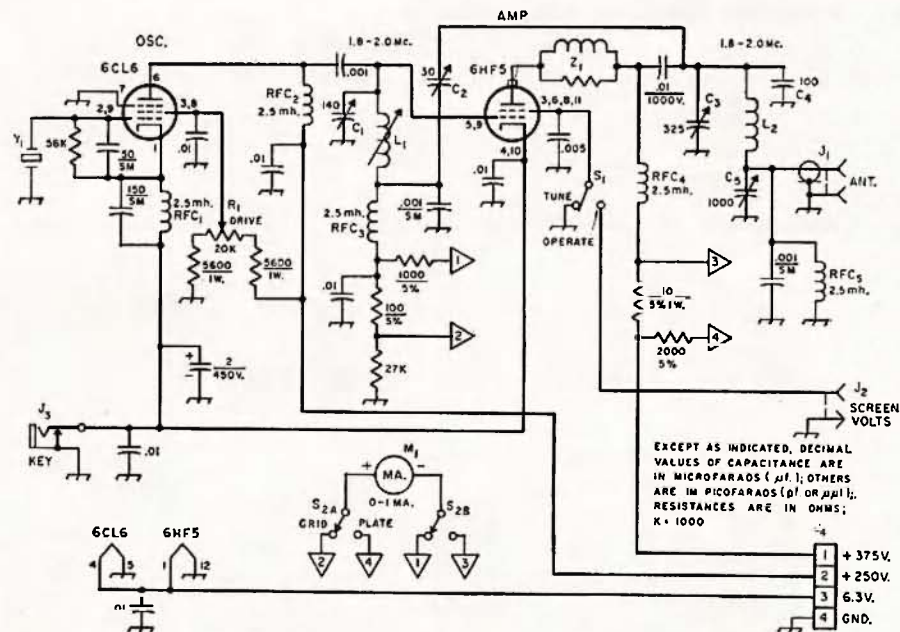


Fig. 1.—Schematic diagram of the r.f. unit. Fixed resistors are 1/2 watt composition unless otherwise noted. Capacitors are disc ceramic except those marked SM, which are silver mica. Capacitors bearing polarity marking are electrolytic and are in uF.

- C1—140 pF. miniature variable.
- C2—30 pF. miniature variable.
- C3—325 pF. variable.
- C4—100 pF. 1,000 volt mica.
- C5—Three-section broadcast variable, all sections in parallel. Remove trimmer capacitors from side.
- J1—Co-ax. receptacle, type SO-239.
- J2—Phono connector.
- J3—Closed-circuit phone jack.
- J4—Four-pin male chassis connector.
- L1—27.5-58.0 uH. variable inductor.
- L2—Coil stock, 4 inches long, 1/4 inch diam., 16 turns per inch.

- M1—0-1 milliammeter.
- R1—20,000 ohm wire-wound control, linear taper, 2 watts.
- RFC1 to RFC3 Inc.—2.5 mH, 125 mA. choke.
- RFC4—2.5 mH, 375 mA. choke.
- RFC5—Same as RFC1.
- S1—S.p.s.t. toggle switch.
- S2—Ceramic rotary, 1 section, 2 poles, 2 positions, non-shorting.
- Y1—1.8 Mc. crystal.
- Z1—Parasitic suppressor, 7 turns No. 20 enamel wire wound on 56 ohm 1 watt resistor (coil soldered to resistor pigtailed).

* Reprinted from "QST," August 1968.



Electronic Components for COUNTING



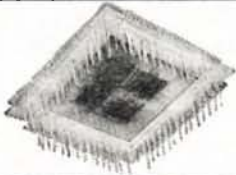
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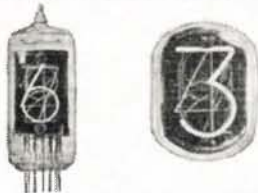
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APPLICATIONS ENGINEERING SERVICE

This service operates in co-operation with, and at specific request of, commercial concerns requiring engineering assistance in the application of Mullard products. In addition, answers to technical enquiries are provided by the Technical Service Dept., where world-wide valve and semiconductor references are on file.

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uring the voltage drops across a 100 ohm resistor in the grid circuit and a 10 ohm resistor in the plate supply line. A 1 mA. meter is used for this purpose, and is switched for grid and plate monitoring by a d.p.d.t. switch, S2. Reasonable accuracy is assured by the use of 5% resistors. Greater accuracy, at higher cost, would result from the use of 1% resistors.

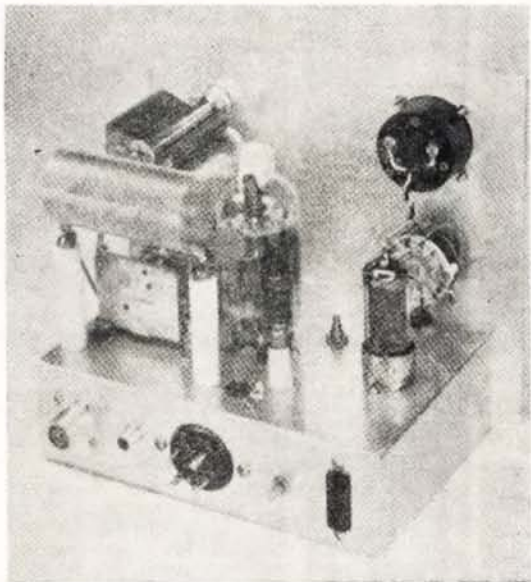


Fig. 2.—Top-rear view of the r.f. assembly. Antenna connector is at left on chassis apron and next to the phono connector for screen voltage input. Power receptacle is at centre with ground post to the right. The four-connector socket at the far right is not used and was installed for future experiments with v.f.o. operation.

MODULATOR CIRCUIT

Three tubes are used in the screen modulator assembly, Fig. 4. The microphone voltage is amplified by V1A, passed on to V1B for further amplification, and then applied to the speech clipper where the positive and negative peaks of the audio signal are clipped by CR1 and CR2. The amount of clipping is determined by the setting of R2. Since CR1 and CR2 are 3.6 volt Zener diodes, clipping will not take place until the peak audio level reaches 3.6 volts. By connecting the diodes back-to-back, both positive and negative peaks are clipped. The clipper is followed by a filter which prevents high frequency audio harmonics from being passed on to the last two stages of the modulator. The harmonics are generated in clipping and would cause the transmitted signal to be broad and distorted were they not filtered out.

Output from the filter goes to R3, which serves as the modulator gain control. A 6C4 is used as a third audio amplifier and is necessary to compensate for the insertion loss through the clipper network. A negative feedback network is used between the plate of the 6C4 and the plate of the 6CM6 modulator tune. The feedback voltage is taken from the junction of two 27,000 ohm resistors which are bridged across one half of the primary winding of T1. The plate load resistor for the 6C4 is returned to this point to permit part of the audio voltage from the primary of T1 to be fed back to the grid of the 6CM6.

Since the modulator is looking into the nonlinear resistance of the p.a.

screen circuit, it is necessary for the internal impedance of the modulator to be low, to minimise distortion. The plate resistance of the 6CM6 is lowered through the use of negative feedback, and the end result is a cleaner a.m. signal.

Transformer T1 is a push-pull 5w. output transformer. Connected as shown in Fig. 4, it provides a 1:1 im-

During c.w. operation, plate voltage to the speech and modulator tubes is turned off by S3. The second half of the switch connects the screen to a voltage divider across the 250v. supply.

CONSTRUCTION

The r.f. and modulator assemblies are built on 2" x 5" x 7" aluminium chassis bases. Separate chassis were used so either unit could be used independently when experimenting with r.f. units or modulators of different design. There is no reason why the entire transmitter, including the power supply, cannot be built on a single chassis if one-piece construction is desired.

Shielded audio cable is used in the modulator filament circuit to help reduce hum pickup. The same method is used in the r.f. chassis to reduce stray coupling between the stages.

The panel for the r.f. unit was made from a piece of 1/16" aluminium plate, 7" high by 8" wide. Each chassis is enclosed by attaching a 5" x 7" aluminium bottom plate to it after final check-out. The bottom plates are held in place with No. 6 sheet-metal screws. Each plate is equipped with rubber feet to prevent damaging the surface of the operating table.

The power supply, Fig. 6, is of conventional design and the layout can be anything you please.

TUNING UP

After the interconnecting cables between the units have been attached, connect a 50 ohm dummy load or 60 watt light bulb to J1. Place the transmitter panel switch, S1, in the "tune" position. Apply power and, while observing the grid current meter, adjust C1 for peak indication. Next, adjust the drive control, R1, for a reading of 3 mA. (full-scale meter deflection in the grid current position is 10 mA.). The amplifier can now be turned on by

pedance ratio between the modulator and the screen grid of the p.a. stage. The voice coil winding is not used. A 30K resistor is connected between T1 and the screen grid of the 6HF5 to drop the screen potential to 75 volts during a.m. operation. A 2 uF. capacitor is in parallel with the resistor to by-pass the audio around the resistor.

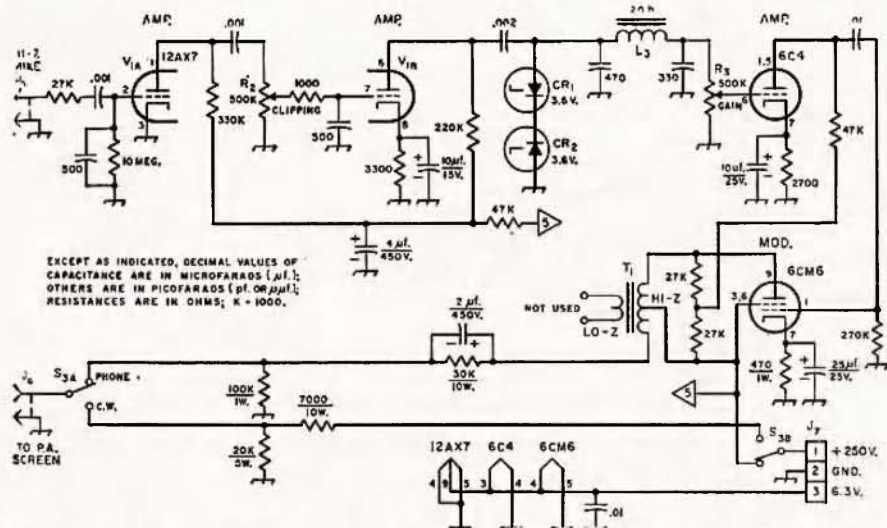


Fig. 4.—Schematic diagram of the modulator. Resistors are 1/2 watt composition unless otherwise noted. Capacitors are disc ceramic except those bearing polarity marking which are electrolytic.

- CR1, CR2—3.6 volt Zener diodes (1N747 or equiv.).
- J5—Two-terminal microphone connector.
- J6—Phono connector.
- J7—Three-terminal connector.
- L3—20 H, 15 mA. choke.

- R2—0.5 megohm audio-taper control.
- R3—0.5 megohm audio-taper control.
- S3—D.p.d.t. toggle switch.
- T1—10,000 ohm c.t. output transformer, 5 watts; voice coil winding not used.

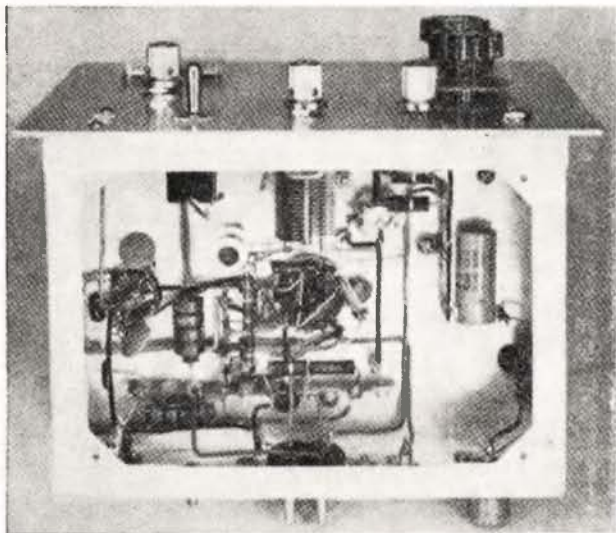


Fig. 3.—Bottom view of the transmitter. Amplifier grid tuning circuit is at the centre with the neutralising capacitor to the right of C1. The oscillator section is at the left of the chassis.

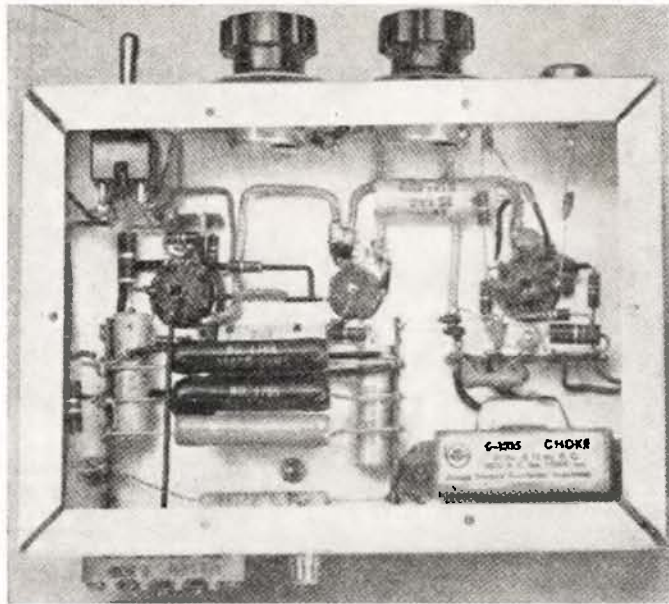


Fig. 5.—Under-chassis view of the modulator assembly. The 12AX7 is at the right, the 6C4 is at the centre, and the 6CM6 is at the left. Shielded wire is used for the filament circuit.

throwing S1 to the "operate" position. With S2 in the plate-current position, quickly tune C3 for a dip in plate current. Normal loaded plate current for a.m. operation will be approximately 100 mA. For c.w. use, the p.a. plate current at maximum output will be about 150 mA. at resonance (full-scale deflection in plate current meter position is 200 mA.).

After tune-up is completed, remove the plate and screen voltage from the 6HF5 by unsoldering the plate supply lead and grounding S1. Connect an oscilloscope or diode r.f. indicator² to the antenna end of L2 through a 50 pF. capacitor. With the dummy load still connected to J1, apply drive to the amplifier and adjust the neutralising capacitor, C2, for minimum r.f. signal as seen on the diode detector's indicating meter. An insulated screwdriver will be required for adjustment of C2. The null in output will be quite sharp when the proper setting of C2 is reached.

If an oscilloscope is used, leave it connected to the output of the transmitter, place the modulator switch in the phone position, and operate the transmitter into the dummy load. Make certain that the amplifier is loaded to approximately 100 mA. at resonance. Set the clipping control, R2, at mid-range and advance the gain control, R3, until 100% modulation is observed on the scope. An audio generator can be connected to J5 for this test, or a sustained whistle can be applied to the microphone in lieu of an audio tone. The output waveform should be free from distortion. Tight coupling to the dummy antenna is important if the waveform is to be clean. The Handbook illustrates proper waveforms for a.m. operation in chapter 11.

The amount of clipping used is a matter of choice. Advancing R2 and lowering the level at R3 will increase the clipping. A compromise can be reached while checking out the rig on the air and getting reports from fellow Amateurs. The more clipping that is used, the greater will be the audio punch. The increased talk power will make the audio less pleasant to listen to, but the intelligibility will remain good. If an oscilloscope is not available, the rig can be tuned up for best audio quality by advancing the audio level until a slight flicker is evident in the p.a. plate current. Once this point is reached, back off on the audio gain control until the plate current flickers only on occasional voice peaks. Make certain that the output tank is tightly coupled to the load when operating a.m., to prevent flat-topping on voice peaks.

SOME FINAL THOUGHTS

In areas where the maximum input power is limited to 25 watts, it will be necessary to reduce the screen voltage to the 6HF5 stage so that tight coupling to the load can be maintained during a.m. operation. In such cases as this, the screen voltage can be reduced by increasing the resistance between T1 and the screen. The 30K resistor can be replaced by one of higher value. It is not satisfactory to reduce the input power by loosening the coupling of the pi network to the load, because this procedure would result in a distorted a.m. signal and would cause splatter.

On c.w. it is helpful to detune the p.a. grid tank slightly from resonance. This will lessen oscillator pulling and aid in preventing chirps.

If you're looking for a little rig with a big signal, "Das Softenboomer 160" will fill the bill.

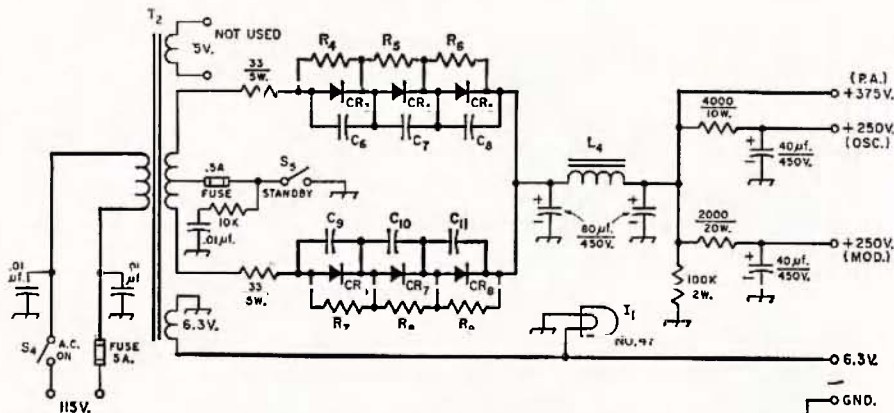


Fig. 6.—Power supply schematic. Capacitors are disc ceramic except those bearing polarity marking, which are electrolytic. Resistors are 1/2 watt composition unless otherwise indicated. Resistance is in ohms.

C6 to C11 Inc.—0.01 uF. 600 volt disc ceramic.
 CR3 to CR8 Inc.—600 p.i.v. 750 mA. silicon diode.
 I1—No. 47 pilot lamp.
 L4—Filter choke from t.v. chassis, 2 H., 200 mA.

R4 to R9 Inc.—0.47 megohm, 1/2 watt resistor.
 S4, S5—S.p.s.t. toggle switch.
 T2—T.v. power transformer, 350 volts at 250 mA., 6.3 volts at 6 amp., 5 volt winding not used.

A SIMPLE LOW COST HIGH VOLTAGE SUPPLY

JIM JONES,* VK2ZEE/T (Ex VK3ZEW)

MOST Amateurs with a limited budget for Amateur Radio would probably agree that the most costly part of a normal a.m. rig is the power supply.

With the advent of semiconductor diodes it has become much simpler to build high voltage power supplies that are both smaller and more efficient.

They are smaller because, firstly, a power diode (semiconductor) is smaller than its equivalent valve type and they dissipate less heat, therefore they can be placed in a smaller area. On the efficiency side, a diode has only a small internal resistance, therefore it has a low voltage drop across it, approximately 1 volt, but a vacuum tube drops at least 50v. and soft tube (gaseous) at least 15 volts, therefore we are able to get more voltage out for the same a.c. input. Also, there is no power lost in the power supply for rectifier filaments—as there aren't any.

that the output voltage depends on the d.c. resistance of the choke, so will range from 350 to about 375 volts.)

In this circuit basically we have a full wave bridge rectifying circuit coupled into a pi-network. As electrolytics are only made to withstand 600v. maximum, we found it necessary to place two of them in series (with equalising resistors across them) so that each capacitor only had half of the 750 volts across it. It may be necessary to check the equalising resistor with an ohmmeter before placing them in the circuit so that we are sure they are of equal values. The value of choke is not critical but the higher the inductance, the better the filtering. It should be able to pass at least 300 mA. of current.

Plus 350 Section.—Diodes 1 and 4 are used to rectify the a.c. voltage so that we have 350 volts at least, at the centre tap of the transformer. This d.c. voltage is then fed into the pi filter. Again the choke value is not critical although the higher values will give much better

filtering. (A large speaker transformer primary could be used as long as it could pass at least 100 mA.)

Plus 150v. Regulated.—This circuit only consists of one 20 watt 20K ohms resistor which has one end connected to 350v. and the other to anode of VR tube. The output is taken across this tube which regulates it.

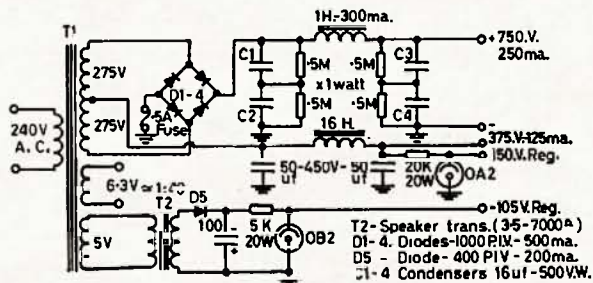
Minus 105v. Regulated.—As I used this supply in conjunction with a gated screen modulator, I found it necessary to have a negative regulated supply.

After looking through my junk box I found a speaker transformer (7000 ohms to 3.5 ohms) which had a primary to secondary winding ratio of 40:1. As I had no other use for the 5v. filament winding, I placed the secondary (3.5 ohms winding) on it and to my joy the output across the secondary was over 200 v. a.c. It was then a simple matter to rectify this voltage, filter it, and then regulate it with a VR tube.

CONCLUSION

This supply can be used for a host of things, anything from supplying the voltages for a 100 watt class B linear amplifier to what I used it for—to supply the voltage for my 6 and 2 metre transceiver.

This supply is mainly used to supply peak currents and that is why it worked extremely well with my rig which incorporates a gated screen modulator. (This circuit only allows the final to draw maximum current on modulation peaks, hence a low average current.)



Hence by using modern semiconductor diodes we can cut costs by—

- Utilising a transformer with lower a.c. output voltage—for the same d.c. output.
- With the production of diodes increasing every day, the cost per unit is becoming cheaper.
- No need for 5v. a.c. winding for the rectifier, but in my case this was utilised for another purpose.

GENERAL OUTLINE OF CIRCUIT

I used a replacement t.v. power transformer which had the following secondary windings:

- 275 v. aside at 275 mA.
- 5 v. filament at 2 amps.
- 6.3 v. filament at 8 amps.

In the circuit we could use any t.v. transformer (from one of the older t.v. sets) that used a valve rectifier such as 5AS4, 5U4, etc. The main thing about the transformer is that it must not be of the voltage doubling type, i.e. it must have a centre tap on the secondary high voltage winding. In the circuit we give the voltages which were obtained from our transformer. (Note

* 1 White St., Darlington Point, N.S.W., 2706.

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AUSTRALIS OSCAR "A" - USERS' GUIDE

PART TWO

Following the February issue of "A.R." in which the Australis Oscar "A" Amateur Radio satellite was described, the following diagrams are given.

The first shows the satellite and the position of the main components including the battery compartment and the electronic modules and also a view of the satellite in its flight configuration.

A block diagram of the main components of the satellite shows details of the transmitters and telemetry system as described last month.

A typical telemetry coding form for reporting the results of an orbit is shown with a typical pass encoded. To clarify the columns, an instruction sheet called "Notes on Using the Australis Oscar "A" Telemetry Coding Form for Telemetry Reporting" is appended.

The telemetry calibration curves follow. It should be noted that the calibration for channels 5 and 7 (internal and skin temperature) is the same. Each curve is approximated by a linear region and the equation for this region is included.

Local co-ordinators have been appointed in each State of Australia to facilitate the distribution and collection of data relating to the project. Any Amateur wishing to track the satellite or with any queries relating to the project should contact his local co-ordinator. Telemetry reporting sets (comprising 3 calibration curves, 2 telemetry coding forms and "Notes") are available from local co-ordinators who will also have all tracking data and other information closer to the flight.

The local co-ordinators for Australia are:—

- New South Wales:
A. Swinton, VK2AAK,
P.O. Box 1, Kulnura, N.S.W., 2251.
- Victoria:
W. M. Rice, VK3ABP,
54 Maidstone St., Altona, Vic., 3018.
- Queensland:
L. Blagborough, VK4ZGL,
54 Bishop St., St. Lucia, Qld., 4067.
- South Australia:
B. Tideman, VK5TN,
33 Ningana Ave., Kings Park, S.A., 5034.

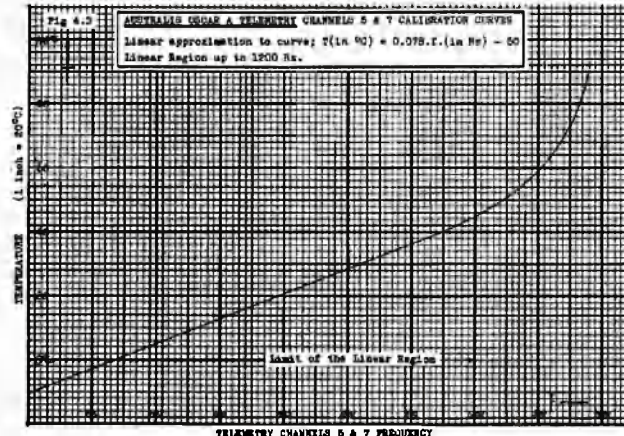
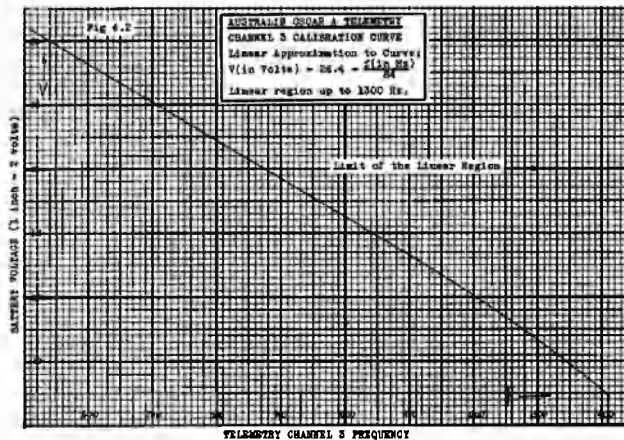
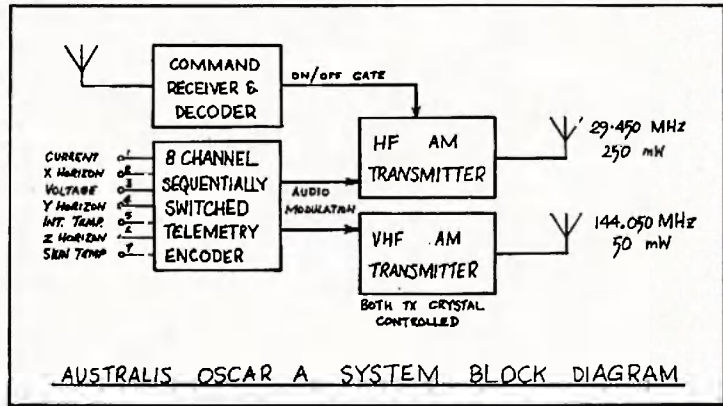
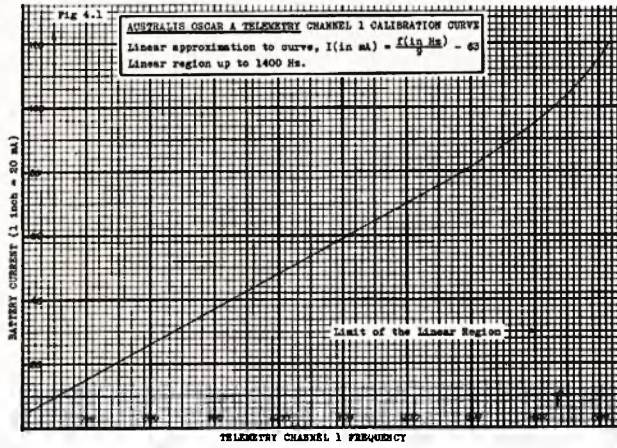
Western Australia:
D. Graham, VK6HK,
42 Purdon St., Wembley, W.A., 6019.

Tasmania:
P. Frith, VK7PF,
181 Punchbowl Rd., Launceston, Tas., 7250.

The latest information is that the launch will occur "around the middle of the year" (1968), but is, of course, subject to delays beyond the control of Project Australis.

NOTES ON USING THE AUSTRALIS OSCAR "A" TELEMETRY CODING FORM FOR TELEMETRY REPORTING

1. Please ensure that your local co-ordinator has a copy of your station resume including the following details:
Name and postal address.
Call sign or station identification.
Station latitude and longitude.
A brief description of v.h.f. equipment such as antenna, pre-amplifier, converter and receiver.



CITIZENS BAND

The text of a memorandum issued by the G.P.O. [English] is as follows:

"In agreement with the Board of Trade the Postmaster-General has made an Order under Section 7 of the Wireless Telegraphy Act 1967 'specifying' certain radio apparatus for the purposes of that Section. The Order is due to come into force on 1st April, 1968.

"It means that the authority of the Postmaster-General will be required by anyone who wants to manufacture or import radiotelephone transmitters capable of transmitting on any frequency between 26.1 and 29.7 Mc. or between 88 and 108 Mc.

"For some time past the public have been offered small imported transmitters, e.g. the 27 Mc. walkie-talkies, which operate on the wrong frequencies for this country. The Post Office has warned that use of these sets cannot be licensed here because they are liable to interfere with authorised services and has prosecuted a number of people for using them without a licence. The purpose of the Order is to deal with the matter at source and protect the public from being offered sets which they cannot legally use.

"This does not mean that there will be a complete ban on manufacture or import of all types of apparatus using the frequencies in question. Exemptions will be made for those which can legally be used. Applications and enquiries should be addressed to the G.P.O. Radio and Broadcasting Department, Radio Branch, Armour House, St. Martin's-le-Grand, London, EC1. Some of the frequencies covered by the Order are used by licensed radio amateurs and they will be authorised to build their own apparatus for use within the terms of their licence. This will be done by a general authority published in the London, Edinburgh and Belfast Gazettes.

"The Order effects only two frequency bands and does not disturb the present arrangements for other frequencies. For example, the Post Office has approved some walkie-talkies (which meet its technical conditions and use the correct frequency bands for this country) and will continue to licence their use. It is important to remember that any use of radio in this country requires a licence from the Postmaster-General."

In accordance with the fourth paragraph of the G.P.O. announcement, an authority will be published which will exempt licensed radio amateurs from the restrictions to be imposed by the Order. Amateurs will therefore continue to be able to construct or purchase transmitting and receiving equipment for use in the band 28.0 to 29.7 Mc. and the Order will assist in preventing encroachment on these frequencies by "citizens band" type operation.

The Society has been consulted by the G.P.O. Radio Branch regarding the terms and effect of the Order and there will be continued liaison in connection with the method of exempting equipment designed for amateur use.

—From R.S.G.B. "Radio Communication," February, 1968.

Strength—

- 1 — Faint signals.
- 2 — Very weak signals.
- 3 — Weak signals.
- 4 — Fair signals.
- 5 — Fairly good signals.
- 6 — Good signals.
- 7 — Moderately strong.
- 8 — Strong signals.
- 9 — Extremely strong signals.

7. The telemetry columns:

Channel 0, "Hi," "A" if the HI keyer is operating normally; "F" otherwise, and describe the failure on the back of the form.

Channel 1, "Current," battery current drain in milliamps.

Channel 3, "Voltage," battery voltage in volts.

Channel 5, "Int. Temp.," temperature of the electronics modules in degrees C.

Channel 7, "Skin Temp.," temperature of the satellite's outer skin in degrees C.

Calibration curves are supplied with this form. Reports on the horizon sensors (channels 2, 4 and 6) should be entered in the comments column and should give some idea of the satellite's spin.

8. When completed, the coding form should be returned to your local co-ordinator who will forward them to Project headquarters. Further copies of the coding form can be obtained from him and any enquiries regarding the project should be made to him.

A brief description of your h.f. equipment.

A brief description of the method used to decode the telemetry.

2. Having decoded the telemetry for a pass, select those results which you think are representative of the pass, rejecting wildly inconsistent results.

3. Write clearly with one character per column and one orbit per line. Any comments may be included in the "Comments" column and on the reverse side.

4. Enter your call into "Call" column (if no call sign, write ZZ1 followed by your initials). Please ensure that a figure is entered into column 3, thus the station A3BCD would enter A into column 2, leaving column 1 blank.

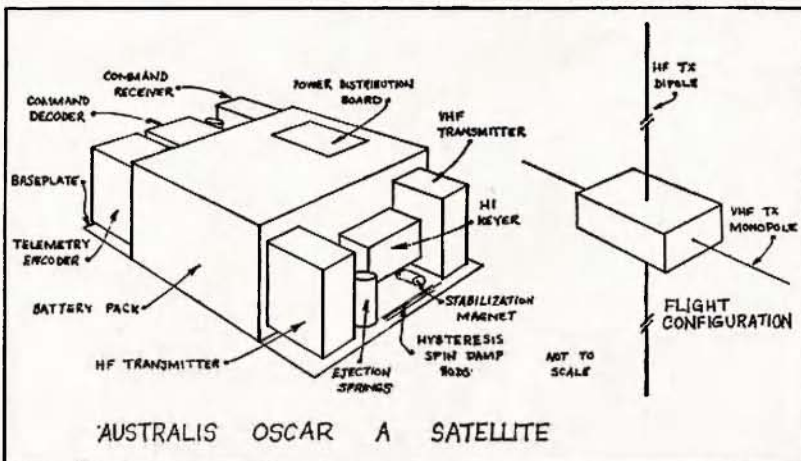
5. "AOS" = Time of acquisition of signal.

"LOS" = Time of loss of signal (to shorten the form, hours of LOS is inferred from AOS time). All times are to be in Greenwich Mean Time (Z or GMT).

6. "R" and "S" columns—readability and strength:

Readability—

- 1 — Unreadable.
- 2 — Barely readable.
- 3 — Readable with difficulty.
- 4 — Readable.
- 5 — Perfect readability.



AUSTRALIS OSCAR A TELEMETRY CODING FORM																																				
CALL	ORBIT NUMBER	MONTH	DAY	VHF TRANSMITTER						HF TRANSMITTER						TELEMETRY				COMMENTS																
				AOS		LOS		RS	AOS		LOS		RS	HI	SPIN	TEMP	TEMP																			
				HR	MIN	SEC	MIN		SEC	HR	MIN	SEC						MIN	SEC																	
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LM41

MAIL TRAIN INCIDENT

Recently one hot day in sunny Queensland in this great big continent of "Down Under," I was making a trip between two provincial towns about 200 miles apart. Townsville to Mackay.

About to embark by rail, I spied an OT Amateur friend, now QRT.

"Blind my eyes, if it isn't Harry G." I extended a hand. The one he gave me in return was cruelly malformed due to a car smash, which some years earlier had put paid to a proficient c.w. career—and soured him in the process. Harry was a garrulous s.s.b. knocker. Secretly, I felt he wanted to put a signal on the air again, but his overt criticism of "duck talk" had put him out on a limb.

Conditioned reflexes took us to the station bar. Here it was so cool, quiet and easy to talk. I pointed questionably to a large jam jar wrapped in brown paper.

"A genetic infusion for my bees," Harry explained. "At least it's a profitable sideline."

The inference being that Amateur Radio was not. So I took him up on it.

"So's Ham Radio, socially."

"Yeah, strained through 'duck talk'."

"Oh, so you have a receiver?"

"I listen a bit sometimes."

"Good enough," I thought to myself.

"I'll have him back on the air if I can."

Our libations at the shrine of Bacchus were cut short by the call "All Aboard." He to his compartment, and I to mine. We'd continue the rag chew at the journey's end.

Imagine my shocked surprise, when at the first stop en route, I saw two uniformed policemen lumbering a struggling and unclad Harry from the train. Harry a little eccentric, maybe, but a "nut", impossible. Making a snap decision, I deapt from the train and made pace for the police station, which was just across the street.

What had happened? Well, if I remind you of the old cliché about truth and fiction, you still won't believe it.

☆

Compartments in up country trains in this part of the world carry six passengers. Three on each side. Harry found he had a whole seat to himself but arrayed in front of him were three stiff, matronly ladies of severe countenance and unbending demeanor. They appraised the OT at the lowest common denominator. Who could blame them. Harry does not exude charm or inspire confidence. The term "rough diamond" fitted well.

Nature in her own manner had provided him with a somewhat lopsided cadaverous countenance. The car smash, a twisted body and his clothes were invariable bought off the hook—and today he hadn't got around to shaving and smelled of drink. Swaying a little, he stowed his portmanteau and surreptitiously slid the jar of bees under the seat. He didn't want the old girls making a fuss and he wasn't sure of the regulations concerning the carrying of livestock in passenger compartments. After some indecision, he discarded his coat.

"Morning," he said affably, hoping to start the trip off by a show of sociability. "Hot day."

No answer. He'd try once more. "Sure could do with some rain. Believe some's forecast."

"My man, you've been indulging in an alcoholic beverage," said the group's spokeswoman.

"Er—yes, did have a couple for the trip. Nothing cool supplied on these ole puffers yer know."

Noses rose in disdain. Their intolerance turned Harry's susceptibilities a little pink. Besides, his inhibitions were down a somewhat.

"Expect me to go out there on the plain and suck a gibber like the natives," he said a little childishly and testily.

Nothing more was said, so the OT settled himself back and relaxed. The rhythmic of wheels against rail junctions began to fade. Heat and alcohol were turning our Ham's brain into a sophoric void. Thought was impossible, even of his beloved bees. Soon he slept. Even the ladies began to doze. But the livestock remained vitally alive and things were on the move. Rubber bands have a habit of creeping. The one securing the paper lid on the jam jar suddenly flew through the air with a faint but perceptible ping. The hot, angry bees were loose.

☆

Some miles further along the track, Harry was brought back to consciousness. Something or somethings had invaded the leg of his pants. He scratched—and was suddenly stung into life. Without wishing to alarm the ladies opposite, he began to squirm, twist and shake his legs in a vain effort to dislodge the advancing nuclei, who were swarming after their Queen.

Consternation reigned opposite. Was this "odd bod" having a fit?

Finally the pain and strain broke him. "Get out," he bellowed, leaping to his feet and tearing at his belt strap.

With a scream they fled. Harry crashed the compartment door shut behind them and tore off his pants. He threw up the partly open window and in sheer ecstasy of relief reached out as far as he could and shook the vicious beasts free. But this was not to be Harry's day. In fact the fates were dead against him. Over the roar of the wind he failed to hear an approaching train. The engine took the trousers from his grasp as neatly as railmen exchange staffs. For a moment he stood appalled. The remaining few bees were flying to their freedom. His eyes settled on the jam jar with its sprung lid. Overcome by pique and disgust, he hurled it out the carriage window.

The conductor arrived with the lady complainants huddling close behind.

"Now what's going on here?" he demanded, surveying Harry, clad in shirt tails and underwear, and scratching feverishly. "Where's your trousers, man?"

"Back at Townsville by now."

"What! Do you mean you boarded the train like that?"

"No. It's those damned Be——"

Mistaking the noun for a blasphemous adjective, the train guard raised an authoritative arm, cutting him short. Then deciding he had a "nut" on his hands, resolved that a show of sympathy might restore the situation. Moving closer he confided. "Yeah man, I know how you feel. Three dames like that, plus the heat is more than any man should suffer on a trip like this. Come along with me and I'll find ya a nice quiet seat all to yourself."

But the small intrigue failed. Harry, smarting in body and spirit was in no mood to acquiesce. Somehow he blamed the women for his predicament. Their apparent senseless feminine timidity irked him.

"No," he roared. I paid for this seat and I'm keeping it. Go to Hell and take those Victorian matriachs with you."

The guard backed out, closed the door and locked it. "Come with me," he said turning to the women. "I'll find you a vacant compartment."

Back in his van, the guard radioed ahead. "Have what looks like a mild case of exhibitionism aboard—or maybe an aggressive psychopath. Can't tell, but ask the Cops to bring a 'jacket' just in case."

Two members of the constabulary were waiting, armed with the necessary equipment, and pre-set in their minds that old Harry was psychotic. No time was wasted in argument. The train was already late, so on with a "straight jacket," rendering him physically docile, he was removed from the train to the weather beaten precinct of a one-pub town.

☆

"Springing" Harry from the prison walls proved to be a tedious job. The Police weren't inclined to believe his story. Finally as the shadows of the day began to lengthen, Harry was allowed to sign a statement and I presented a cheque for his bail.

Free, and with an hour to fill before the next train, we repaired to the only place possible—the pub. If Harry did not need any more liquor, I surely needed a couple of stiffeners.

The OT gazed miserably into his half empty glass. (A little of the dog that bit him earlier.) "Those flatfoots thought it one heluva big joke at the end didn't they," he mused. "I wonder what the judge will say?"

"Oh, I reckon you'll be charged for carrying livestock on a passenger train—and that's not criminal."

"Yeah, but the fine's heavy. Two thousand dollars maximum—and I've lost the best strain of bees in the country." After a long pause, he smiled wanly. "Shoulda stuck to Amateur Radio I guess."

Hobbywise Harry was now destitute. Spiritually in an abyss. Both objects of his affection had been taken from him. First Amateur Radio, now his apiaristic dreams had vanished.

(Continued on Page 15)

USING THE MR3 CARPHONE ON A.C.

W. GEORGE FRANCIS,* VK3ZCG

THIS method is a simple and easy way of operating the Carphone Junior, both from the battery in the car and also straight from the mains via a step-down transformer to the normal battery plug and by removing the vibrator from its socket and inserting a shorting plug in place of it.

The idea originated as a thought amongst some of the boys in the Western Zone, and brought across to Gippsland by Harry VK3ZX when he moved into Traralgon last year. As he required to run his carphone off the mains inside as well as in the car, so with Graham's (VK3QZ) help, the idea was tried out successfully, and since has been used daily by members of the Eastern Zone who have Carphone Juniors.

No excessive overheating has been observed, but the original vibrator transformer does run at high temperature, so it is suggested to run the set out of its case when used in the shack. The step-down transformer voltage output should not be higher than 12.5 volts. If the voltage is higher, excessive heating may take place. It is well to remember that the vibrator transformer was designed for a higher frequency operation of about 120 cycles or more.

A suitable step-down transformer with a 2-pin polarised socket already mounted is the Ferguson transformer type TS12/60A, or out of your junk box a t.v. mains transformer can be used if it has a 12 volt filament winding or two 6 volt windings that can be connected in series.

Try it, if it is satisfactory, mount the t.v. transformer in a ventilated box and wire a 2-pin polarised outlet socket as per sketch, and connect the a.c. input to the transformer highest primary winding tap, so to keep the secondary voltage as close to 12.5 volts as possible. This will enable the carphone battery lead plug to be plugged in to either the d.c. outlet socket mounted in the car or the step-down transformer.

When changing from one supply to the other, it is most important to remember to remove the V6606 vibrator when used on a.c. and replace it by a shorting plug made out of an old 6-pin valve base with the two larger pins (1 and 6) wired with a shorting link soldered across.

When changing back to d.c. operation, it is also most important to re-fit the vibrator, otherwise the vibrator transformer will burn out.

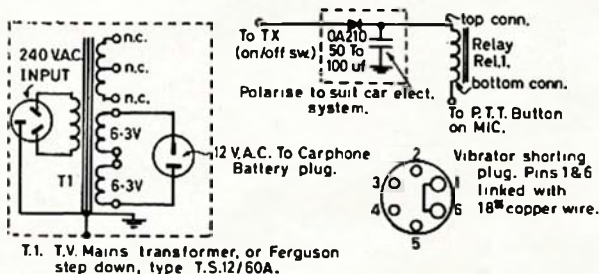
The shorting plug may have a small hole drilled into the side of it and a piece of nylon cord or string attached to it and the protection rail, so it can be always found.

So, it is a simple matter to change from a.c. to d.c. or back again, but firstly before you can use the transmitter on a.c. a small permanent modification has to be carried out on the relay supply, that is, by wiring a OA210 or similar rectifier in series with the change-over relay REL1 bobbin, on the bottom lead closest to the chassis and a smoothing electrolytic capacitor of 50 to 100 uF. connected to chassis.

The rectifier and condenser will have to be polarised according to the d.c.

system of the car, if it is positive or negative earthed, as per sketch. Which ever way you wire it to suit your car, it will operate on the a.c. supply.

This article should enable the Carphone Junior user to extend his operation considerably, as he can now use it as a low power base station, and keep up with the local net and passing high-way visitors (Interstate) with no t.v.i. It is recommended to use a ground plane or a vertical polarised skeleton slot yagi or 8 element phased array cut to 146 Mc.



T.1. T.V. Mains transformer, or Ferguson step down, type T.S.12/60A.

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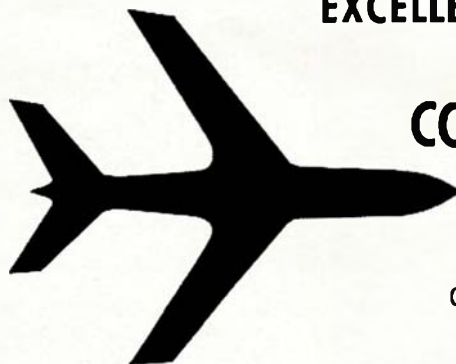
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UNIUNCTION TRANSISTOR

(Continued from Page 4)

SWEEP GENERATOR

Fig. 19 gives the circuit of a very handy little sweep generator. The coils can be switched if you like. It will work from about 50 Kc. to about 60 Mc., depending on the transistor used for SC2. If you don't want to go real high in frequency, an OC45N will work admirably.

TECHNICAL CORRESPONDENCE

Transistor Overtone Xtal Osc.

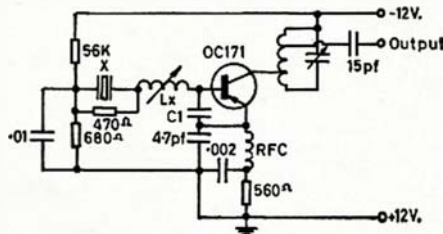
Editor "A.R.," Dear Sir,

I wish to query an article published in "A.R." May 1967 as to a possible circuit error. The article was "Overtone Operation of Quartz Crystals," by D. H. Rankin, VK3QV, and the circuit is Fig. 11—a transistor overtone crystal oscillator.

As I have had very good results with the valve version (Fig. 10 same article), the transistor version was attempted with no success, as this device is an impedance inverter the position of the 680 ohm bias resistor seems to damp the circuit.

I have modified the circuit and it works satisfactorily using crystals of 25, 35.5, and 40 Mc., and various transistors—OC171, 2N3563, BF115. Enclosed is the circuit I have used.

—C. S. Perger, VK7ZCP.



AUTHOR'S REPLY

The point raised by VK7ZCP is a valid one and he is to be thanked for raising the matter. No matter how much checking is carried out some errors seem to slip by somehow.

The alternative arrangement suggested is quite satisfactory but has the minor disadvantage that both sides of the crystal are above ground. This makes the switching of the unit a more difficult matter where multiple frequency outputs are required from the oscillator.

Another possibility is to increase the value of the bias resistors but maintaining the ratio of values so that the base voltage remains the same. For example, the 5.6K resistor could be replaced with a 120K and the 680 ohm resistor with a 12K one. This 12K resistor should not damp the series inductance.

—D. H. Rankin, VK3QV.

[Apologies are offered for the delay in this matter as the author has been overseas on business.—Editor.]

YRS

Howard Rider, VK3ZJY, Y.R.S. Supervisor in Victoria, advises that he is leaving at the end of 1967 to take up a position overseas. We wish you all the best Howard and will be interested to have further news from you. I can see the Y.R.S. become more international than ever. Howard is one of the dedicated team to put Y.R.S. on the map and his help has been invaluable.

The Correspondence Section reports four Elementary successes with Honours: Warren Shapcote of Greg Dunne's Group in Queensland, and Chris Lamp, Stirling Finlay and Andrew Lloyd of Alan Nutley's Group in N.S.W. Congratulations to Greg and Alan for such good results.

There are now 34 clubs in N.S.W. with a new one at the Ukarampa High School in New Guinea. The club leader is Gene Nurkka, VK9GN. There is also a member club on Christmas Island in the Indian Ocean.

There have been many successes since August in N.S.W. For the Elementary the Sydney Grammar School had four, Westlakes R.C. seven, Maitland Y.M.C.A. fourteen, and Sydney Teachers' College six. For the Junior, the Yenda R.C. had two, Westlakes four, and Kingsgrove High had one.

Camp Technology has been held at Mt. Victoria again this year. This has become such a popular camp that this year it was held in two sections. These camps are sponsored by the Inter School Christian Fellowship.

Y.R.S. Certificates have recently been approved by the Duke of Edinburgh's Award Scheme Committee. Information regarding the requirements can be had from Mr. Jack Flynn, Y.R.S. Secretary, 30 Sharp St., Belmont, N.S.W., 2192.

Michael Plummer has taken over the reins of Y.R.S. from Howard Rider and all mail for the Supervisor should be directed to him at 71 Kernan St., Strathmore, Vic., 3041.

There are 18 clubs in Victoria and they have had considerable success with all certificates. The Gowrie Park State School had one success for the Elementary, four for the Junior, two for the Intermediate and three for the Senior. The St. John's College had eleven for the Elementary; Camberwell Grammar had fourteen for the Elementary and five for the Junior. Moorabbin Tech. had ten for the Elementary. Congratulations to all these clubs.

Bert Hollebon, VK5EQ, of Port Pirie, reports a busy time in South Australia. Glandstone R.C. had six Elementary successes, Christie's Beach had two, Port Pirie R.C. had one, and the Kadina R.C. had five. It is of interest that Gladstone had Debra Casey amongst its group and that Debra is the first girl in South Australia to win a certificate.

South Australia has another new club at Port Augusta. For 1967 S.A. had 60 sit for the Elementary examination with 33 successes and 7 successes for the Junior.

73, Mona, VK2AXS.

MAIL TRAIN INCIDENT

(Continued from Page 13)

I looked at the malformed hands, the sad and lonely face and sensed he needed a "lift". Psychically he was "ripe" for the right suggestion—and I had it.

"You're right," I replied. "Amateur Radio's not likely to land you in this mess, unless you broach security or something. Say," I said with an enthusiasm that was really fair dinkum. "I've got a monobander in my Grip. They're a piece of cake to operate. Just throw out a wire, tune it and talk. I'll put it on the air when I get to Mackay. (Harry's home town.) I'm not busy for the next couple of days. Let me show you how it works."

Suddenly a look of sweet anticipation lighted up the shaggy countenance. "Yeah," he said, suddenly keen. "I'd like to try it out. Hey, come over to my place. I've got a big long wire to work it into."

"Done," I said, "—and let's have a beer on it."

—AL SHAWSMITH, VK4SS

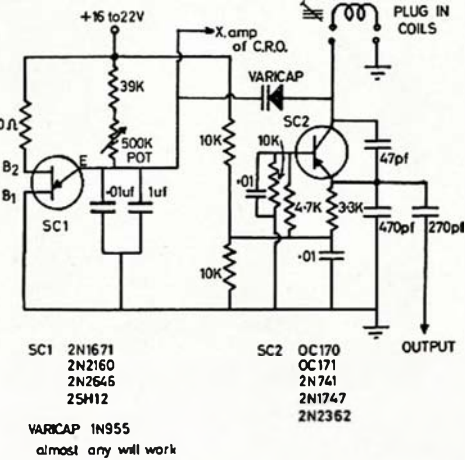


FIG. 19.

The circuit is fairly non-critical and some variations are permissible. The supply could be two 9v. batteries in series. Coils are found by experiment. For 455 Kc. the coil from an i.f. transformer (with capacitor removed) is ideal. Similarly, i.f. windings at other frequencies work well. To limit the sweep range add a capacitor across the coil and retune the slug. The output is quite high and some attenuation may be necessary. Connect a high resistance in series with the output to effect a reduction.

Well, there we are. Knock up a few circuits and find out about U.J.T.s. I think you may find a few useful circuits in this article. For more ideas and circuits look up the references mentioned below.

REFERENCES

- "73 Magazine":
Jan. 1966 (U.J.T. Keyer, p. 12).
Dec. 1966 (1 P.P.S. Generator, p. 23).
March 1967 (Sawtooth Generator, p. 29a).
- "Electronic Fundamentals and Applications," J. D. Ryder.
- "Transistor Manual," G.E. Company.

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- VK2AO—A. L. O'Donnell, 51 Hillcrest Ave., Mona Vale, 2103.
- VK2APG—F. W. Fowler, Station: 38 West St., Five Dock, 2046; Postal: P.O. Box 127, Burwood, 2134.
- VK2BNT—Newcastle Technical College (School of Applied Electricity), Maitland Rd., Tighes Hill, 2297.
- VK2BOA—A. A. O'Brien, 28 Alexander St., Hamilton, 2303.
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- VK0AL—A. Nickols, Amery Ice Shelf.
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KEEN DX'ER



JIRI KEAL, OK2RZ

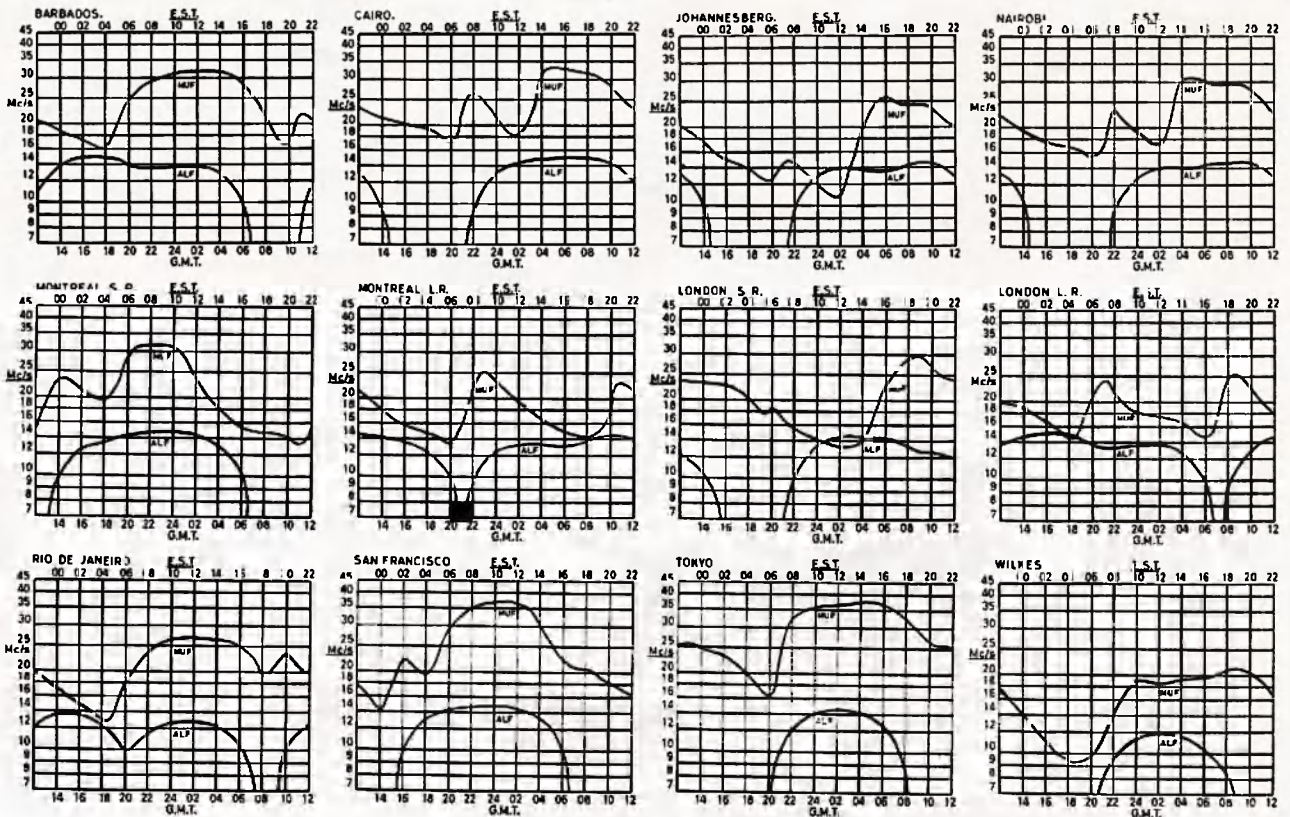
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- VK2ZLK—K. J. Corr. Not renewed.
- VK2ZNT—N. R. Telfer. Now VK1ZNT.
- VK2ZYM—R. C. Morgan. Transferred Interstate.

PREDICTION CHARTS FOR MARCH 1968

(Prediction Charts by courtesy of Ionospheric Prediction Service)



SWL

Sub-Editor: D. GRANTLEY, WIA-L2022
P.O. Box 222, Penrith, N.S.W., 2750

A very big welcome to all for 1968 and many thanks to all who sent greetings. I trust you have a very successful year and look forward to hearing from members regularly.

This month's notes will be restricted to information on hand at the time of writing, as I will be leaving here for a further two weeks at Oak Flats, and with two large groups of hungry teenagers to cook for, I guess I won't have a lot of time for note writing. I will, however, have a tape recorder and the six metre gear with me this time and hope to hear some DX down there.

What is on 6 metres? This question has often been asked, and for an answer I hand over to the former sub-editor of this page, Mac Hilliard who has probably had more experience on this band than the average listener.

"Many S.w.l.'s and Amateurs shudder at the thought of operating on the v.h.f. bands. "Why go on the v.h.f.s, no one will talk to you up there, or even listen to you, and if you get a contact, it will be only over the back fence." Anyone with these ideas is certainly on the wrong track, nevertheless you can't expect to work European DX. However, the distances covered on the v.h.f. bands are more than just a few miles, 52 Mc. for instance is an excellent band for local contacts all the year round, with no QSB as experienced on h.f. bands, and the QRM position is negligible compared to the lower frequencies.

"During the months of November through to January or early February this band is capable of producing S9 signals from all VK States, plus ZL and VK9. Naturally you cannot expect to work or hear the band open every day, however there should be many days in this period in which excellent signals will be heard. The peak of the DX season should be in the last week or so of December. During the period of maximum sunspot activity, 52 Mc. and down to 50 Mc., if you can tune, is worth watching for DX of world wide proportions.

"Naturally some areas of VK are more favorable than others for these conditions to exist. However, all VK States have at times enjoyed these conditions. Contacts between VK4 and JA are commonplace, also XE and W6 stations on the Pacific have been contacted from VK also 9M2. These conditions are most likely to be prevalent during the period of the equinox, Oct.-Nov. and March-April.

"During a period of large magnetic disturbance, the possibility of Auroral activity is a factor and some very strange effects can take place. If you have a beam, you should point it at the aurora, local stations on a.m. will sound garbled, with what can be described as a growl or buzz on the frequency, and it is a good possibility that stations from other States will be heard. However, the only successful mode of operation under these conditions is c.w. Much more could be added to these notes by the experts, however the foregoing findings are from the S.w.l.'s viewpoint."

Thanks Mac, and if any of the v.h.f. experts have anything to add, which would be of interest to the listener, would you please pass same on to me and I will include it at a later date.

In the E.A.R.C. bulletin for December, there appears a list of stations worked from their v.h.f. editor's QTH up to 13/12, and they include all States except VK8 and 9, and three contacts with ZL—all on 6 metres. The best I have heard this season was VK7SS and VK7WH.

IN THE BEGINNING (Part Two)

A Big Advance, 1923-28, by Harry Major

In 1924, dull emitter valves were becoming more readily available, and as they required only 0.06 amp. at 3v. they were much more economical than the older bright emitters. Their efficiency was largely due to the new type of thoriated filament, but the filament voltage was critical, and it burned out rapidly if overheated. Using two 1.5v. dry cells on a one tube set was sufficient, but on multi-valve sets an accumulator was necessary. As these gave 4 volts, it was the practice to control each valve with its own rheostat, although in a 4-tube set each of the valves were of the same types, each could be performing a different function, r.f., det., 1st and 2nd a.f.

My first valve set used an Edison AR08 dull emitter in a regenerative circuit, but alas, the valve went west when I was trying to get a little extra out of it. Next came a 4-valve t.r.f. using four Philips A310s, and a Sterling Floral Speaker, replacing the inverted earphone in a china basin.

In 1924 a.c. was becoming common, and this led to some great advances in radio. Battery eliminators were available on a commercial or home-made basis in 1926, and the troublesome "B" batteries began to disappear, thus making it possible to use a higher voltage up to the maximum allowable on the valve rating, and, in fact, many valves were often heavily overloaded, but we achieved results.

Most sets used regenerative detectors, and whilst the results were good, they often caused interference by too closely coupled feedback. In 1925 some experimenters found that a Ford ignition coil could make a spark transmitter, with the aid of a key in the primary circuit, and a spark gap in the secondary. A large, and often untuned antenna completed the outfit. It was not long before the ether became a mass of jumbled blips and blabs, and nothing was discernible, so fortunately all scrapped the idea. We had very little practice in either sending or receiving Morse, in any case hardly knew the code sufficiently to read more than two or three w.p.m. During this period, the Amateurs had been working between 200 and 500 metres, and with the beginning of National and B class stations, in this range, the Amateurs were re-allocated lower bands.

Mr., later Sir Ernest, Fisk gave a demonstration to a Melbourne audience in Queens Hall in 1920 of what was advertised as "real broadcasting". In 1925 a new radio magazine appeared in Melbourne. This was "The Listener In," which gave programmes, items of interest and circuits, plus helpful hints for constructors—this helpful section being carried on for many years. In fact, it was for a long time the main source of information.

An official list of Victorian transmitting stations at the time were 3AR (Assoc. Radio Co.), 3UZ (O. J. Nilssen), 3WR Wangaratta (L. Hilliar), 3EO Mildura (R. Egge), and 3PB in Brighton, which was a projected station for Mr. Pemberton-Billing. There was a sudden expansion of radio shops, catering for home constructors, in Swanston Street (Melbourne) alone—Cohn, Robothams, Vealls, Homecrafts, British Aust., Climax—and another opposite the library catered for the home builders' needs. Homecrafts advertised a crystal set guaranteed to separate 3LO and 3AR for £6 including earphones.

In 1927, a good 7-valve battery operated superhet cost £66, and later a short-wave attachment was made available for £4/10/0. The super was becoming more popular due to the ease in which stations could be separated, and of course the better reproduction was a help too. The t.r.f. sets had two or three dials, covering the single-gang condensers. Plug-in honeycomb coils mounted on suitable holders were used, these gave greater selectivity, and were easily changed, the old tapped coils with their multi-stud contacts were banished.

Interstate stations could now be heard, 2BL and 2FC, 5CL and 5DN, the latter two being well received in the later hours after the Eastern stations had closed. Later came 3DB, designed and built by the Holst Bros. of Caulfield, who operated their own station VK3BY which gave us many hours of musical entertainment. Otto Holst passed away recently, whilst his brother pre-deceased him by several years. (We note here that the broadcasting stations did not open on Sunday until lunch time or shortly after, prior to which Amateurs were permitted to operate on the broadcast band, VK3PA being one of many.—L2022.)

In the early 30s, electric sets began to appear, both directly and indirectly heated valves being used. The number of tube types increased, screen grid and pentodes amongst them, each giving more power than several of the old battery types. The Amateurs, who had up to now been working on fairly low power and receiving remarkable results, were now able to build more powerful transmitters, overseas countries had commenced transmitting to the rest of the world, and their reception in this country became more frequent. (To be continued)

PERSONAL NOTES

Peter Drew, back in VK6 for Christmas leave, sends in a huge list, including some fantastic loggings on 10 mx. Bryan Prosser, back in Perth after a long trip away, found a lot of gear and QSLs had been destroyed by fire. Syd Underwood and Mac Hilliard spending a lot of time on Mac's 6 mx gear. Ernie Luff is okay again after op., with a long list of new confirmations and busily chasing awards, and cards from TF2WKH, VK9XI, EL2AC, 4U1UITU,

H13JHV, W8HQF, LX1RB, USARTEK, 9HIHE, KR8LL, FG7XL, VK9TB, ZS6FN, 8G1GF, VP6EW, plus many of the more common ones. A late one was CR4BC. Ernie went to Fiji on the Orsova on 18th Jan. for a holiday cruise (the day I went back to work, Ern).

Alan Rafferty was back at the set over the holiday period; he too has a good list of calls heard on 14 new QSLs to him are DU7SV, 9V1NY, UP2NV, VP9FR, FB8YV, W0MLY, HB9JZ, IZBBS, UW3BJ and UA4KED. On Dec. 30 Alan logged three stations signing themselves JH; can anybody assist him as to identification? All were operating from JA. L2022 on holidays, and the receiver hasn't been on for weeks, only logging made was on 6 mx, and this was VK7SS. Inward cards: 9M2FO, 9M2LO, OZ4DX, OH3MF, UM8AP, UV3EZ, OX3JV, CR6AI and W9FJX. Due to the lapse of time between the Jan./Feb. notes, I have omitted to list any calls heard as, by the time you got them, they would be old news.

OVERSEAS LISTENERS

Louis Rybroek has been one of the top S.w.l.'s in the world for around 12 years, in which time he has rattled up 294 confirmations in 40 zones. Rx is the oft used Trio 9R59, which he says is a very selective receiver and does a good job under European conditions. His antenna on the higher bands is a long wire, but for 2 mx he uses an 8 el. beam. Recently he got his restricted licence and uses the call PA0LRK on the v.h.f. bands. For some time, Louis has been the S.w.l. Secretary for V.E.R.O.N. and six years the chairman of his particular club. V.E.R.O.N., which is the recognised radio society of Holland, caters for the S.w.l. in no uncertain manner, realising that a contented S.w.l. will stay with his home society when he eventually gets his ticket. Each S.w.l. has an NL number, and there are over 400 in PA-land. They have free use of the QSL Bureau and the V.E.R.O.N. magazine devotes four pages per issue to the S.w.l. section, as well as encouraging the listeners in their activities. His report to us came via tape and the machine used is a twin track Grundig.

DX NEWS

From Peter Drew, the following QTHs: ET3REJ via W5LEF; CE0AE via WA5PUQ; VKZADY/8 via W0TCF; VR2DI, Box 184, Suva; PK8YBC, 31 Salam St., Bandung; HM5BF, Box 4, Nth. Pusan, Sth. Korea; WA8TFJ, 4X4UJ/K5, WA1EJM, G3OKQ and WA1FHU all via the I.S.W.L. London; VQ9JW was on Aldabra; AP2AD, Box 84, Lyallpur, W. Pakistan; WU2DKZ on 21 s.s.b. is in India; YN1BKC C/o. U.S. Embassy, Managua.

QSL LADDER

For new readers, this is a list of confirmations, countries heard, etc., from W.I.A. S.w.l.'s only. The listings are open to any member who does not hold a transmitting licence of any grade, and are listed in order of the number of confirmations. Countries heard are of a secondary importance, and to be eligible, you must have a minimum of 10 countries (as listed in the W.I.A. countries list) confirmed. This chart is published every three months. Scores not notified after three months will be deleted.

Leader at the end of 1967 was Eric Trebilcock, my list shows 293 confirmed, 299 heard in 40 zones, with 50 American states. I understand, however, that Eric has passed the 300 mark. Second is Peter Drew of VK6 who has been on National Service for the past 18 months; he has at last count 197/265/38/41. I have No. 3 position with 177/307/40/35, whilst Ernie Luff over there in VK5 is right there with 162/236/37/38. Mac Hilliard comes next with 103/252/33/14, then Alan Rafferty on 84/201/31/13.

To give you an idea of how our chaps stand in world ratings, here are the top eight in the I.S.W.L. list, with number of confirmations and zones confirmed. Kloppsch (DL), 323/40; Eriksson (SM), 312/40; Hammond (VE), 305/40; Waite (WV), 305/40; Graham (GM), 302/40; Noon (VE3), 300/39; Woodley (VE3), 299/40; Trebilcock 295/40. I am in 31st position, and Ernie Luff, the other VK, is on 38th. There are slight differences between the I.S.W.L. list and ours, but not enough to alter the positions to any extent.

At the end of the year I will again give you the world top ten or so, and we will see how the VK chaps are progressing.

That winds it up for this month chaps, remember closing date for all material is 25th of the main. 73 de Don L2022.

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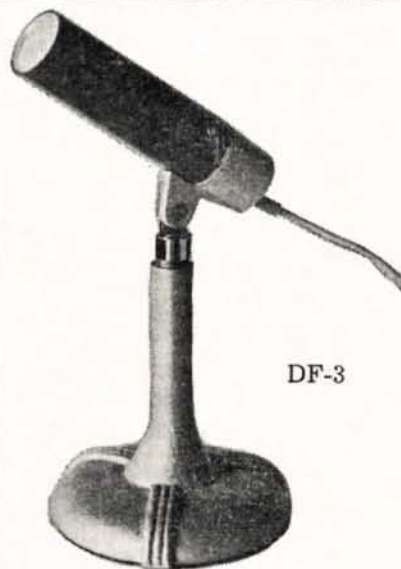
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DX

Sub-Editor: ALAN SHAWSMITH, VK4SS

35 Whynot St., West End, Brisbane, Qld., 4101

Conditions on all bands these past few weeks seem to be holding up very well. 80 mx has opened to Europe and Asia on odd mornings briefly around 1845-1915. Some QSOs have been possible. Forty has been good to Africa and Europe, from 1700 almost nightly with some rare ones coming through strongly. 20 mx is quiet but open day and night, particularly after 1700 to the West. 21 Mc. is best from 1100 until 2000 and later. Firstly Europeans then Ws at 1700 and finally the odd Central American and Indian. Ten now opens a little later at about 1030 to Europe. If the band seems blank, try a CQ or two. The result might surprise you.

NOTES AND NEWS

Afghanistan: YA3TNC 14001 1400. Also audible at this QTH 1900.

Aldabra: VQ9JW still QRV on all bands. Lately using the frequency 14170 at 1800. Also has skeds with ZS stations 21380 1800. John goes QRT in March, so if you still need a QSO chase him up. He also uses 7005 1900 occasionally and 28600.

Bahrain: MP4BEC is daily active on 7004 1900 and on 14 c.w. a little before or after this. MP4BCC uses s.s.b. 14193 1330. Also MP4BEC 7005 1900z.

Hong Kong: VS6CO 14180 1000. VS6DO 7 and 3.5 at low end, 1000 and later. VS6GN 14060 1300. VS6AG 14150 1300. VS6ZF and VS6FX both use 21 and 28 c.w. from 0800z.

Galapagos: HC8RS 14170 2200. QSL 5757 Guayaquil, Radio Club, Ecuador. HC8FN also reported active but no information on same.

Tchad Rep: TT8AN 14088 2200. QSL P.O.B. 443, Ft. Lamy.

Central Af. Rep.: TL9DL. Only information on this one is that the QSL goes to the U.S. Embassy, Car.

Cape Verde: CR4BC 14170 1800. QSL P.O.B. 36 St. Vincent, Cape Verde Is.

Cameroun: TJIAS 14002 2200. TJIQQ 14003 0730. TJIAG 14006 1900.

Burundi: 9U5BB 14204 0500.

Easter Is.: CE0AE 12160 2200. QSL WA5PUQ.

Indonesia: PK1SH 14020 1200. QSL P.O.B. 2127 Djarta. (see below)

Ivory Coast: TU2BX 21232 2200. P.O.B. 20047, Abidjan. TU2BQ 21331 2300, P.O.B. 1617, Abidjan.

Senegal: 6W8BM 14221 0900. QSL P.O.B. 290.

Sao Thome: AI CR5SP 14187 0630. QSL to W2GKH.

San Andreas Is.: HK0BKH reported on 7 Mc. s.s.b./c.w. QSL WA6AHF.

Saudi Arabia: 7Z3AB 14215 1700. QSL W4YDD.

Nepal: 9N1MM 14186 1030. QSL W3KVQ. (VK2AOU)

Mauritius: VQ8CA 14105 1800. VQ8CC 14185 1200, also on 14 c.w. around 1800-2000.

Malawi: 7Q7EC reported going QRT about now, but 7Q7LC will take his place on c.w. Try 14045 1700 and later. QSL WANJF.

Maldives Is.: VS9MB is on nightly 14050 1700 onwards. QSL W2CTN.

Vietnam: XV5PV on 7005 approx. most mornings at 1900. Name is Chin, QSL Box Pat - 0, 53, Saigon.

Swaziland: ZD5X is a regular on 14 and 7 Mc. He can be picked up on the latter at 1900. QSL P.O.B. 49, M'babane.

Tristan da Cunha: ZD7SN 7008 any time after 1700. QSL W1SZU.

Caicos Is.: VP5YL 7008 1900. Name Susan/YL. QSL via A.R.R.L.

Barbados: Remember the ever active VP6PJ on bands 7, 14, 21. He is now using the call 8P6BU. QSL to Col Jones, Hillcrest, Palm Beach Gap, Hastings, Christchurch, or via WB2UKP. Several others active from here.

Mongolia: JT1AA 14050 0800. Note Tbc.

Algeria: Harry 7X0AH QRV on all bands c.w./s.s.b. but is sometimes on 7003 1900. Also 7X0WW 7X2ED and others.

Sierra Leone: 9L1JJ who is G3HPZ is QRV using a KW2000 on 28600 around 1000 and earlier.

Argentina Is.: VP8IU 2000 14108. QSL to VETAON.

Bouvet Is.: As reported earlier, any activity from here prior to 1/1/68 may not be valid. 3Y0EB is said to be on 14103 0600 and asking QSLs to be sent via W0GTA.

Fernando Poo: EA0CM/HB9CM will be leaving here shortly. Another op. will take his place. Mode 14 s.s.b. 1700. No other information. EA9AH audible here 14008 1700.

Turks Is.: VP5AA 28600 1500.

Glorieuses Is.: FR7ZO/G 14080 1600. QSL P.O.B. 4, Saint Clothilde, Reunion Is.

West Samoa: 5W1AS 21270 0900. Also used 14 s.s.b. Occasionally c.w. 5W1AT 14170, QSL WA4ZDI.

Seychelles: VQ9L 21303 1400. VQ9B worked here 14145 1800, says he may be there two more years. QSL P.O.B. 191, Mahe.

Pitcairn Is.: Tom Christian reported his honeymoon in U.S.A. as super. He arrived back home in his Utopia and re-commenced his Amateur Radio activity on 21335 at 1900.

Rodriguez: VQ8BZR. This stint is now QRT. QSLs go to H. S. Lambert, La Cavernes, Vacos, Mauritius.

Iraq: YI2AC 14209 s.s.b. and c.w. 1400. (Unofficially reported as a phoney.)

Spanish Sahara or Rio de Oro: EA8EJ again going great guns both c.w. and s.s.b. Try 14116 1700 and later. Also c.w. around 1900.

Don Miller, W8WNV: Reported as saying he is toying about going back to Heard Island.

San Felix Is.: Has been on 14 s.s.b. Seems now that QSLs go to XE2NZ. Call is CE0XE.

Antarctica: John VK0JW should be on from Wilkes Base now. He is ex VS1JW, 9M4JW, 8V1JW, 9M6JW, VK2BJK, VK4GU. Send his QSL to Norm VK3UO, 181 Victoria Rd., Northcote, Vic., 3070. Freq. will be 14075.

W9WNV, Don Miller: That man again. Says his 200-page book, "Amateur Radio DX" will be published about March. Now that could be a dandy. (I must confess I'm interested.—Al.) Profits from the book will go to future DX-peditions. (Does he never get tired? Well, I am.)

Daito Is.: A couple of ops. from Okinawa intend to activate this one during February and maybe into March. Call will be KD6—. No other info available. (Guess I'm the only VK to have worked KD6 before this—but still no QSL, hi.—Al.)

ACTIVITIES

Dud VK4MY is dividing his time between 14 c.w. and s.s.b. and not missing much. On s.s.b.: CE3UF/0 (Fernandez), CE3ZN/0, FR7ZG, VQ8EZ (Rodriguez), UW9YQ (Zone 18), CP-5BK/8, VP2AA (Antigua), 9M2FO (Malacca), HK4TA, 7Z3AB, 4A7PB, HS1CB, TZ2AC, PK8YO, PJ2CZ, VZ2AZ, PZ1CI, H1LAL, 9Y4AR, UT5RP, UV3AAE, 9N1MM, 8P6AH, FG7XX, VS9MB, HM1AJ, ITIPZA, 4X4FP. On c.w.: UD6KBO, VP6PJ (now 8P6BU), CT3AS, VF1DM, HP1IE, ZP5JB, HMsBF, XW8EP, KK5ER, 8H1AE, UV3AAM, CO8AY, HM2CM, UP2PA, ITIVRS, ET3REL, FY7YM.

Peter VK4FJ reports all bands holding but has not been very active of late. He worked 14 s.s.b.: CO8MN 14125 1215, 8U5BB 14170 2020, 5H3JL 14145 2040, 7Q7EZ 2100, JT1KAA 14140 1125, VP5AA 2115, VP2DT 2050, 7Q7AM 2044, ZS2H 2030, UW9AF 0930, UA3UV 0840. Peter mentions one bad operating habit of which both VKs and others are guilty. Overdone Cqs. This only results in a heap of QRM at the end of the call.

David VK3QV back on his favourite band and really proving that ten is hot, lists the following: EP2GI, F3II, F5RV, DK1KT, DL7HU, DL9OH, DJ1ZT, DJ4AX, DJ9HR, G13IVJ, HB-9ADQ, HB9ZC, HB9BR, HR1DX, I1PGL, IS3FC, KR6KS, KR6TAB, OE3GA, ON4OR, OZ1PL, OH2BR, OH5VY, SM3BZ, SM6CMK, UV3AAE, VE3FGV, VU2QR, 4X4UL, KP4FS, plus stacks of Gs, Js and all U.S.A.

Dave supplies the following propagation information: 1300-1330 Europe s.p., 1400 Middle East areas, then a little later to W on the l.p. This is the first l.p. report on 28 Mc. (Thanks OM, your comments are much appreciated.—Al.)

Barry VK5BS, our QRP co-ordinator in VK, who is also a technician at Woormera, logged these on 14 c.w.: UG8KAA, SM4CMG, UL7RR, HP1IE, TG0AA, KVAAM, XW8BF, AP5HQ, YV6ANA, 6Y5GS, 9V1OP, UQ2KC, KZ5ZN.

Brian VK2AND breaks the ice in this column with a nice list of 20 s.s.b. worked: XE2III 0730, VU2DKZ 1038, DU7SV 1100, KG6IF 0148, EP2BI 1253, 5Z4KL 1305, 7X0AH 2131, LUD1AB 1033, 9M2PO 1100, PJ2MI 1107, VP8BY 1245, XW8BZ 1234, FJ3CC 1311, VPIPV 1300, VP2GAI 1138, OA4XN 1008, 1233, 9N1MM 1233, HR1KAS 1135, H18RG 1158, PJ2K 1118, HK4TA 1153, GY1AA 1856, 7Q7FBD 1858, KW6GJ 0824, KG-6GF 1207, UA4IF 1332. Brian has his sights on WTW 100 on s.s.b. 14 Mc. Then we will hear him back on Al mode. (Good luck OM, please some more information.—Al.)

Don VK3AKN sends in a staggering 28 Mc. DX worked list. Here are just a few: ON4ID, ZC4FB, G14RY, UW6LC, OZ3JR, PA0DC, 4X4WF, VE3IT, HM1BB, UL7JT, LA9XP, ZS-5LB, ZS8D, 9Z2BC, Y09APJ, OH2OW, UP2ADZ, etc. (Your letter delayed en route OM, please send more.—Al.)

SOME QTHs
VP2AZ—QSL WONGF.
CE0AE—QSL WA5PUQ.
9N1MM—QSL W3KLV.
8P6AH—QSL VE3DLC.

VP2AC—QSL WA4AYX.

HM1AJ—QSL P.O.B. 2806, Seoul, Korea.

CT3AS—QSL G2MI.

HP1IE—P.O.B. 664, Panama 5.

ET3REL—QSL W5LEF.

YS1FSE—Does not QSL.

VK8XI—QSL W2GHK.

VP6AO—QSL VE3DLC.

VPIPV—Box 17, Cayo.

SU7AN—QSL SU7AL.

TJ1QQ—QSL W4QOS.

QD5BZ—QSL W4ZCQ.

ZS2MI—QSL WANJE.

5N2AA—QSL WV1RO.

5R8AS—QSL W8ZPX.

PX1IE—QSL F0JS.

9L1GQ—QSL K4MQG.

GD3RF—QSL K4MQL.

KG6IF—QSL W6ANB.

OX4AA—QSL K8REG.

6Y5GG—VE4XN.

9N1MM—Father Moran in Katmandu. QSL to W3KVQ, E. W. Harrowey, Jr., FRD 2, Tioga, P.A.

AWARDS

Worked 100 U Stations (W-100-U)
The award is issued by the Central Radio Club of the U.S.S.R.

1. W-100-U is available to all Amateurs of the world for two-way contact with at least 100 U.S.S.R. Amateur Radio Stations, including at least 5 UA, UW9 stations. The contacts to be made after 1st January, 1958.

2. The contacts to be made on c.w. or phone, on one or more of the Amateur bands (3.5, 7, 14, 21, 28 Mc.).

3. Minimum reports to be RST337, RSM 335.

4. The 100 cards of the contacts must be sent to the Central Radio Club, with a list of the same, giving date, time, band and other details of the QSOs.

Address for the application: Central Radio Club, P.O. Box 88, Moscow, U.S.S.R.

RADIO AMATEURS (OR SHAMATEURISM) IN INDONESIA

Around the latter part of 1965, when the power of Dr. Sukarno first began to wane, there arose mainly among student groups many Amateur Radio stations.

It is not known if these rigs were used for political purposes, but they have, until now, provided a daily programme of Western style popular music, with each station charging a small fee for each record played.

General Suharto has now issued a decree banning this type of Mass Media Entertainment. Only those who intend to operate bona fide experimentally, will be issued with a licence.

Several PK stations have appeared in recent weeks on the DX bands, with modes of s.s.b. and c.w. It is to be hoped that the activities of these chaps are not curtailed, as they are in big demand the world over.

QRP CLUB NEWS

New members include VKs 3AQ, 3AHG, 9JL, 4WO and S.w.I. Thorpe. A new innovation will be the quarterly QRP QSO Parties. This might help to liven up the club a little. Un-financial members will you please pay your dues. Membership may be withdrawn from those who after a certain period have not come to the financial party. Please write to Barry VK5BS for any queries you have about the club. QTH is 18 Cornish St., Glenelg North, S.A.

My thanks, as always, to the column's supporters. 73, DX, Al VK4SS/I.A.R.J.S.

PROVISIONAL SUNSPOT NUMBERS FOR DECEMBER 1967

Dependent on observations at Zurich Observatory and its stations in Locarno and Arosa.

Day	R.	Day	R.
1	131	17	160
2	126	18	172
3	89	19	129
4	75	20	179
5	71	21	141
6	88	22	130
7	126	23	105
8	131	24	101
9	113	25	83
10	114	26	111
11	112	27	142
12	110	28	140
13	124	29	165
14	140	28	141
15	151	30	121
		31	108

Mean equals 123.2.
Smoothed Mean for June, 1967: 87.8.

Predictions of the smoothed monthly Sunspot Numbers for the coming six months:

January	110	April	117
February	113	May	117
March	115	June	116

Contest Information

CONTEST CALENDAR

2nd/3rd March: 34th A.R.R.L. International DX Competition (2nd week-end phone).
 9th/10th March: B.E.R.U.
 16th/17th March: 34th A.R.R.L. International DX Competition (2nd week-end c.w.).
 6th/7th April: "CQ" WPX Phone Contest (s.s.b. only).
 11th/12th May: 17th OZ-CCA Contest (c.w. only).
 12th/13th October: 21/28 Mc. Phone Contest.

1967 "CQ" S.S.B. CONTEST OCEANIA RESULTS

AUSTRALIA			
Call	Band	Score	QSO's Wkd.
VK2KM	21	159,768	432
VK2AFK	14	348,520	709
VK3AXK	A	117,484	439
VK3XB	A	1,380	25
VK3VM	28	67,368	276
VK3SM	21	17,907	134
VK3ARX	14	47,970	189
VK3KS	14	330	11
VK4PJ	A	4,176	48
VK4WF	21	30,016	159
VK4DO	14	27,000	129
VK5AX	14	9,702	70
COOK ISLANDS			
ZK1AR	A	239,355	622
HAWAII			
KH8IJ	A	550,197	1,790
W0PAN/KH6	A	211,014	638
KH8BZF	21	42,803	232
WB6FHL/KH6	21	37,298	206
LAOS			
XW8AX	A	521,888	1,001
TERRITORY OF NEW GUINEA			
VK9GN	A	501,670	1,009
VK9KS	14	51,597	228
NEW ZEALAND			
ZL1KG	A	1,042,152	1,417
ZL1AIX	A	556,052	1,128
ZL3AB	28	35,955	248
ZL1AGO	21	112,548	346
ZL4BO	21	19,494	129
ZL1AAS	14	144,160	363
PHILIPPINES			
DUIFH	A	412,344	779
CONTINENTAL LEADERS			
28 Mc.	VK3QV	87,368 points	
21 Mc.	VK3M	159,768 points	
14 Mc.	VK2AFK	348,520 points	
7 and 3.5 Mc.: No entries.			
MERITORIOUS OPERATION			
Highest All-Band Score—Single Operator:			
ZL1KG	1,042,152 points		

1967 A.R.R.L. INTERNATIONAL DX TEST—AUSTRALASIAN RESULTS

Call	PHONE		Multipl'r Contacts
	Score	Wkd.	
VK2APK	910,860	190	1,598
VK3ZR	540,218	184	1,098
VK2WD	236,888	116	681
VK3ARX	56,984	47	404
VK2VN	42,822	61	234
VK3XB	7,884	35	73
VK3KS	1,275	17	25
VK3FU	1,459,773	203	2,397*
VK9GN	188,300	110	510
ZL1KG	1,522,125	205	2,475
ZL2QH	860,310	158	1,815
ZL1AGO	560,001	173	1,099
ZL1IL	266,832	109	816
ZL3AB	51,528	78	226
* Multi-operator.			
C.W.			
VK2EO	1,371,760	222	2,360
VK3AXK	817,908	182	1,498
VK2GW	487,056	146	1,112
VK2VN	219,438	148	501
VK5TC	172,078	97	593
VK5KO	82,628	31	131
VK4FH	52,920	63	280
VK3XB	34,860	70	166
VK4FH	33,040	40	276
VK3AFN	28,987	41	238
VK3OP	28,828	38	236
VK3KS	15,732	46	114
VK3UM	6,696	24	93
VK4WO	1,260	14	30
VK9GN	159,840	120	444
ZL3QH	1,012,092	183	1,748
ZL1HW	354,560	128	945
ZL1AFW	183,486	106	577
ZL1AMQ	80,928	48	582
ZL1OY	37,620	55	228

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

THANKS FROM MACQUARIE OPERATOR

Editor "A.R." Dear Sir,
 Having just returned from Macquarie Island, I would like to express my sincere thanks to the many Amateurs who helped me and other personnel of the Macquarie 1967 expedition during that year. I can assure all those Amateurs your help, whatever form it took, was most appreciated.

My special thanks go to Sam VK7SM who patiently took my logs over the year and sent them regularly to Greg VK7ZKJ who acted as my QSL manager and did such a first class job. Many thanks to you both, Sam and Greg, for a terrific job well done.

My appreciation to those Amateurs who patiently waited their turn for a QSO, but to those who couldn't wait their turn and persisted in interrupting established QSOs for a new country or what ever other selfish reason they may have had I can only say I am glad there are more who play the game than there are who don't.

Those who lived up to the Amateur's Code made Amateur operating on Macquarie a wonderful experience—but those who didn't made it distasteful often. I certainly hope to have an eyeball QSO with the many friends I made whilst on Macquarie through Amateur Radio. A great hobby particularly whilst down South.

—Rodney Champness, VK3UG, ex VK0CR.

THE "XL" OPERATOR CLUB

The name of this fraternity has low meanings: (1) The Latin figure XL stands for "forty" and (2) The English pronunciation of XL is "excel" or "excellent".

The membership of this fraternity is based on long-term service and excellent achievements in the fields of Amateur Radio. The "XL" operators could claim to belong to the "High Society" of Amateur Radio. The requirements of this fraternity are intensive activity of many years on various Amateur bands.

A minimum of forty (40) points is required for the membership. The points may be earned as follows:

- Five (5) points for the first full 10 years the applicant has been duly licensed as transmitting Amateur, plus three (3) points for each full five years thereafter.
 - Five (5) points for the first 200 DXCC countries confirmed, plus three (3) points for each additional 50 countries confirmed.
 - Five (5) points for each 100 DXCC countries confirmed on each of the 28, 21 and 14 Mc. Amateur bands.
 - Three (3) points for each 50 DXCC countries confirmed on each of the 7 and 3.5 Mc. Amateur bands.
 - Two (2) points for each 20 DXCC countries confirmed on each of 1.8 Mc. and v.h.f./u.h.f. V.h.f./u.h.f. is considered as one band.
- The country totals are calculated regardless of the mode of operation, so one country may be counted only once on each band. A.R.R.L. DXCC rules apply for counting the countries. However, official A.R.R.L. DXCC credit is not required.

There are no endorsements. The "XL" Club is sponsored by the Award Hunters' Club International.

Count the points and, if you can claim at least 40, send in your application. Give the following details: Your call, your name and complete mailing address, plus (1) the date of your first transmitting licence (in case there have been interruptions, give the details), (2) the DXCC score confirmed (or credited by the A.R.R.L.), (3) the number of confirmed countries separately on each band (see the calculating table). Finally certify personally that the information given in your application is true. No other certification is necessary; we trust the word of "XL" operators. If false information is given it will spoil the Ham Spirit.

Enclose sufficient return postage (there is no membership fee), and address the application to the Award Hunters' Club International, C/o. OH2YV, John Velamo, Isokaari 4-B-30, Helsinki 20, Finland.

Tell your friends about the "XL" Club. This recognition is really worth working for, and no doubt the "XL" Amateurs will be recognised by all Amateurs as examples of successful operating and loyalty to Amateur Radio. Remember, Ham Spirit is our Guide Star!

LOW DRIFT CRYSTALS

1.6 Mc. to 10 Mc.,
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Larger, spiral-bound pages
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Price 85c each
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Obtainable from your Divisional Secretary, or W.I.A., P.O. Box 36, East Melbourne, C.2, Victoria.



FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL QSL BUREAU

Henry Anderson, VK8HA, advises he intends visiting CR8 from 15th to 29th April inclusive and has applied for a licence to operate from CR8.

Outward managers and others please note the change of address for the Norwegian Radio Relay League to Box 21, Refstad, Oslo 5, Norway. This address includes the QSL Bureau.

The L.A.R.C.V. advise of an award to commemorate the 3rd Presidential visit to Cape Verde Islands, 9th to 18th February. Any Amateurs who worked two CR4 stations during that period are eligible. Details from the Federal Bureau.

Will the station who agreed to act as QSL Manager for Dave VK0IA during his sojourn at Macquarie Island this year please contact this Bureau.

The Radio Sports Federation of the U.S.S.R. forwards details of its annual DX Contest to be held from 21z May 4 to 21z May 5. The contest is for c.w. only and all bands 3.5 to 28 Mc. may be used and at least 12 hours of operation is necessary to qualify for an award. U.S.S.R. stations send RST plus Oblast and all others send RST plus serial commencing with 001. Object is to contact as many stations as possible in any country but contacts between stations in same city are not permitted. Contacts on same continent count 1 pt., on different continents 3 points. Band score is sum of contact points multiplied by number of countries worked on that band. Total all band score is sum of scores on each band. Awards of certificates and badges will be made to the highest three stations on each band in each country and similarly to the highest three multi-band stations in each country provided at least five logs are received from that country otherwise only one single band or one multiband award will be made. Logs to Box 88, Moscow, by 1st June, 1968. Any further details required may be had from the Federal Bureau.

As of February 7 the Post Office is just commencing to clear the backlog of 2nd class mail that accumulated during the recent strike. During January cards through the Federal Bureau slumped to 1,500! Writer did not organise the strike but appreciated the let-up enabling his broken leg to get more rest.

—Ray Jones, VK3RJ, Manager.

NEW SOUTH WALES

N.S.W. DIVISION CONVENTION

The Division's Convention was held over the Australia Day holiday week-end in hot summer weather, commencing with the general meeting held at Atcheson St. on Friday, 26th Jan.

The meeting was opened by President-Chairman Keith 2KJ and after reading of minutes a further 17 members were admitted and welcomed to membership of the W.I.A. In reporting to the meeting, Keith said that the postal strike had hampered the delivery of bulletins and the operations of the Division generally. Keith then briefly explained the new membership renewal procedure and gave details of the Convention arrangements.

The meeting was then handed to Harold 2AAH to announce that the Lecturer of the Year Award was won by Howard Lilley, 2AYT, for his lecture on Video Recorders, last year's winner, John Featherstone, being a close runner up. President Finney then presented the prize of the award to Howard.

He then announced that the Adams Trophy which is awarded for the best technical article published in "A.R." from VK2 had been won by Frank Hine, 2YL. Keith then presented the trophy, suitably engraved, to Frank to hold this year.

President Keith then advised that the Federal Councillor had some interesting news, however the meeting would adjourn to allow the lecture to commence. The lecture, on Log Periodic Antennae, was given by Dr. Guertler, who, with the aid of sketches, made easy the theory of i.p. antennae, explaining the evolution of the type and ending up with the practical result. Dr. Guertler then showed slides of a commercially made unit rotatable on a 100 ft. tower which can be readily raised and lowered, which has been used by Government services.

Many questions followed but resumption of the meeting ended an absorbing lecture well given.

The Federal Councillor then presented his report in which he stated that the forthcoming Federal Convention to be held in Sydney would be an historic occasion as the new Federal Company proposals would be presented and possibly accepted. Coupled with this would be the Region III meeting of the I.A.R.U. with delegates from the leading Amateur organisations of the world. Pierce 2APQ said that some sessions of these meetings would be open to visitors. His detailed report was duly accepted on motion by the meeting.

Pierce then advised that he was prepared to stand again as Federal Councillor, and was very rapidly nominated and seconded. Chairman Keith Finney then called for further nominations and there being none presented, called a vote, resulting in Pierce 2APQ being elected unopposed.

The Chairman then advised that the Council elections would be held at the April meeting due to the inability of the Division to operate during the mail strike. Keith requested members to read the bulletins carefully regarding nominations, etc. The meeting was then closed and supper served.

CONVENTION DINNER

Some eighty members and friends enjoyed a memorable Dinner on Convention Saturday, 27th Jan. Held in attractive surroundings, with very well set tables and good service, the diners were well entertained under the very capable M.C., Bert Hay, 2AGW. The toast to the Queen was given by Dave 2BSJ, to the W.I.A. and P.M.G. by President Keith 2KJ, and the toast to the visitors by Pierce 2APQ.

The visitors were Mr. and Mrs. J. Striker, W6MOV; Mr. Roll Thomas, FK8AV; Col. and Mrs. Ballantine, VK2AAA, O.C. 8th Div. Sigs.; Mr. and Mrs. Allan, Civil Defence. Mr. Stringer replied to the toast to the visitors on their behalf.

Mr. Striker turned out to be more than the usual guest, a musician of no mean accomplishment, he joined in the trio playing piano and clarinet really hotting things up, so much so that it is understood that some will remember this event for a long time to come.

CONVENTION FIELD DAY

The Field Day was held at the Dural grounds in clear hot weather. An attendance of well over 200 had a good time, including the visitors W4SMZ/DL4SZ/BV1US, FK8AV, VK8ID, and VK4XY; Newcastle, Central Coast and Illawarra Branch members.

During the course of events a Floral Art Display was held for the ladies as well as novelty events. Children enjoyed pony rides while all enjoyed plenty of soft and hard drinks, etc.

The usual display of commercial Ham gear was on to frustrate the OMs while the W.I.C.E.N. Committee provided a clinic for f.m. carphones. OMs complete with odd looking devices were often seen wandering about the bush or driving about in cars during fox hunts and the scrambles. The hot weather, however, kept quite a few under the shelter of trees and canvas.

The complete list of prize winners of the field events will be published in the Divisional Bulletin, however the main winners were as follows: Fox Hunts, 7 Mc.: 2AWZ, 2AWZ; 144 Mc.: 2ZPJ, 2ZVW, 2ZVW. Scrambles, 7 Mc.: 2AWZ; 144 Mc.: 2ZCF. Nail Driving: Mrs. Laws; Ball Game: Kay Laws; Nearest Pin: Mrs. Newland. Gate Prizes: Mrs. Laws, W.

SILENT KEYS

It is with deep regret that we record the passing of the following Amateurs:

- VK2OB—Lionel W. Mashman.
- VK2OE—William M. Allworth.
- VK2ANU—Ken Mitchelhill.

Pollock. Distance Prizes: 6ID, 4XY, 2ZZI (Dural). Y.R.S.: D. Fraser, S. Mudge. Raffles: 2AXJ, Mrs. 2RU, 2ATT, C. Fairhall (Assoc.).

MEMBERSHIP CARDS—1968

Each member will be sent a Membership Card which will be used as a record of membership details. It is most important to return the correct half with payment. The card system introduced in this Division is an indication of the new secretarial system introduced in the office procedures recently re-arranged by the use of a full-time Secretary. In spite of extra expenses incurred, and increases in existing costs, Council has decided to hold the fee at \$5, but this can only be done if membership increases, so remember, the motto, "Every Member Win a Member."

You are requested to check the card carefully, so that Bulletins and "A.R." are sent to the correct address and then time and money are not wasted trying to find you.

SUNDAY BROADCASTS

Due to burnt out transformers the Broadcasts from VK2WI have been discontinued temporarily on 3595 Kc., and to enable call backs on 7050 Kc. the Broadcast AT13 on 7146 Kc. has to be returned to 7050 at the end of the news. As can be appreciated this does not assist the duty operator and listeners should check all frequencies each Sunday to obtain the broadcast and call back frequencies. Installation of new transmitters will very shortly rectify the situation as well as provide the 53.950 Kc. f.m. transmission.

URUNGA CONVENTION, EASTER WEEK-END

Members are reminded of the Urunga Convention to be held over Easter 1968. Being the 20th anniversary of this event, it promises to be an excellent way to spend Easter in idyllic conditions with very attractive prizes for all events. Motel and hotel accommodation can be booked. See bulletin for details.

W.I.C.E.N. NEWS

As a continuance of W.I.C.E.N. policy to enable all Amateurs to have their f.m. gear periodically aligned by competent personnel using accurate test gear, a clinic was held during the Field Day at Dural. A total of 17 units were presented and 14 were suitably doctored, lack of time prevented the completion of the project.

The Western Area Network based on Orange continues to expand with new stations operating from Orange, Dubbo, Eugowra, Blayney and Gulgargahone. A proof of coverage is to be held as an exercise on 23rd and 24th March. The exercise will be controlled through the Orange Radio Club's Base on Mt. Canoblas, will encompass the Mitchell and parts of the Lachlan and Macquarie C.D. regions. Many mobile stations will be travelling from Sydney to participate and those willing to assist should contact Brian 2ZQX (Sydney) or Kees 2ZKN (at Orange).

The new Operations Room of the Communications Centre at Atcheson St. is almost complete. Don Miller, 2GN, who headed up the installation team, was responsible for the design, modification and installation of this new showpiece. The room has been attractively appointed with light panelled walls, acoustic tile ceiling and wall-to-wall carpet.

The large polished wooden operating desk comfortably seats h.f., v.h.f. and telephone operators, with fingertip control of 250w. h.f. transmitter, AR88 Rx, all 8 and 2 m.f.m. and a.m. channels, and land lines. Latest model headsets enable operators to be in simultaneous communication without any mutual interference. Following the erection of the proposed rooftop aerial farm, it is expected that an Official Opening will be arranged. 73, Stan 2ZRD.

HUNTER BRANCH

Well I suppose it had to happen eventually. Why even the I.T.U. has made recommendations about it and the date of 1970 has been mentioned. But to have come so quickly and without warning was almost more than one could imagine. Still we must take the philosophical outlook and tune our receivers a little sharper. Yes dear reader, Bill 2ZL has gone sideband. Of course everyone who knows about it is most perplexed but there it is. The perfectly good AT5 and modulator which has

served him so well for so long is to be laid aside in preference for a black box! The prospect of Geordie s.s.b. is with us. Just listen on 80 or 40 at nearly any time and you'll be convinced that what I say is true. And this is not the only rapid new development around the lakeside.

Another Bill, 2XT this time, held a ceremonial pole-raising ceremony early in February to raise to its full height the umbrella quad which has so long languished on a small pole near the shack. A large group of Y.R.S. boys were there to lend a hand with the mechanics and physics necessary to get the big mast—all 70 feet of it—to the upright position with the super quad and a two metre yagi as well on top. To prove that it was really working, Bill broke into some contest working on 28 megs. and the dogpile of Ws that came back was proof enough. And since the Collins went in for a super tune up, I'd say that Jim 2AHT is also in the power trimmerate of the Lake Macquarie area. Watch out you DX stations—we're on the air.

As for some of course the most DX they work is on 146 f.m. and there's even a fair amount of that about if one judges conditions by the happenings of late December when all the carphone operators in Newcastle joined the party to work upwards of 10 Sydney stations. About the same time, Dick 2ZSI was having regular battery flattening exercises on the dizzy heights of Dudley and Ian 2ZIO complained that he spent more time on the microphone than on the soldering iron. Oh it was a time of great activity and never a minute of night or day was free from the monitoring ears of the locals. (Phil 2XT did the night shift).

And it was perfectly natural that the very next Branch meeting should be occupied with a learned discussion on the gentle art of f.m. as expounded by Warren O'Rourke, the gentleman who has helped many a Newcastle Amateur to tune up the cranky carphone. Warren showed his absolute mastery of the subject to the quite large audience and the way he handled vector diagrams eclipsed the efforts of such mathematics professors as we have known. Congratulations Warren on a really good lecture.

At the meeting, Les 2RJ announced that he was to be a starter in the John Moyle Memorial Field Day and a great deal of interest was shown from among the S.W.'s but other Amateur activity seemed to be nearly non-existent. Of course there's a reason for the lack of activity among the v.h.f. boys just now; they're all pounding the brass. Since that magical announcement was made the keys in the v.h.f. men's shacks have been running hot. Even one dedicated "phone only and Z calls for ever" type admitted to me that keys could be used for other things than opening doors.

One of the staunchest advocates of Morse for communication and a man who was responsible for the copy-book style heard during the slow morse transmissions, Ken 2ANU, is with us no longer. Branch members were shocked to hear of his sudden death after seeing him looking so well at our last convention. The Amateur Service in general and Hunter Branch members in particular have lost a great friend and a real Amateur. Les 2RJ and members of the Muswellbrook Radio Club represented his many friends who could not be present at the funeral.

If you see a tall, handsome looking gent wearing a ferenial in his lapel you can bet it's Bob 2BOB who has just returned from a two-week vacation in ZL. Bob is loud in his praise of the friendliness and genuine Amateur spirit of the ZL boys who arranged all his tour in the land of the long white cloud and gave him one terrific time. Frequently our members return from overseas with the same story of super hospitality by their hosts. Does it always happen here?

If you are anxious to repay some of the help you've received then the time is fast approaching. At Easter the Federal Convention to be held in Sydney, is to be a real international affair with visitors from at least five overseas Amateur Associations. Why not plan now to give these chaps and the visiting delegates from interstate the reception that they deserve—the sort of thing that Bob and Bill and Jim and Lionel received when they went abroad. I'm sure they'd appreciate it.

David 2GF dropped a bombshell at the last meeting when he announced that he had been transferred to Melbourne and that he'd be leaving the Branch. Frank 2ZFX expressed the thoughts of the members when he told Dave how concerned we are when Branch members leave. We all wish you well Dave and may the Radio Amateur grass be even greener in the southern metropolis.

While the big power men continue to pour on the coal, those with QRP are also busy but in a slightly different way. Stuart 2AYF has been on with the flea power rig and has had some excellent reports while even 2AWX has

OBITUARY

LIONEL WILFRED MASHMAN, VK2OB

It is with much regret that we record the passing of yet another old-timer from the ranks of Amateur Radio, in the person of Lionel Wilfred Mashman, VK2OB. Lionel had been in ill-health for some time but passed away suddenly on the evening of 8th January.

Licensed at an early age in March 1925, his 43 years' experience in Amateur Radio covered a period of such vast change in the art that would be appreciated only by the comparatively few old-timers still with us.

The 14 Mc. band claimed most of his attention up to 1939, and during World War II. he served as a voluntary instructor at Moore Park Signals Depot, Sydney.

Following the war, Lionel again opened up on 14 Mc. but owing to pressure of business and other interests was not very active. However, his gear was kept in "go" condition and, as a matter of fact, it was always a delight to visit his shack. There was a place for everything and everything was always in its place—something rarely found in a Ham shack.

Another interest that claimed much of Lionel's attention was astronomy, and for some years he was secretary of the British Astronomical Society. In the backyard of his home at Bexley a sliding-roofed building housed a 6 inch telescope, the lens for which he had laboriously hand-ground over a long period of time.

As manager of the Kingsgrove pottery works of F. A. Mashman & Sons, Lionel became very well known throughout the district. He was a kindly and generous man, and the very large and representative attendance at his funeral at Christ Church of England, Bexley, and later at Northern Suburbs Crematorium, testified to the esteem in which he was held by all sections of the community.

Lionel leaves a widow, one daughter and two sons, and to them and their families may we tender sincere sympathy on behalf of all members of the W.I.A. and the Amateur Radio movement generally.

PETER VESPER, VK2PV

Peter was licensed in 1934 and was active on all bands 80 to 10 on c.w. A keen DX operator, he had 300 countries and some 40 awards. After World War II. he was active in the W.I.A. in connection with the N.S.W. Bulletin.

During World War II. Peter saw active service in New Guinea, in the Owen Stanley Ranges. He was a pharmacist, and until his sudden death after a short illness, operated a chemist shop in Sydney.

Deepest sympathy is extended to his wife, son and daughter.

been reported as having an excellent signal with less than double figures of watts. Another high wire has appeared in Toronto above the house of Bruce Morley while the low wire of Paddy 2AXU is again bringing in good reports. No wire at all is stretched between the poles in Janet Street where Frank 2APO resides, but I have it on some authority that it won't be long before the big signal is on again. So it looks, on the whole, as if most things are moving pretty well.

Why not come along to the next meeting and hear some of these interesting facts at first hand. I may even be able to introduce you to a man who has stood knee deep in 6DQ5s. The date? April 5 will do; at the Tech. See you, 73, 2AKX.

VICTORIA

Council meeting was held on 22nd January, 1968. Council was pleased to welcome two visitors, namely Federal Secretary, 3OR, and the Chairman of the V.h.f. Group, to the meeting. Council had a long agenda to work through and much time was spent on the matter of appointments to Federal Executive, a matter which is causing this Division much concern, so much so that it was resolved to leave the matter open for decision at a later date.

The matter of lack of a broadcast recently was briefly discussed and it was decided the matter would be raised with the appropriate committee. Basically the trouble was the lack of news due to the postal strike. More important was the discussion on the accident to the

40 metre transmitter. Council was informed that an unauthorised visitor gained access to the transmitter room and decided to "go on the air". Not being familiar with the equipment, he operated without an antenna, and the unloaded final "gave up the ghost". By some unexplained means the relay power supply was also destroyed.

Council resolved to have a notice placed in the transmitter room, prohibiting the use of any equipment for purposes other than official W.I.A. broadcasts.

Matters for the Federal Convention agenda were considered and several items relating to the Federal Policy Book reviewed. These matters will be incorporated in this Division's agenda items.

Council gave consideration to the Division's financial position and decided that we would have to raise subscriptions. After a full discussion it was agreed that we would retain the number of classes of membership we have, as it was unreasonable to ask those not in receipt of regular incomes to pay the same as those more financially able to pay. This means we have to subsidise many of our members, and Council considers it preferable to have these members at a lower fee than to not have them at all. We hope all members appreciate the position and will not hesitate to pay their accounts which they will receive shortly. As somebody pointed out, even a full member still pays less than two cents per day.

WESTERN ZONE

The Z call signs in our Zone have been very active during the last few months and doing a fine job for Amateur Radio generally. During the past V.h.f./U.h.f. Contest some have made the 400 contact mark. Together with the full call signs in the northern part of the Zone, they by far outnumber members in the southern section. With the departure of Merv 3AFO and Harry 3ZX, Horsham now has not an active member. Stawell, however, is on the map again, Keith 3AKP has gone s.s.b.

Ray VK9LR has now departed for New Guinea again and will be located in Goroka. He will be looking for yarns on the 14 Mc. band. Sorry to hear that Lyle 3SA (Nhill) has suffered a broken limb while taking part in another hobby. Certainly must be a great thrill Lyle, but you have got what it takes—a lot more than most of us. We wish you best of luck in your sky-diving future. 73, 3AKW.

QUEENSLAND

IPSWICH AND DISTRICT RADIO CLUB

By now, 1967 is history and all club members look forward to a bright and prosperous 1968. A few club members have had annual leave and travelled interstate and around the home state.

S.w.l. Merv went to Cairns by road, but we don't know if he went in his car as we were unable to find the car for the coat of chain mail it was wearing, seems Merv had provided the vehicle with every type of protection possible. I am sure an Army tank is not so well protected as that car was. Another S.w.l., Tom, spent his holidays with relations at Bowral and arrived back with a new car. This one has not been worked over yet, but I do believe the 6 mx mobile rx will have pride of place and XYL Lyn has been banished to the back seat.

The antenna system at the club house has been altered now and we have raised the aerial a further 20 feet, so we hope the results are better and our signal strength has increased by 20 db.

The camping fraternity spent New Year week-end on the banks of Brisbane River near Borallon, and a f.b. time was had. It seemed that some competition was held without the members' knowledge, and was won by Dave 4HW—he claimed the DX award for the camp-out by working a VK5 on 6 mx en route to the camp site—a QSL is necessary before any award will be given!

A very welcome visitor to the club was Roy Spotswood, 4ZWR, Vice-President of Bundaberg Radio Club. He called on us and was to have come back on a meeting night, but was unable to make it due to floods around the Noosa area, seems Roy's car was not equipped with a rudder which would have been very handy.

The proposed get-together camp out between the Bundaberg and our club could be some time in the near future, and the area chosen is near Gympie, so we could see a few Gympie club members there also we hope.

The new 2 mx net is progressing slowly. We now have two stations operating on the 2 mx band and we hope more will join them soon; both 20 and 2 mx are now used for the normal Monday night net.

By the time this is printed, we hope to have one of our old club members back from VK8 land. Bob 8JR has been in Darwin for two years with the R.A.A.F. and is returning home for leave, then possibly a VK2 call sign. Bob called in frequently on our Monday nets and kept up with club news. Another club member, Col 4ZMA, also serving with the R.A.A.F., returned home from Wagga Wagga recently. He never made any 6 mx contacts while away, seems he changed cars and did not install the mobile in the new car.

Seems as if I have said enough for the month, more next month. 73, Warren 4GT.

BUNDABERG AMATEUR RADIO CLUB

When the club was first inaugurated we decided to spell off each Xmas-New Year period. We soon learnt, however, that this usually ended up the busiest period of our year with the v.h.f. bands wide open and the influx of visiting Amateurs. Xmas 1967 really was hectic here, with a decided increase in the activity on 6 mx, both local and DX. There was also a big increase in the number of visitors.

State President Les 4XJ spent several weeks here in his home town and met many of the local chaps. Ex-club member, Murray 2XL, is here on a month's holiday. Murray was at our January meeting and gave a most interesting talk on Radar Technique as applied to Aircraft. George 4ZMG and Danny 4ZDD spent a month or more in town and helped to swell the QRM on 6. Ken 4DG spent several days here and was a welcome visitor to our December meeting.

Bill McIntyre, from the Satellite Tracking Station in Canberra, was quickly found and given a very hectic few weeks by the club members. Bill delivered a very interesting lecture on the subject of Satellite Tracking. Ex-club member, Bob 4ZRG, spent several weeks in town and was often heard on 6 mx. Bob visited quite a few of the local shacks. Other visitors over the holidays included John 4ZJT from Pialba, and also Phillip 3ZZS and Geoff 3ZNA, who were touring around Queensland.

The 6 mx band has been pretty good for most of the Ross Hull Memorial Contest and local 6 mx activity is very high. Club member Bob 4ZZE spent a month or more in VK3 with his parents. We had many contacts with Bob, both on 6 mx and 20 mx. Merv 4MZ holidayed at the Gold Coast. He had a surf board on the hood rack when he left, obviously to enjoy several weeks of both hanging five and the wonderful scenery that the Coast presents at this time of the year.

Frank 4UK caravaned to the South—fortunately, he got home before the rain. Roy 4ZWR spent several weeks at Noosa and Brisbane. Eventually got washed out as did our Club Treasurer, Jim Yarham. We hope the 30 inches of rain did not dampen Jim's and his XYL's enthusiasm for camping as we plan to have at least six field week-ends during '68.

The Xmas Party was most successful in spite of the heavy rain that night, which kept most of the out-of-town visitors away.

Our congratulations to Geoff 4GI, Steve Spotswood and Bob 4UD on the very good passes they obtained in the recent apprenticeship exams. Geoff and Steve are now both tradesmen but have decided to further their studies in their particular fields.

A.O.C.P. and Y.R.S. classes will be resuming early in February and it looks as though the club will be in full swing again soon. The club extends to all Amateurs all the best for 1968. 73, Rusty 4JM.

SOUTH AUSTRALIA

The monthly general meeting of the VK5 Division was held to a capacity attendance of members and visitors, and in view of the fact that the night was particularly warm, and had followed a day of nearly one hundred degrees in the shade, the big attendance came somewhat as a surprise, and it can only be assumed that the lecture for the night was the main reason for the large number.

In the absence of the President, Murray 5ZQ, on holidays, the meeting was chaired by Geoff 5TY, the Vice-President, and opened practically on time. Very little business, Federal, Divisional or otherwise, was on hand and after the distribution of QSL cards by George 5RX and a short smoke-oh, the meeting was called to order for the lecture of the night.

This was in the joint hands of the President and Vice-President of the U.F.O. Investigation, Australia, Mr. Fred Stone and Mr. V. Godic, respectively, who both made it quite plain from the start that no attempt would be made to convince the meeting as to whether U.F.O.—Flying Saucers to you—were genuine or otherwise, no scientific explanations would be attempted, in fact whether the members present believed it or not, or whether they thought it just a joke, was a matter of no

concern to them, all they were going to do was to produce all the evidence on the subject at their command, and leave the rest to the common sense of the members.

Mr. Stone then spent a little time on reading from literature on the subject, that he had brought along, all well known names from the space and science world, and after having heard them and just what they said in support of unidentified flying objects, it would have been a brave member of the audience who would have dared to rise to his feet and dispute this part of the lecture.

Mr. Stone then handed the meeting over to Mr. Godic, whom I feel was a little more electronically minded than he led us to believe, who then proceeded to substantiate the subject with slides, more slides, and still more slides, all of which showed in some part of the picture undoubted evidence of flying saucers. There was no doubt about it, the visual evidence definitely backed up Mr. Stone, and was prepared in such a workmanlike manner by Mr. Godic, that again it would have been a brave member of the audience who would have dared to dispute this second section of the lecture.

The lights were then turned on and Mr. Stone and Mr. Godic stood back prepared for the barrage of questions from the members present. The members present were so apparently stunned, or could it be brainwashed? that not one question was forthcoming, and in the somewhat embarrassing silence which ensued, both gentlemen beamed their pleasure at the obvious success of their lecture. Just think of it, the entire meeting completely stunned into silence, what greater success could they have asked for?

One member did recover enough to somewhat shakily ask as to what could be the best thing to do if he should come in contact with a U.F.O. at some time or other, and received the obvious answer "run like the devil!" But aside from this courageous attempt to save the situation, silence prevailed.

In all the years that I have been attending Divisional meetings, I have never seen such an effect that this lecture on U.F.O. had on the audience, and I have never seen an audience so bereft of words at its conclusion. All of which speaks volumes for both lectures and also for the craftsmanship displayed in presenting it. I don't know just what those present thought about the subject of flying saucers, or whether their complete silence at question time was purely due to good manners, but this I will say, no lecture delivered at our meetings has ever had the effect of this one, and I will hazard a guess that the subject of flying saucers is imprinted on the minds of all present, and will remain so for some time, which must have satisfied both lecturers immensely, and also been the cause of not a little secret amusement on their part.

The vote of thanks to the lecturers was ably delivered by Bob 5ZDX and the applause that followed must have been as music to their ears.

Among the very welcome visitors at the meeting were Rex 5HO from Kimba, Peter 3APJ (who was staying with Don 5ZIK), which only goes to prove the old adage "that birds of a feather, etc., etc." and Barry 8DI who came along with Uncle Joe, 3UJ, and his harmonic. Uncle Joe insisted on being classed as a visitor, but the ease with which he bobs up at the meetings is fast making Port Pirie look like an outer suburb of Adelaide!

Heard Bill 5FR portable at Bright, in VK3, working with Wyk 5WM also portable at Edithburg, on 7 Mc. Both signals much stronger than from their usual locations to me, and I gathered that Wyk was on his last day at Edithburg, whilst Bill seemed to be just settling in.

Gilbert 5GX, he of disposal fame, is at the moment of writing, suffering from a cold and a "crooked" knee, both of which are improving.

Keith 5KH, my facurite banker, became very technical the other day, whilst on mobile in describing his exact location. He became very descriptive, as he said, "I am at the moment in the Dead Centre of Mitcham," and qualified it by adding "The Mitcham cemetery." How exact can they get?

However, Brian 5CA went the reverse with his description to some expected visitors by saying "Look out for a dirty two-toned grey Holden, with a big black dog in the back." Did not hear him give the car number, nor the number on the dog's registration disc, so hope the visitors were able to find him to allow him to pilot them in.

Les 5NJ on the day of the motor racing at Mallala was heard on route mobile. Your guess is as good as mine, but I gathered that he must have had more than a passing interest in the sport at one time.

Max 5GF heard saying that he was going away for a few days over the Xmas-New Year period, but "was not taking the mobile." This was a shock to the system, as he is usually well to the fore mobile on such occasions.

Geoff 5TY had a pleasing result after his year's studies, the paper showed his name on top with "credit" well to the fore. His XYL Christine also kept the flag flying with a pass in maths, at the Flinders University. Quite a cultural family, if I might say so.

Heard Jack 5LN mobile on 7 Mc. the other early evening, and from his conversation I gathered that he was just returning from bowls, an annual outing I gathered. He was putting in a powerful signal to me, but when he gave his location I soon woke up. He was only about two or three streets away from my QTH.

The other half of the QSO, Athol 5LQ—how did you guess—seemed to be somewhat hysterical over the fact of Jack being at bowls on a week day, but finally broke down and confessed that he would not have minded if he could have swapped places with him for the afternoon.

My morale was considerably shaken the other day when I heard Wyk 5WK in contact on 14 Mc. with a VK3 and a G station. The reason for the shaken morale was that he was on s.a.b., using a Swan, I think, and he was the one station in VK5 whom I thought would have given me allegiance to the bitter end. He was certainly putting out an effective quack.

Listening to Nobby 5WK and Huck 5JU in QSO on 14 Mc. recently, I could not help but let my memory wander back as to just when I had heard them in contact last. I pulled my memory up at thirty years. It was becoming too nostalgic, but came to the conclusion that it would have been when Huck lived in Kent Town, and Nobby was on top of the Liberal Club building. What a QTH for Nobby, DX-wise. I never stop telling people as to how he went W.A.C. on loop phone from that address.

Had a very short visit from Ted 2ACD over the New Year period. He had been unable to catch me in a couple of occasions, and just managed to bump into me as I was leaving for work one Saturday morning. Naturally did not exchange many words, and left my XYL to hold the fort for me. I remembered later that he is mates with Jim 5FO and XYL Rae, but I won't hold that against him!

Our Federal Councillor, Geoff 5TY, is claiming that he has lost a stone in weight, and advances the proof that when he was on top of a ladder the other day erecting a new aerial, his strides gently fell to his ankles, much to his mental and physical state of mind. I checked up on the story, and whilst I can find no proof for the loss in weight, I do find that the residents of Fairmont Street are in the process of forming a Purity League, and all cross the road when they get to number 16!!

I may or may not have mentioned it, but Rex 5DO recently changed his car over for another one, and believe it or not the first three letters in the new number plate were REX. At the rate the letters are moving along, by the time I am ready to get my new car, I could be stiff enough to get the first three letters of SSB in my number plate. What a horrible and frightening thought. Eventually heard from Jack 5LR and pleased to report that he is now well settled in at Victor Harbour, and feels like he has lived there for years. No report on any activity on the air, but it should not be long now.

Received a letter from Bert 5EQ with a couple of news items concerning Youth Radio Scheme activities for use in the "Advertiser" column. Bert is certainly pulling his weight for Y.R.S., and is doing a job and a half on its behalf. Thanks for the news items Bert, they come in handy any time.

Plenty of interstate visitors in and out of our fair city over the Xmas and New Year break. Mobile signals with interstate call signs reached a new high, and many new friendships were formed and visits paid. This is all to the good, as there is no better way to advance our hobby than an eyeball QSO.

Bob 5OD, the Co-ordinator for Y.R.S. in VK5, has agreed to represent our Division at the 1st National Y.R.S. Convention to be held over the week-end of June 1 and 2. This is



an excellent choice on the part of Council, as Bob has been a real battler for Y.R.S. in VK5 over the past months.

The age of miracles is not past, don't you believe it. George SZNW has volunteered to act as assistant treasurer whilst Harry 5MY goes on one of his safaris in the near future. Just imagine it—a volunteer from among the ranks—well did you ever, usually they have to be clubbed, or worked over a bit before they even will consider it. Must be quite a man this George.

Our respected President, Murray 5ZQ, last reported on holidays en route to Bright, which is in the dreaded VK3 land. All hope that he will escape detection and be permitted to return, although there was a slight suggestion that he might not make the trip because the boys got at him and filled him up with stories that every three cars out of five fell over the terrible precipices in and around Bright. He finished up quite shaken and as white as a sheet when they finished with him.

Fred 5MA was at the meeting and looking the picture of health. He is not as yet very active on the air, but give it time. Quite a lot of water has flown under the bridge since you used to send me the notes for the magazine down from Berri. Fred.

George 5RX, the VK5 QSL Officer, has been having a quiet time with the mail strike in progress, but is all geared up for the influx of cards when the strike ends. Not many of us realise just how many cards pass through his hands each month, and with the expected backlog to come, he will have his hands full, especially when you consider that chaps like Henry 8HA send them in lots of 500.

Was having a chat with Marshall Hilder at the meeting about the passing this week of well remembered radio personality Phyllis Pullman, and we both remembered her from her performances on stage at the 1st radio show in the late 1920's or early 1930's. Incidentally, this radio show was held in the old Exhibition Building on North Terrace, and was organised and run by the VK5 Divisional Council of those days. The Council took a gamble and sub-let the space in the show to all and sundry, and for the entire period it was a sell-out. Rumour has it that the Secretary or Treasurer used to take the nights takings home in a suit case bulging with pound notes. They were the days, then were!

Much as I don't want to, it looks as if I will have to curtail my notes somewhat this month, cheers from VK6 and VK4, mainly because of the mail situation, plus the fact that my espionage agents have not been feeding their carrier pigeons too well, and the lines of communication have broken down. Twas ever thus.

Len 5ZF seems to have been hiding recently. I heard him say that "he would be more or less leaving it alone this year. The next thing he is hard at work in the Ross Hull Contest. Hope he never decides to "more or less give it a bash!"

A short while ago in these notes it was reported that a quad was up in the air at the QTH of Tom 5MX. It is now no longer there, and what appeared, in the dim light when I was in the vicinity, to be a yagi, has taken its place. A change is as good as a holiday, so they say.

Did you cop the picture of the VK5 DX-peditioner at Lord Howe Island in the December issue of the magazine? Arch 5XK and the island are becoming synonymous now, as he ducks off in that direction at every opportunity, and always seems well pleased with results DX-wise.

John, ex-5ZDZ, now 1ZDZ, recently offered a caravan to W.I.C.E.N., which was gratefully accepted by those concerned. Some work is required upon it before it can be kept as

a ready-to-go mobile set-up, but the roof has been strengthened to take four adults, or one Co-ordinator and two adults, providing it is the chief co-ordinator! and there is a 30 ft. telescopic mast with it as well. If you know anything about the building of caravans, or you are handy with tools, run for cover, as Simon Legree, 5TY, is looking for some help along the lines suggested.

One of my spies tells me that he sees Joe 5JT from time to time, and his first words are always, "How is DX?" Joe can be heard going flat out in the early mornings on 14 Mc.

A certain gentleman in VK5, who will remain nameless for technical reasons, is receiving more than his share of QSL cards for 21 Mc. c.w. contacts, especially as he is not on the band!! The recipient of all these cards is wondering is it a case of "who can't read," or "who can't send."

The announcement of the lowering of the speed qualification for the code in the Amateur exam. was well received in VK5 and no doubt everywhere else, to put it mildly. This is quite a break-through for our hobby and also proves that the "backroom boys" are really on the ball.

The VK5 State Convention of the Y.R.S. was held at Elizabeth on the Australia Day holiday, and from all reports was a huge success. Among the delegates attending were Bert 5EQ and Jim 5ZMJ from Port Pirie; Ian from Kadina; Bob 5OD from Christies Beach, who convened the convention; Alan 5FD from Elizabeth; Brenton 5ZKJ from Peterborough; Lloyd from Port Augusta, and Reg 5QR from Nailsworth. Representing the W.I.A. and Council were Geoff 5TY, John 5UL and Trevor 5ZIS. Alan 5FD was appointed State Secretary of Y.R.S., and it was agreed to hold another convention after the June National Y.R.S. Convention to be held in VK3. Definitely a milestone in Y.R.S. for VK5, and the hosts, the Elizabeth Amateur Radio Club, and Bob 5OD the convenor, are to be congratulated on the job they both did for Y.R.S.

Putting two and two together and making it seven, I gather that Leith 5LG was primarily responsible for the members of U.F.O. coming along to the meeting this month and laying everybody in the aisles. If this is so, I take off my hat to him and give him a pat on the back. It was a lecture and a half, Leith.

Just as I was putting these notes to bed, ten little green men have just marched across my window sill, with the front one, a very truculent young man, demanding that he be taken to meet my leader. I have tried to convince him that Pincott 3AFJ is in VK3, and this is VK5, but nothing doing. I also explained that Ken and Joan have just decided to keep a recent visitor from outer space, a cuddlesome little person I am led to believe, and therefore would not be interested in any more visitors at the moment, but still nothing doing. Oh well, I will shovel the ten visitors into the envelope with the notes, and will that give George 3AOM with the fright of his life when he comes to sub-edit. Oh dear, oh dear, why did I go to that monthly meeting and listen all about those flying saucers??

73 de 5PS—Pansy to you.

WESTERN AUSTRALIA

Well, here we are again, happy as can be, as they used to sing in the good old song of days gone by.

My spies inform me that, as is usual at this time of the year, many of my would-be victims are absent on leave and nobody seems to be putting a foot out of place. All except one guy that is! I understand that Kim Gates suffered burns on his foot in an accident which occurred while attending a barbecue.

Being at the very antipodes, the residents of Albany made a supreme effort to assert themselves as the radio centre of the Great Southern, or so it would appear. Nearly everyone to whom I have spoken in the last couple of months was either about to set sail for Albany or just returning! Perhaps the highlight of the season was the establishment of a six metre net, mainly due methinks to a little arm twisting by Lewis (first harmonic of Doug 6EP). Another visiting fireman ex-Kalgorlie, was Percy 6ZDC, whose holiday was unfortunately prolonged by a spell in hospital.

Hospitals and Doug 6EP have almost become synonymous over the last couple of months. Luckily he was permitted to have his trusty Swan close at hand and succeeded in matching up the bedstead as an antenna, enabling him to maintain his lines of communication. Rumour also has it (as yet unconfirmed) that Doug also carried out some research on various hospital vessels as cavity resonators!

These Kalgorlie types sure get around. John 6ZBY popped into the big smoke (or should it be the big heat?) during the Xmas break. Nice to hear his call on 6 metres again—locally that is.

During the January meeting, those present were afforded the opportunity to ponder a rather absorbing question put by one of the members. It was worded with such skill that I begged a copy of the transcript in order to pass it on to those not fortunate to be present. I have no wish to foul up the very harmonious relationship which exists between the Institute and Radio Branch, so hope this will be taken in the spirit in which it was given.

I quote: "I have a question which is purely rhetorical, and to which I do not expect an answer. Recently the Radio Branch issued a warning to Amateurs, and in particular to those Amateurs who use the v.h.f. bands, against the use of bad language. Particular reference was made to the so-called great Australian adjective. In view of the fact that a recent episode in a British produced t.v. show, telecast by ABW2, featured the great Australian adjective (spoken with a Lancashire accent) 14 times in 25 minutes, is it possible that the authorities have set a certain permissible standard of profanity for public consumption, but will not tolerate the same standard on the comparative privacy of the Amateur bands?"

What do you think? I have only one question myself. What the heck does RHETORICAL mean? Ah well, it's nearly time to start school again anyway.

News to hand that another new settler has arrived on our sun-soaked shores from far off Tassy. VK7DS has decided to cast his lot with the Sand-groppers. Will it be VK8DS soon? Welcome Hugh.

East-West traffic has been fairly heavy of late. Graham 6ZDB returned to Perth for a brief holiday away from the hustle and bustle of Melbourne town. Others who ventured this side of the rabbit proof fence were VK3ZWA, VK3ZOO, VK3ZPQ.

In order to keep our island in a state of equilibrium it was necessary for some of our fellows to rush to the other side! Among those eastward bound was Dave 6WT peddling the family jalopy, and Jack 6RT making like a bird.

Devaluation? Alyn Maschette, alias "Two-bob Maschette," now rejoices under the call sign of VK2ZAX! Pardon my pun.

During the recent gathering of Boy Scouts in Queensland, many Amateurs throughout the world were privileged to have QSOs with the boys in VK4 land. With so many lads under canvas it is only natural that a few little mix-ups should occur. Was it necessary for a gentleman in one of the more southern states to declare to all and sundry that "We'll show you how it really should be done, when our turn comes round." Okay, pal, we'll all be watching and waiting for your spectacular effort.

Congratulations to Doc 3AVM, ex 6AQ, on his recent appointment as headmaster of St. Kevin's College, Toorak. Doc has really been amongst the DX while holidaying at Lakes Entrance and jockeying his new Galaxy.

Congratulations are also the order of the day for Neil 6ZDK, our new Federal Councillor. Good luck Neil and thanks to the retiring member Roy 6RY.

See you later, gang. 73, Ross 6DA.

HAMADS

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Freq. coverage: 80 mx, 3.4-4.0 Mc.; 40 mx, 7.0-7.6 Mc.; 20 mx, 14.0-14.6 Mc.; 15 mx, 21.0-21.6 Mc.; 10 mx (A), 28.0-28.6 Mc.; 10 mx (B), 28.6-29.1 Mc.; 10 mx (C), 29.1-29.7 Mc. Triple conversion: 1st i.f., 3.4-4.0 Mc.; 2nd i.f., 1650 Kc.; 3rd i.f., 55 Kc. Sensitivity: a.m. less than 1 μ v. for 10 db S+N/Noise Ratio; c.w./s.s.b. less than 0.5 μ v. for 10 db. S+N/Noise Ratio. Selectivity: 0.5 Kc., 1.2 Kc., 2.5 Kc., 4 Kc., all at -6 db. In-built 100 Kc. Crystal Calibrator (crystal supplied). **\$461.50.**

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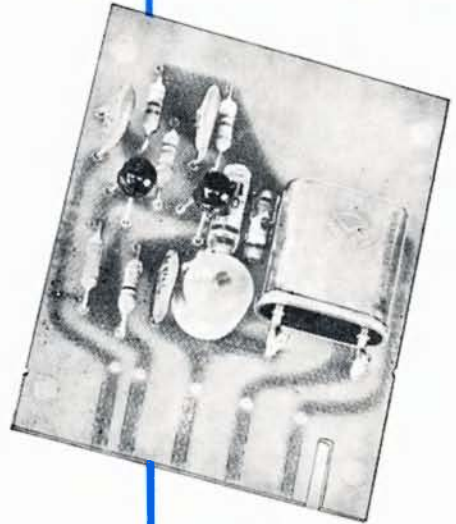
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amateur radio

Vol. 36, No. 4
APRIL
1968

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30c

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100-0-100 uA.	\$5.50	15 volt d.c.	\$3.75
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6AN8	\$1.89	6N3	88c
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6AU4GT	\$1.18	6V6GT	\$1.35
6AU6	\$1.05	6X4	75c
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6BA6	\$1.08	9U8	\$1.35
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6BE6	\$1.09	12AX7	\$1.25
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1K7	50c	7C7	90c
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1LN5	50c	12A6	50c
1M5	50c	12A7H	50c
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6AG7	\$1.25	57	50c
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"AMATEUR RADIO"

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REGION III. CONGRESS

Easter 1968 and the Federal Convention in Sydney will have more than the usual significance for the Wireless Institute of Australia for, by the time this is read, final preparations will have been made to receive visitors from the National Amateur Societies of Japan, Philippines, New Zealand and U.S.A.

Sydney and the New South Wales Division will be hosts for the inaugural meeting of the Region III. I.A.R.U. Congress which was initiated by Federal Executive following discussions by Federal Council at Hobart last year.

In many respects this meeting can be likened to the initial meeting of what became the I.A.R.U. nearly 45 years ago when nine nations met in Paris to discuss the formation of an international association of Amateurs. Although techniques have changed, the original concepts are still as true today as in 1924—"the affecting of co-operative agreements between the National Amateur Radio Societies of the world on matters of common welfare; the advancement of the radio art; and the representation of two-way Amateur Radio communication interests in international communication conferences."

However, with the formation of the I.A.R.U. accomplished, national societies in other parts of the world have found that mutual co-operation and unified action within their own Regions can lead to a better understanding and possible solution of the problems facing the Amateur Service—convention in Region I, i.e. Europe-Africa, and in Region II, i.e. the Americas, have become, in recent years, regular affairs with the status of Amateur Radio being the better for these meetings.

Region III.—our part of the world—is unique. We are isolated from our neighbours by history and geography; we are part of a Region with a small Amateur population, yet it is significant that three national societies are sending two delegates to this, the inaugural meeting of Region III. It is unfortunate that other societies have not been able to be with us, but we understand their problems.

What then are the reasons for this spate of activity and what does this Congress hope to achieve? The reasons for the activity have been clearly stated in detail in earlier issues of this journal, but let us refresh your memory.

At the next international conference, the Amateur Radio Service, like all other users of the radio frequency spectrum, may be required to rejustify its frequency allocations. Whilst the Service has been well supported by some countries who recognise the benefits derived, this support can be expected to continue only so long as the Service compares favourably with other contenders for frequency space.

The Amateur Service has not received unqualified support from all countries, many of them claiming that other radio services are of greater importance and that allocations to the Amateur Service should be reduced or discontinued. This problem is of particular concern to new

and developing countries which find that few frequencies are available to them for their varied communication needs.

It is, therefore, vitally important that all administrations briefing delegates for an international conference have a sound understanding of the values of the services they are asked to support.

FEDERAL COMMENT

The basic, immediate, and ultimate aim of this Congress, and indeed the preoccupation of any Regional Congress, is to promote, establish and maintain continuing Amateur activity in all countries so that the recognition of Amateur technological and sociological contributions are justification for continued existence.

How this can be done will be the immediate concern of the delegates in Sydney at this Congress, but it can be expected that discussion will include matters of finance, establishment of technical and educational assistance, and other details vital in the implementation of such a far reaching and important goal.

For our part, we see no alternative to a plan for continuing support to our neighbouring Amateur Societies. It is a plan that does not come cheaply and is made more urgent by the belief that some I.T.U. conferences dealing with frequency allocations will be on a Regional basis.

If a Region III. I.T.U. conference was held now, the fate of presently held Amateur assignments in this Region could well be in jeopardy because Amateur orientated administrations would be in the minority—the threat to our allocations could well be within our own Region!

We have established an I.T.U. fund to send an observer to any I.T.U. conference dealing with Amateur affairs, but this is not enough. With the formation of a Regional association this Easter we must continue our personal contacts, and in the same way that Japan, New Zealand and the Philippines were able to send delegates to Australia, we too, must continue the work started. We must be prepared to finance and send W.I.A. representatives to future gatherings held elsewhere in this Region, and at the same time finance and implement Region III. assistance programmes.

PETER D. WILLIAMS, VK3JZ,
Asst. Federal Sec., W.I.A.



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SINGLE LOOP TRIBAND CUBICAL QUAD ELEMENT

Triband Aerial Principle and Some Applications

H. F. RUCKERT,* VK2AOU

WITH the present sunspot cycle near its peak, DX is again possible on 20, 15 and 10 metres. About fifteen years ago only those few Amateurs could successfully work DX who had plenty of real estate for an antenna farm or had enough engineering ability and cash to build a tower with three yagi beams in Christmas tree fashion stacked on top of each other.

With the last sunspot maximum a number of economy style triband aeri- als were invented, known by the call sign of the designers: W3DZZ, DL1FK, G4ZU, various versions of these aeri- als and the one the writer described, which is called VK2AOU beam in Europe. All these beams were described by the proud owners of large full size aeri- als as "compromise", but we are now convinced that some are a very good compromise, and top DXCC results have been achieved with them. In the mean- time about 70% of all successful DX contacts are being made with these shortened beams.

The cubical quad has in recent years joined the list of excellent DX aeri- als, but its popularity is only limited by engineering problems involved to put up and rotate such a monster spider web. A mini-quad would in many cases be the answer, especially if three-band resonance could be had with one wire loop per element.

Experience has shown that an effective aerial is more important than transmitter power (within reasonable limits). Not only the measured or calculated aerial gain is important. This figure would not explain sufficiently the DX results obtainable with a beam compared with a ground plane or di-

pole. The beam brings less noise, less QRM and, if high enough, places the radiation in the right direction to obtain maximum reflected power from the ionosphere.

Knowing that the successful DXer needs some sort of beam, the problem amounts in most cases to finding a reasonable compromise between DX ability of the aerial on the one side and weight and size reduction on the other side. We like to live in peace with the XYL, the neighbours and the local council. That means our aerial must not be considered as dangerous or as an eye sore and it must not hang over the fence of our 50 x 150 ft. block half of which is already covered by buildings. With these limitations in mind, to which we have to add cost and difficulties of erecting the supporting structure and the rotor, most of us will not be in the position to put up a full size 20 metre beam (yagi) or a cubical quad. A compromise, economy style or mini aerial is therefore in most cases the only way out.

The following description of a Tri- band Aerial Principle may be of partic- ular interest because it can be applied to wire dipoles, ground planes, yagi beams and cubical quad aeri- als. The writer developed the principle about ten years ago. It was published in a number of magazines (see Refer- ences) and in the antenna book by DM2ABK.

For the benefit of those who were not with Amateur Radio ten years ago, the principle and its development will be briefly repeated, and the second part describes aeri- als which were developed in recent years by DJ2UT and the writer. Early critics have been satisfied by now that this aerial works. VK2AOU

won 1st place for N.S.W. phone section 1957 VK-ZL Contest. VK2AOU won 1st place for Australia, phone section, in the W.A.E.D.C. Contest in 1958, DL- 8NU made DXCC with 20 watts with the VK2AOU beam, and DL3GY worked 255 countries in 1966 with this beam.

About one hundred of these aeri- als are being used in central Europe, most of which were built by DJ2UT.† These aeri- als were two and three element yagis with the special triband tuning sections in the element centres using a single co-ax. feed line. A number of ground plane aeri- als using this tuning method are also in use, and cubical quads will follow soon.

Interesting features are that these aeri- als do not respond to harmonics, they have only the desired resonances. They are only shortened at the lowest operating frequency, full size or more at the medium frequency and much longer at the highest frequency. They have no heavy blocking tuned circuits near the element ends. These are the main differences comparing this design with the now popular W3DZZ aerial, which are also shortened at the medium frequency, and which respond to un- desired frequencies.

THE MULTIBAND TUNING PRINCIPLE

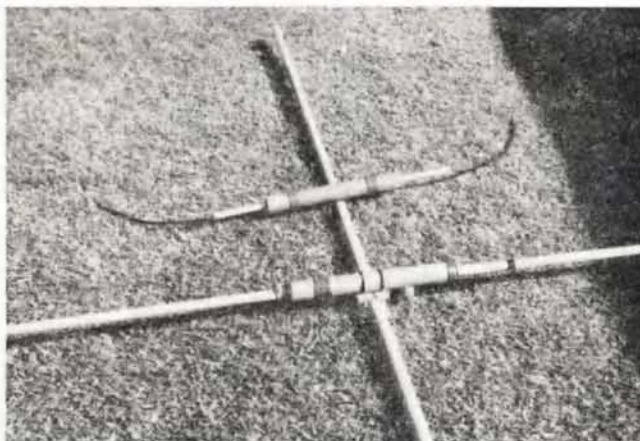
Fig. 1

- Dipole features:
 - Wavelength: λ .
 - Fundamental resonance freq.: f_{r1} .
 - Dipole length: $\lambda/2$.
 - $f_{r1} \text{ (Mc.)} = 300 \div \lambda \text{ (m)}$.

The dipole has the usually unwanted harmonic resonances at $3xf_{r1}$, $5xf_{r1}$, etc.

† Walfried Sommer, 7809 Denzlingen, Kandel Str. 35, Germany.

* 25 Berrille Rd., Beverly Hills, N.S.W., 2209.



Radiator element mounted to boom of VK2AOU's three element triband beam. Note the coil tuning rings. Director tuning section lies behind, not yet mounted. Tuning section from DJ2UT. The cable type tuning capacitors of the director tuning section can be seen.



Beam 30 feet up on not yet cranked up steel mast. Junior op. on mast.



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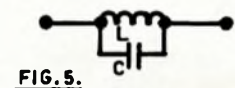
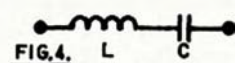
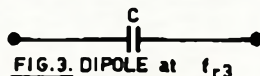
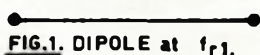
Fig. 2
Dipole electrically lengthened with loading coil—
 $f_{r1} < f_{r2}$.

Fig. 3
Dipole electrically shortened with capacitor at centre—
 $f_{r2} > f_{r1}$.
Both these loaded dipoles have also odd harmonic resonances.

Fig. 4
The series tuned circuit behaves similar to the dipole, but only the fundamental resonance is found, as can be shown with a grid dip meter (g.d.o.).

Fig. 5
The parallel tuned circuit has only the fundamental resonance. f_r is in both cases:

$$f_r = \frac{1}{2\pi\sqrt{L \times C}}$$



TWO-FREQUENCY TUNED CIRCUIT (Mullinband Tank)

Fig. 6
The parallel combination of a series and parallel tuned circuit has been popular in transmitters, because with suitable components a frequency range of 3 to 30 Mc. could be tuned without changing the coils. This circuit shows always two simultaneous resonances, f_{r1} and f_{r2} , which are not necessarily harmonically related to each other.

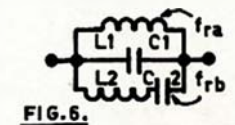


Fig. 7
Two-band Aerial: The dipole replaces the series tuned circuit shown at Fig. 6. L1 and C1 may have any suitable form. C1 may be a piece of cable of the required capacity, but it is not necessary to tune this cable to a particular frequency (G4ZU claim, switching stub). The resonance frequency f_{r1} of L1 and C1 is usually somewhere between the

operating band frequencies (with the dipole element halves disconnected).

- The two-band dipole may have different forms:
- (a) A dipole of wire or tubing.
 - (b) A ground plane radiator and radials.
 - (c) Any yagi beam element, and any number of these.
 - (d) A loop of a cubical quad aerial element, any number of these.

These combinations have always two resonances simultaneously, and can be tuned to work on two bands. The full dipole length is effective on both bands. No unwanted or harmonic resonances occur (3rd, 5th, etc.). L1 may be a closed stub or loop or coil. C1 may be a piece of cable, an adjustable or fixed capacitor.

Fig. 8
The one-loop two-band cubical quad element may be tuned for the required radiator, reflector or director frequencies.

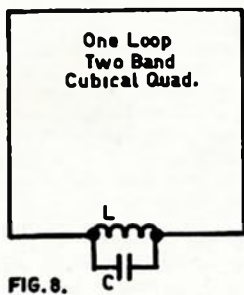
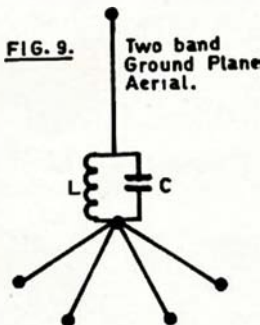


Fig. 9
Also in the case of the two-band ground plane aerial, L can be adjusted to tune the lower operating frequency, whilst C is more effective to tune the higher frequency.



THE TWO FORMS OF THREE-FREQUENCY TUNED CIRCUITS

Figs. 10 and 11
Three simultaneous resonances, f_{r1} , f_{r2} and f_{r3} , occur for any L1-C1, L2-C2 and L3-C3 value combination. The Type-A and Type-B versions give similar results. The three resonances are not necessarily harmonically related nor do they have to be evenly spaced. All resonances may fall within a frequency ratio Δf of less than 1:2 or over 1:3.

TRIBAND AERIALS

The series tuned circuit L3-C3 of the Type-A or Type-B circuit can be replaced by any dipole form, like a simple

dipole, the yagi beam element halves, a single loop of a cubical quad, and the radiator and radials of a ground plane aerial. The dipoles are connected to point I and II of the tuning section.

Figs. 12 and 13

Typical conditions:

- f_{r1} : Between high f-band and medium f-band (without dipole).
- f_{r2} : Between medium f-band and low f-band (without dipole).
- Dipole: Resonance (without triband tuning section) between medium f-band and about 80% of low f-band.

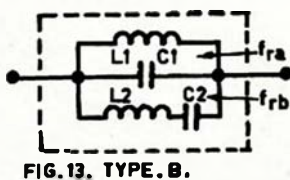
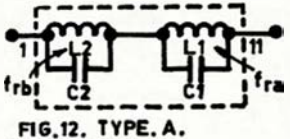
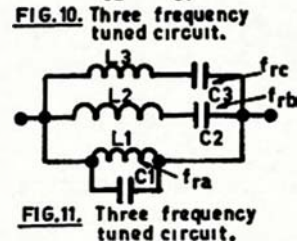
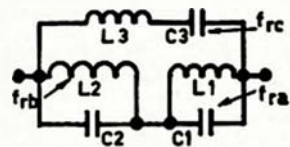


Fig. 14

The Type-A or Type-B tuning sections (Fig. 12 and Fig. 13) form with the dipole element halves a triband dipole or any element of a triband yagi aerial. Similar elements may be tuned to work as director(s), radiator or reflector(s). The radiator or other elements as well may be fed.

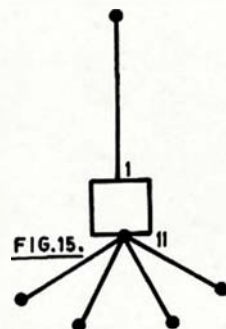
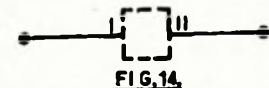


Fig. 15

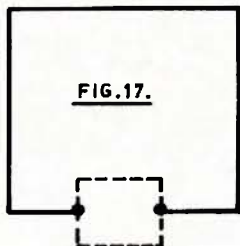
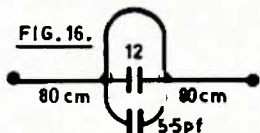
A triband ground plane aerial. Type-A or Type-B tuning sections may be connected to I and II.

Fig. 16

Triband v.h.f. beam element with Type-B tuning section in symmetrical form. Bands at 64 Mc., 102 Mc. and 195 Mc. are covered with this set-up. The tuning inductances are short wire or tubing loops.

Fig. 17

A single loop cubical quad triband element which can be tuned to three bands with the tuning sections shown in Fig. 12 or Fig. 13. Such a cubical quad has only 1/4 the weight and wind resistance of a full size three loop cubical quad of the same mechanical strength.



The mechanical and installation difficulties are many times smaller, so is the cost of the mast, rotor and maintenance. Yes, it is a compromise and the gain is less, but it still puts the signal in good DX company. It is the quad that will be tolerated at many more locations than the big brother presently is. This quad could be used as indoor aerial strung at two opposite room walls. The tuning sections can be switched to change the reflector or radiator function, to make the quad usable in two directions.

The quad is known to be quite effective at less than one wavelength in height, which is the main reason why many quads are better than too low yagi beams.

Triband Tuning: Low f-band resonance depends mainly on dipole length and L1.

Medium f-band resonance depends mainly on C1 and L2.

High f-band resonance depends mainly on C2 and L2.

The aerial must be efficient, because correctly built tuning sections do not become warm, a low v.s.w.r. can be obtained. The radiation pattern shows deep nulls at the sides and the normal beam front-to-back radiation ratio.

EXPERIMENTS WITH TRIBAND ONE-LOOP CUBICAL QUAD ELEMENTS

Example: Desired band frequencies: 80 Mc., 60 Mc. and 40 Mc. Midband frequencies for tuning section (alone) 70 Mc. and 50 Mc.

Fig. 18

a and b—

L1—10 turns, 1.7 cm. diameter, 3 cm. long.

L2—6 turns, 1.7 cm. diameter, 3 cm. long.

C1 and C2—Trimmer, 10-40 pF.

(a) Wire loop = 4 x 1 m. attached to I and II.

Resonances of f_{ra} = 52 Mc., f_{rb} = 70 Mc. (without loop).

Resonances with loop: 40 Mc., 60 Mc. and 80 Mc.

(b) Wire loop = 4 x 1.25 m. attached to I and II.

Resonances of f_{ra} = 52 Mc., f_{rb} = 84 Mc. (without loop).

Resonances with loop: 40 Mc., 60 Mc. and 80 Mc.

c and d—

L1—6 turns, 1.7 cm. diameter, 2.5 cm. long.

L2—4 turns, 1.7 cm. diameter, 1.8 cm. long.

(c) Wire loop 4 x 1 m. attached to I and II.

C1 = 38 pF., C2 = 18 pF.

Resonances of f_{ra} = 42 Mc., f_{rb} = 74 Mc. (without loop).

Resonances with loop: 40 Mc., 64 Mc. and 80 Mc.

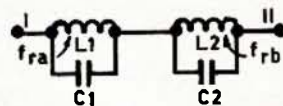
(d) Wire loop 4 x 1.25 m. attached to I and II.

C1 = 32 pF., C2 = 16 pF.

Resonances of f_{ra} = 44 Mc., f_{rb} = 82 Mc. (without loop).

Resonances with loop: 40 Mc., 54 Mc. and 80 Mc.

FIG. 18.



Example: One-Loop Triband Quad Element for 14, 21 and 28 Mc.

Fig. 19

Coil former—3.7 cm. diameter, 8 cm. long.

L1—7 turns, 1.6 cm. long.

L2—5 turns, 1.1 cm. long.

L3—4 turns, 1 cm. long.

f_{ra} = 17 Mc., f_{rb} = 23 Mc. (without loop).

Wire loop—4 x 3.5 m. = 15 m. long, attached to I and II.

Spacing of two one-loop elements: 2.5 m.

V.s.w.r. over all three bands below 1:2.

Type-A or Type-B tuning sections may be used with similar results.

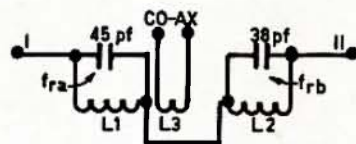
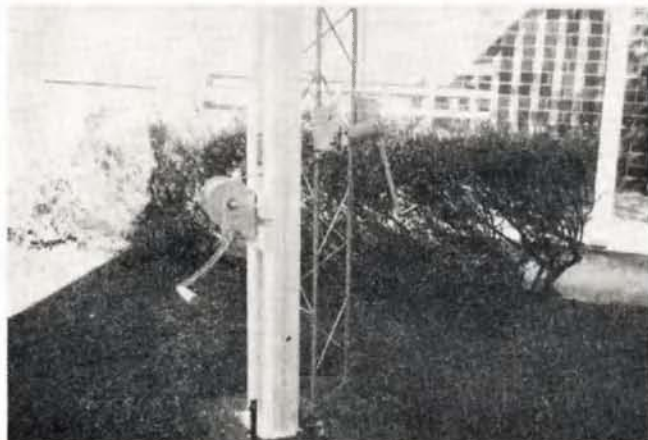


FIG. 19.

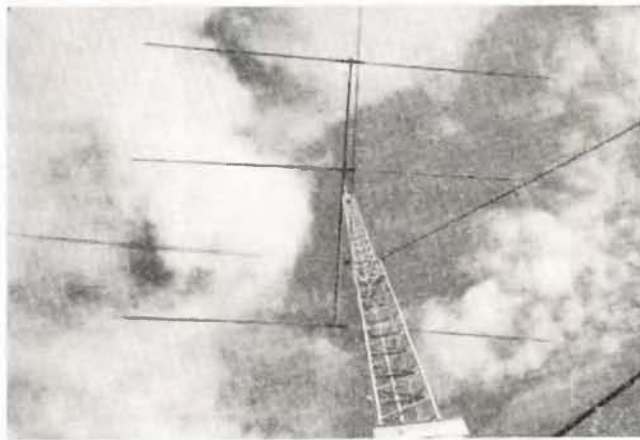
FEEDING METHODS FOR MULTIBAND AERIALS

A simple link coil as shown above may be used. The earlier versions of the VK2AOU beam made by DJ2UT had this link coil and a single co-axial feed line was used. He developed more recently a two element feeder method with a crossed over connecting feeder, to feed also the reflector, which made the front-to-back ratio (reflector tuning) less dependent on the beam height

(Continued on Page 10)



Steel mast with crank up winch, right. Left, 12 feet supporting mast with tilt over winch (boat winch).



Three element triband beam at VK2AOU with central tuning sections from DJ2UT about 55 feet up. A TR-44 rotor is now in use.

A HANDY D.C. SUPPLY FOR THE BENCH

ROLF B. PETERSEN, VK5ZIE

A LONG with many other Amateurs, I felt the need for a flexible general bench supply for development and testing of a wide variety of transistor circuits.

After some thinking and looking around, I came across a Trimax TP1550B transformer, which seemed to be just begging to be put into such a supply. It has four 6.3v. windings, one of which is centre tapped, and one of 5v., all at 3 amps. r.m.s.

I thought that it would be best to keep things quite simple and that a few hours of development and a few more for the final build up would be sufficient. Three months later! I had what seems to be a very useful piece of gear, only, it's not very simple. In fact, when I finally finished it, we will have a fairly ambitious project.

As it stands it has no overload protection, so some care is needed when using it. The overload protection will be added later, probably when I blow up some transistors.

current ($I_{0.90}$) of germanium ones will upset the works.

The small transistors should all be mounted so that they won't be heated by warm components, e.g. power transistors, rectifiers and transformers. The same of course goes for electrolytic condensers. Easy and ample airflow through the unit should be provided.

Now let us have a look at the circuit diagram. The first thing we see here is that there are three supplies. The one in the middle is the main supply which carries the load, and the two are auxiliaries.

The regulated supply at the bottom provides a stable +20v. rail which is used as the reference source. The tranny was hand wound on an existing core.

From the one on top we get 6.2v. which is riding on the output rail and is used as collector supply for the amplifier transistors and the first emitter follower. This is known as a pre-regulator and it greatly improves regu-

little. A 4,000 uF. 50v. condenser is used as reservoir and from it the regulator 2N513B is feeding the load through 40 megohms which gives the meter a 2.5a. range. A spare relay contact at this point keeps the meter disconnected until the first charge-up surge into the 5,000 uF. condenser has passed.

A d.p.d.s. switch serves to convert the meter to a voltmeter and, having a 50v. range, it then monitors the voltage right at the output terminals. This is also the sensing point for the error amplifier. Switch 1b selects a suitable tap on the 1K resistor chain for every chosen output voltage. The 1K pot. at the base of the first amplifier is a front-panel control and sets the exact voltage at the output. It is possible, on the higher ranges, to turn the output voltage down beyond the next lower step, i.e. from 24v. to below 18v. This should not be used as it may overload the 2N513B and, if driven too far, will result in inferior regulation. However, the full range of 6v. from one step down to the next can be confidently used to the full two amp. capacity.

The bottom end of the chain goes via 2.7K and a 2K trimpot. to the +20v. reference rail. On initial adjustment the output selector S1 is set to 6v. and the 2K trimpot. is then used to set the output to just over 6v. with the 1K front-panel control fully c.w. Before that, of course, the 20v. reference supply must be adjusted.

The error amplifier is a differential type and uses four BCY11 transistors in Darlington connection. These four transistors must be thermally strapped together. To do this I used four Philips mounting clips and screwed them back to back in a sandwich fashion. No other heat sink is required at this place.

The 513B is mounted on a commercial heat sink which is insulated from the remainder of the unit. There is no mica insulator between the 2N513B and its heat sink, for better heat transfer. This transistor is driven by two emitter followers, a 2N1183 and a BCY11. The leakage current of the transistor used in place of the 2N1183 must be low, even at high ambient temperatures, to enable the output to go down to zero.

Turning now to the +20v. reference supply, we see that it is a straight forward stabilised supply. It contains the relay and time delay RC combination. There is an OA5 diode included which is normally off and comes into action when the unit is switched off. What happens is that upon switching off, the reference supply discharges more quickly than the 5,000 + 4,000 uF. condensers in the main supply and they will charge the 1,000 uF. condensers in the reference branch the wrong way, which will make the latter ones unreliable after some time. The OA5 prevents the reference rail from going more negative than 0.2 of a volt.

Some experimenting went into the attainment of reasonable temperature

(Continued on Page 18)

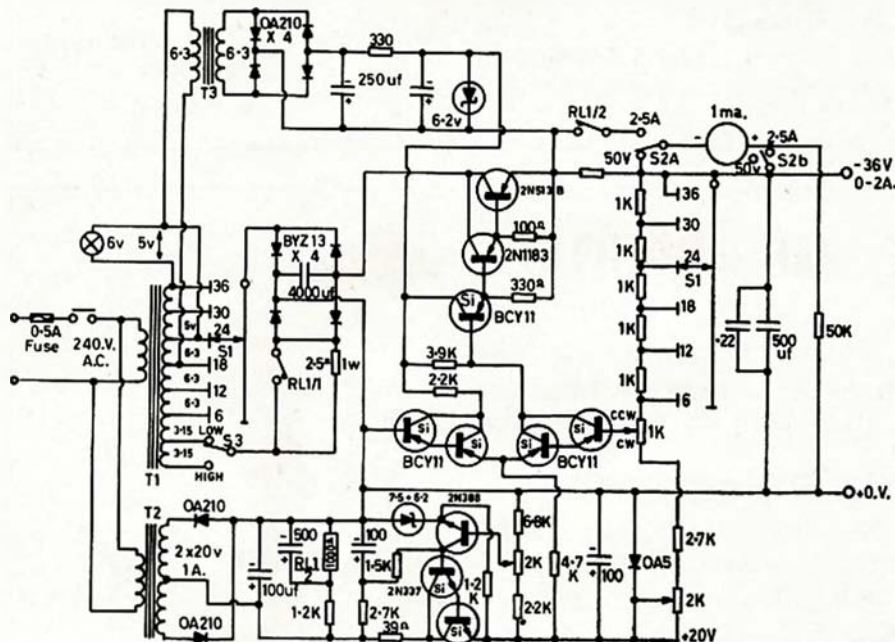


FIG. 1. REGULATED POWER SUPPLY.

Performance is fairly good. The supply will deliver any voltage between zero and 36v. at currents up to two amps. Regulation is better than 0.25%, temperature stability is about 0.1%/°C. or better.

One useful feature is the fact that one can simulate flat batteries by connecting a small value variable resistor in series with the output and adjusting the volts to suit.

The transistors used in the unit are types that had been on hand. Other types can be used, of course, as long as their characteristics are similar. It is important to use silicon transistors where indicated, as the high leakage

of the output voltage. The transformer (T3) can be a t.v. booster. If a main transformer (T1) with an additional 6.3v. winding can be bought or wound, so much the better.

Back at the main supply, we see that the voltage which is applied to the bridge rectifier is increased in step with the selected output voltage. I did this to keep the dissipation in the 2N513B at a comfortable level.

Also in that part of the circuit is a 2.5 ohm resistor, which is shorted out after 0.4-0.5 sec. It limits the switch-on surge current to an acceptable level, thus enhancing the life expectancy of the four BYZ13s and the 2N513B a

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TRANSISTOR RADIO NOISE LIMITER

ROY HARTKOPF,* VK3ZOM

The popularity of transistor car radios means that many are now being used as tuneable i.f.'s instead of the older vacuum tube car radio. There is an added advantage that if a transistorised converter is used, one can have a completely portable self-powered high quality receiver. On 6 and 2 metres, noise is as great a problem as ever and this article describes a noise limiter which has given excellent results over the last two years.

Fig. 1a shows a typical transistor detector and 1st audio stage. A jack for audio input is often inserted be-

there is no clipping at all. When it is at the negative rail end D2 is permanently conducting and D1 is cut off and the receiver is muted.

The advantage of having the shunt diode D2 as well as the series diode D1 is that with D1 alone, if a high voltage positive going spike reached it, the capacitance effect could allow some of it through even though D1 was not conducting. But since D2 shorts circuits these spikes they cannot reach D1 anyway.

The tone control R4 was used as in most cases there is no space to add an

extra control. R5 and R6 should be as high a value as possible and are best adjusted on test for the desired clipping range, and with a positive rail the polarity of the capacitors may have to be reversed. The polarity of D1 and D2 depend on the polarity of the detector diode. They can be any germanium detector, OA95, etc.

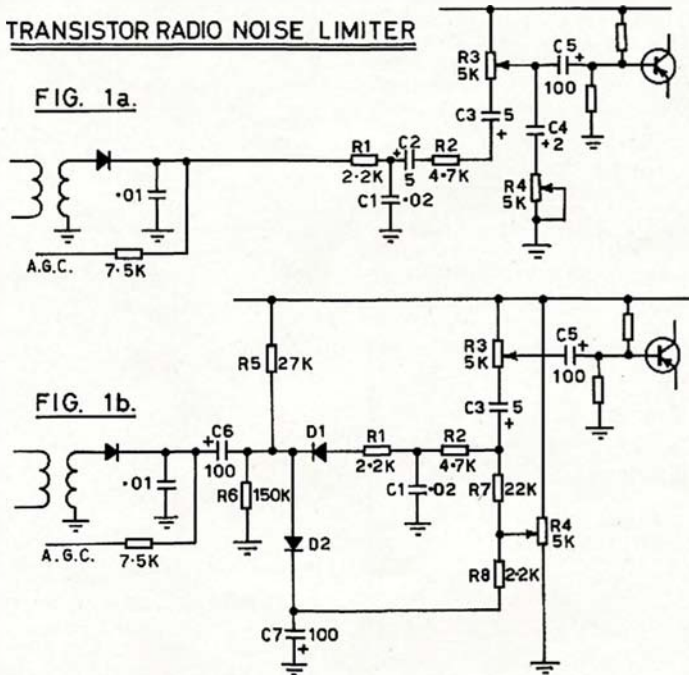
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The receiver consists of an ultra sensitive silver detector which automatically records the result of the contacts. When ways can be found to amplify satisfactorily at this frequency, longer transmission distances may be possible.

TRANSISTOR RADIO NOISE LIMITER



tween C2 and C3. R4 and C4 provide tone control.

Fig. 1b shows the modifications necessary to insert the noise limiter. R4 is used as a voltage supply and controls the level of clipping. C6 prevents the noise limiter from interfering with the a.g.c.

The operation is as follows: The two resistors R5 and R6 establish a d.c. voltage level at the junction of D1 and D2. If R4 slider is adjusted to the same voltage level, both diodes will be on the verge of conduction (only short by an amount equal to their threshold conduction voltage). A positive going spike from the detector diode (which suppresses the negative ones anyway) will block D1 and cause D2 to conduct, thus shorting the spike to earth.

As the slider of R4 is made more positive we have D1 conducting and D2 cut off and the level of the clipping thereby raised. When the slider of R4 is at the earth end (positive earth)



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ADDITIONAL NOTES ON TRANSISTOR REGULATED POWER SUPPLIES

The referred to power supplies featured in "Amateur Radio" in February, April and May issues, 1967. R19 of the power supply (April issue) should be 30 watts, not 3 watts as shown. In Fig. 2 (same issue) the AC127 is shown as a PNP when it is a NPN type, see accompanying diagram. It is suggested

a uF. capacitor wired across the base-collector of the AC128 control transistor TR2. A paper capacitor may also be placed across the output of all these supplies, should the electrolytic across the output go open all sort of funny effects can occur such as oscillation of the more sophisticated of these supplies.

Now referring to the a.c. supply for the 122 set, R6 is the 1 ohm resistor in the collector lead of the 2N441 transistor and R5 is the 680 ohm resistor between the plate of the VR150 and pin 2 of the Set input. A modification to save one zener diode Z1. The cathode of VR150 can be taken to the 12 volt regulated line which goes to the valve filaments and heaters, etc., on pin 10 or 12 of the Set input. R1 is the 68 ohm 1 watt resistor.

I hope in the future to design yet another type of transistor regulated power supply using a variable duty cycle multivibrator controlled transistor switch operating at a frequency somewhere between 1 kc. and 10 kc. This type of supply would be much more efficient than the preceding ones that I have described. Depending on how experiments go as to when this proposed supply will be presented.

—Rodney Champness, VK3UG.

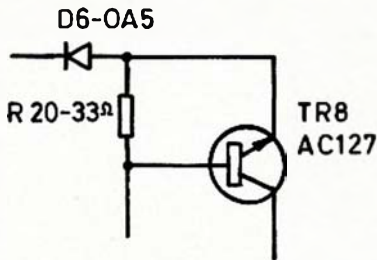


FIG. 2. Correction.

that C6 in the same power supply should be an electrolytic designed for high ripple operation, this applies to the reservoir capacitor in all four types of supplies described in the three articles.

The two power supplies using output voltage sampling may also have a 0.01

SINGLE LOOP TRIBAND CUBICAL QUAD ELEMENT

(Continued from Page 6)

and surrounding objects. A ferrite transformer or cable balun may be used to connect the feeder.

Figs. 20 and 21

The phase relationship of the fields in L1 and L2 vary from band to band, so that too much direct coupling between these coils has to be avoided. It is not necessary, as originally proposed by the writer, that separate link coils and feeder cables be used to couple to L1 and L2. Coupling to the larger coil is sufficient, as found by DJ2UT.

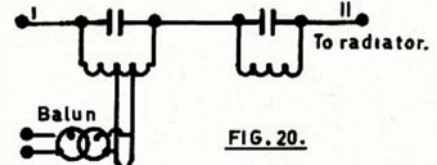
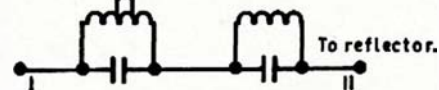


FIG. 20.



5 m. Long-co-ax cable loop.

Coax feeder

FIG. 21.

SOME PRACTICAL DESIGN FEATURES

DJ2UT used short pieces of co-axial cable as capacitors and they are later placed inside the element tubing. The coils and inner capacitor ends are sealed and moulded in resin. The centre section is about 40 cm. long and has 5 cm. diameter. The tuning of the lowest frequency is carried out by adjusting the element length. The medium and highest frequency are tuned by shifting copper rings more or less over the ends of L1 and L2, which can be done from outside without affecting the sealed coils in any other way.

The writer wishes to thank OM Sommer (DJ2UT) and his co-workers for the very considerable amount of work carried out and the many good and practical ideas which made successful aerials with this triband principle.

REFERENCES

- "Amateur Radio" (VK), May and June 1958, by VK2AOU.
- "DL-QTC" (DL), March 1958, by VK2AOU.
- "Funk-Technik" (DL), No. 16 and No. 17, 1959, by VK2AOU.
- "Break-In" (ZL), June and July 1963, by VK-2AOU.
- "Antenna Book," by K. Rothammel, DM2ABK, 1963.
- "DL-QTC" (DL), June 1964, by DL7BB.
- "DL-QTC" (DL), April 1961, by VK2AOU.

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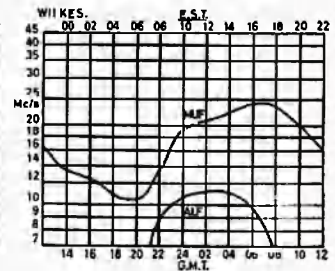
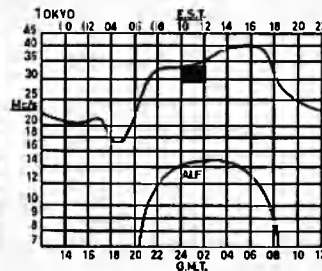
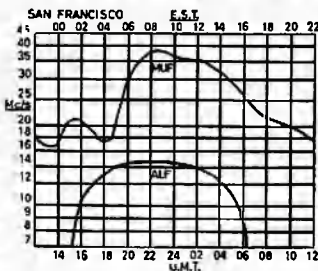
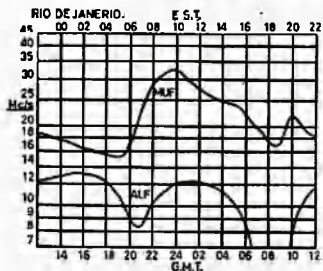
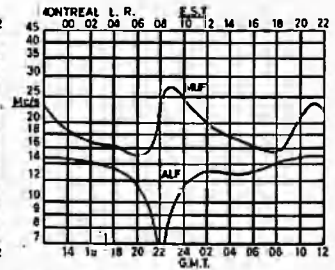
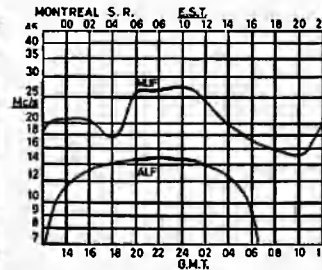
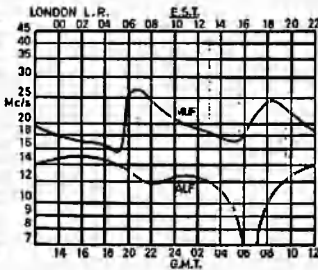
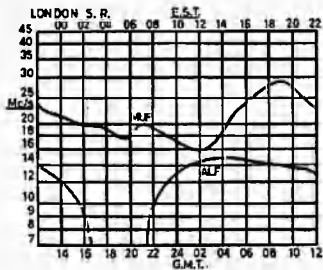
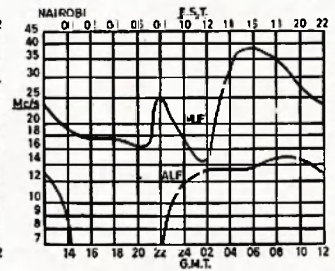
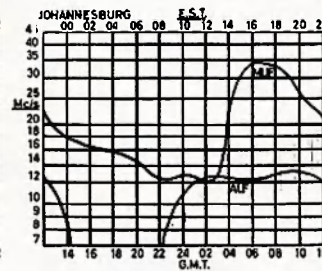
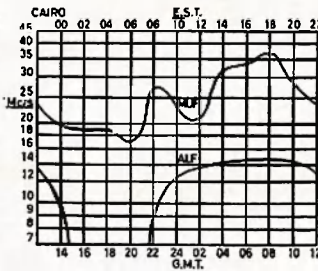
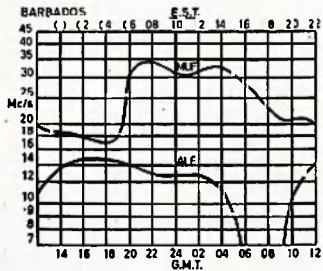
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PREDICTION CHARTS FOR APRIL 1968

(Prediction Charts by courtesy of Ionospheric Prediction Service)



USING A PHASE COMPARATOR

K. C. BICKNELL,* VK6ZCB/JT

This article is designed to help many who will be endeavouring to extract telemetry data from the Oscar Australis satellite. The telemetry takes the form of an audio frequency appearing in the range 500 cycles to 3 Kc.

To obtain accurate data from this a means of measuring the frequency is required, once the frequency is known the use of calibration charts will give details of satellite functions. As can be seen, reasonable accuracy of audio frequency measurement is essential. Methods used can be direct reading frequency meter or digital frequency meter, however these can give inaccuracy under noisy signal conditions. Another method is to use a standard oscillator and compare it with the audio signal from the satellite. This can be done by feeding both into a c.r.o. and forming a Lissajous pattern; this system is difficult when noise on the incoming signal is fairly high. One other point is that not many shacks are equipped with digital frequency meters or a c.r.o. A simple method is to compare the two frequencies by ear but once again under noisy signal conditions accuracy of reading is hard to obtain.

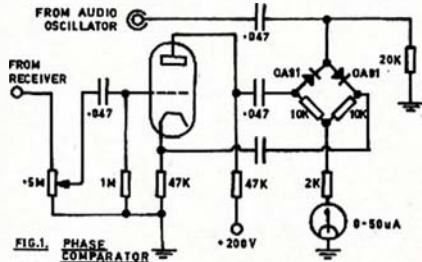


FIG. 1. PHASE COMPARATOR

By using a phase comparator we overcome the noise problem and have a cheap direct reading device that can be used off receiver audio during a satellite pass. This means that those who don't have recording facilities can still extract important information and assist in the project. However, this unit can be used in conjunction with tape, after the pass, to extract data.

There is one problem, however, tape recorders have inherent wow and flutter, which will cause frequency modulation of the recorded signal. To determine the unknown frequency under these conditions the standard oscillator is tuned until the meter deflects negatively or positively, depending whether you are high or low in frequency. As you near the exact frequency the meter will oscillate between negative and positive, and when the amount of deflection is equal in the negative and positive directions the frequency is exactly in phase and a direct reading from the oscillator calibration can be taken. When measuring from tape, the frequency and severity of the deflection will depend on the condition of your tape machine.

When measuring under ideal conditions, such as direct from receiver audio, a steady negative or positive reading will appear on the meter. When the standard oscillator is exactly on frequency the meter will read zero. There will be no reading on the meter until the standard oscillator approaches the frequency of the unknown signal. A sudden deflection occurs when about 20 Kc. off frequency, it is then only necessary to adjust the standard oscillator until the phase comparator unit reads zero.

A short description of the phase comparator (Fig. 1) may help you to understand its operation. It is basically a bridge, of which two arms are fed from the unknown signal, one 180° out of phase with the other, obtained using a phase splitter. The standard source is fed into one leg and the other side of the bridge is fed to a centre zero 50 uA. meter.

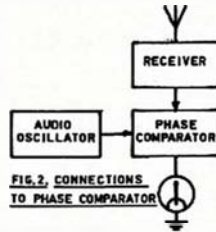


FIG. 2. CONNECTIONS TO PHASE COMPARATOR

The unknown signal being 180° out of phase, will produce no output; this also applies to any noise on the incoming signal. When the standard signal is not in phase with the unknown signal, the bridge will be unbalanced, one diode will conduct depending on the phase relationship between the signals, and a negative or positive voltage will appear at the arm of the bridge being metered. As the two frequencies approach each other the meter will move towards zero. When both signals are in phase the bridge is once more balanced and a zero reading will appear on the meter.

As you can see, unless noise is occurring at approximately the same frequency as is being read, it has no effect on the meter reading. Under test conditions a 1 Kc. tone was set up on a c.r.o. and receiver noise was added until the original signal was not visible, being completely masked by noise. There was no change in accuracy of measurement, and for that matter, no indication of the presence of noise.

I will not add a circuit of the audio oscillator, as many circuits have been published. One in the December "Electronics Australia" should be suitable, but one improvement would be to bandspread the range between 500 cycles and 3 Kc. to obtain greater dial calibration accuracy. Any commercial unit should be suitable, provided its calibration accuracy can be trusted.

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SSB

Sub-Editor: PHIL WILLIAMS, VK5NN
37 Winns Rd., Coromandel Valley, 5051

HAMILTON S.S.B. GATHERING

The January 1968 holiday week-end saw yet another successful Sidebanders' Gathering at Hamilton, Victoria. This was the third of these week-ends, which are held every other year. Local organisation was by Danny VK3ADD, Ern VK3AEM, and Tim VK3TW, all of Hamilton, assisted secretarially by Dud VK2DQ, who, unfortunately was kept at home in Broken Hill by a throat infection.

Sidebanders assembled at the Western Motel on the Saturday afternoon before the dinner in the evening. Several arrivals were filmed and shown on the Ballarat Regional Television that evening. With true journalistic licence the announcer described proceedings

tions governing power output of s.s.b. transmissions.

The second speaker was George VK3VX, who is the Institute's I.T.U. representative and organiser of the "Intruder Watch". He stressed the reasons why band occupancy is so important if we are to retain their use and not have them swallowed up by broadcasters and other unidentifiable intruders.

Geoff VK3AC had a few words of wisdom on further measures for mobile interference suppression. He followed this with a tape of Mr. A. Hancock as a Radio Amateur which gave us all the chance to laugh at "ourselves as others see us".

Finally Ray VK3ATN told us of his 2 metre moon-bounce experiments for which he received his Award of Merit from the A.R.R.L. He did well to tell us so much in the short time available, and concluded with tape recordings of the actual moon-bounce contacts.

Should you contact any VK sidebander who tells you that "It raining in Tokyo is not," you will know that he enjoyed his visit to Hamilton—January 1968.

In the original circuit a simple screen grid dropping resistor was used, but I found it necessary to use a voltage divider, as shown in Fig. 1, otherwise, when you try to bias the 6BA6 grid to reduce its gain, the screen grid draws less current and its voltage swings up to almost full h.t. and the gain does not reduce as required. Adding 100K from grid 2 to earth had the desired effect.

As published, the 6BA6 had a plate load resistor of only 22K ohms, and so its output was very small. Obviously the original was intended to provide an output signal at a level similar to the microphone. Increasing this to the 100K ohm shown gave sufficient drive for the 6C4.

The 6BX6 only amplifies the signal and the network with diodes, resistors and condensers which follows it, provides the control bias for the 6BA6. The a.f. signal is fed to the 6BA6 by the 0.0068 uF. capacitor. The OA85 diodes are nothing special and any germanium diodes with high back resistance will be satisfactory. Those used measured about 0.5 megohms on the ohm meter's "ohms x 1000" scale.

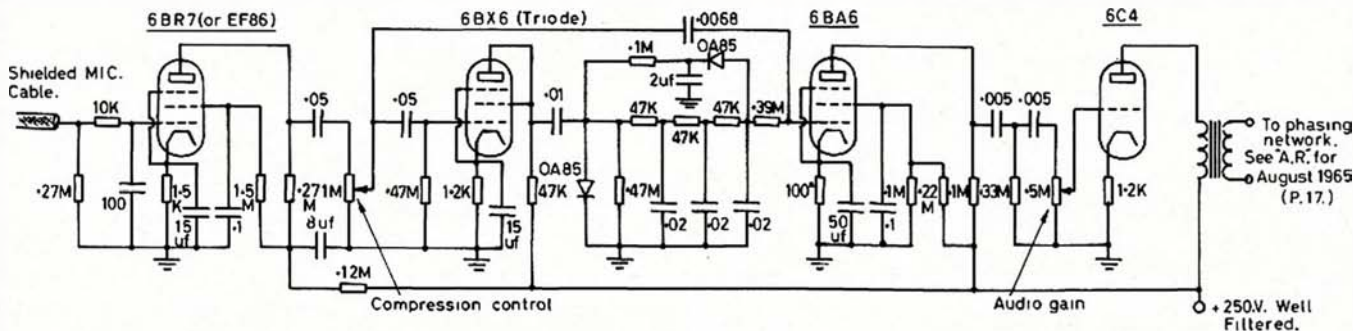


FIG. 1. AUDIO AMPLIFIER FOR S.S.B. EXCITER—WITH SPEECH COMPRESSION.

at the Hamilton "Single-Side-Board" convention, but this was "heavily" corrected at the second showing. How would they react if we were to refer to their "vestigial sideboard transmission"?

The trip to Hamilton was hot for all travellers except for John VK2QJ and XYL Ruth, who flew down from Berri (N.S.W.).

It was much cooler next morning for the technical lectures at the R.S.L. Hall. The first speaker was your scribe with a brief review of current matters of interest to sidebanders, in particular the newly promulgated P.M.G. regula-

SPEECH-COMPRESSION FOR EXCITERS

I have built speech compressors before, the old type with push-pull variable- μ tubes with transformers and full-wave diodes, and more recently the transistor type, to save space. The former are too large, and the latter appear to add quite a bit of distortion which some hours of persistent work did not correct.

Then came the simple valve job in February 1963 "QST," so I decided to build it into the exciter here at VK5NN. I have followed the original circuit rather loosely, and made the following discoveries and changes:

The original amplifier was shown in August 1965 "Amateur Radio" on p. 17. This used a 12AX7 followed by a clipper to drive the 6C4 output stage. Two more valve sockets were fitted to the chassis, the first a 9-pin (noval) and next a 7-pin miniature for the 6BA6 controlled tube. The first change was to re-wire the 12AX7 socket to take a 6BR7 low-noise audio tube—much like an EF86 which is probably more readily available in Australia.

A 6AB4 triode was hard to find so a 6BX6 was used as a triode, but it was necessary to double the plate resistor to 47K to get sufficient voltage out of the stage to bias off the 6BA6.

This compressor appears to do the job without introducing distortion. If you expect to be able to walk around the shack and talk, letting the poor compressor take up the changes in level you will be disappointed, but tests on the air showed that it had adequate control from about 2 feet to 3 inches from the mouth, with normal speaking, although room echoes, the clock, the dogs and kookaburras, all tend to show up between words if the mike is too far away.

The beauty of this compressor is the small space it took to build it into the exciter. It will certainly be useful for shack visitors, especially when "Jamboree of the Air" comes around again.

73 for now, Phil VK5NN.

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TECHNICAL ARTICLES

Readers are requested to submit articles for publication in "A.R.," in particular constructional articles, photographs of stations and gear, together with articles suitable for beginners, are required.

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- ★ Gonsett SB2 2 metre SSB Transceiver with 110 power supply, \$400.
- ★ Imported Hy-gain TH6-DX Thunderbird Antenna with the new BN-86 balun included, \$220. Without balun, \$210.
- ★ Hy-gain TH3-JR with BN-86 balun, \$110. Without the balun, \$100.
- ★ BN-86 Balun, \$17.50.
- ★ Ham-M heavy duty Rotator, \$180.
- ★ Soon available: German 9 Mc. super Filters with 8 crystals, \$40.
- ★ HA-14 Linear Kits with power supply, \$225.
- ★ Heathkit HW32A single band Transceiver Kit for 14 Mc., \$170.
- ★ New-Tronics 4BTV 80-10 metres Vertical, \$70, or without 80 metres top loading, \$55.

Since the absence of Arle overseas, I have been doing my best to meet the needs of all. He informs me that in a short while he will be homeward bound with a stopover in Japan to glean from what is offering there the best in Ham gear and this will be put on the market on his return at our usual competitive prices.

—Alex Outtrim.

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VK-ZL-OCEANIA DX CONTEST 1967 RESULTS

AUSTRALIA AND NEW ZEALAND

Call	Phone Section					Total
	80m	40m	20m	15m	10m	
VK1QL	—	—	990	1590	2710	6290
VK2APK	—	780	8250	4525	3675	17230
VK2KM	—	220	6955	4685	4700	16560
VK2AOU	—	—	2785	630	355	3770
VK2PN	—	—	—	—	795	795
VK3AMK	—	4090	3520	2425	10085	—
VK3AXK	—	—	2885	2930	1500	7315
VK3SM	—	—	—	4210	—	4210
VK3AKS	—	3745	—	—	—	3745
VK3YQ	—	815	1185	—	1970	—
VK3ABA	—	—	—	1175	—	1175
VK3XB	—	870	—	—	265	1135
VK4LT	—	5280	2135	6095	12510	—
VK4FA	—	4410	1985	770	7165	—
VK4SF	—	7130	—	—	—	7130
VK4DO	—	3580	—	—	—	3580
VK4XJ	—	—	—	—	1155	1155
VK6BB	—	3495	3435	2960	9890	—
VK5WP	—	—	—	—	5185	5185
VK6KN	—	4625	—	—	—	4625
VK6EK	—	—	—	4355	4355	—
VK5MF	—	—	—	3815	3815	—
VK5FM	—	—	2845	—	—	2845
VK5ZZ/T	—	—	—	2815	—	2815
VK6XX	110	6965	4810	7435	19320	—
VK6RU	—	8020	3655	7005	18680	—
VK7DK	320	6810	3540	2825	13495	—
VK7SM	765	3980	3850	—	—	8595
VK9GN	—	5350	4070	6030	15455	—
VK9DR	—	1235	3545	4180	8940	—
VK9PJ	—	815	2600	4145	7560	—
VK9XI	—	2185	2045	1165	5385	—
ZL1AIX	165	490	7295	6115	5025	19080
ZL1LIL	—	—	—	2820	3175	5995
ZL1AVO	—	—	—	5475	—	5475
ZL1AAS	—	—	—	—	5340	5340
ZL1AFQ	—	—	4095	—	—	4095
ZL1TZ	—	—	1645	—	—	1645
ZL1AGO	—	1400	—	—	—	1400
ZL2AYI	—	—	5010	—	—	5010
ZL2AZI	—	—	1755	—	—	1755
ZL3QH	—	110	7825	4240	2715	14890
ZL4BO	—	—	165	1950	—	2115
C.w. Section						
Call	80m	40m	20m	15m	10m	Total
VK1GD	—	5485	4370	2395	—	12260
VK2APK	1905	6920	6220	3425	18470	—
VK2BKM	1610	7805	5880	3015	18310	—
VK3AXK	235	1760	6811	5305	1015	15126
VK3DQ	—	1300	5885	1215	—	8400
VK3XB	165	455	5190	1345	—	7155
VK3APN	500	3370	—	—	—	3870
VK3QF	—	3485	—	—	—	3485
VK3RJ	—	3280	—	—	—	3280
VK3ABR	—	—	1375	485	—	2045
VK3ABA	—	—	—	1255	—	1255
VK3KS	55	715	—	—	—	770
VK4SS	—	285	3045	4885	1295	9510
VK4JM	—	—	5960	3365	400	9425
VK4PH	—	1175	4110	990	6275	—
VK4JC	—	—	5095	—	—	5095
VK4XJ	—	—	—	—	4270	4270
VK5FO	100	1510	3885	—	—	5405
VK5FM	—	—	—	5370	—	5370
VK5FH	—	—	4310	—	—	4310
VK5KO	455	935	1180	975	630	4155
VK5RK	—	—	2935	—	—	2935
VK6RU	—	610	6133	4995	7265	19005
VK6WT	—	—	5485	1510	720	7715
VK7SM	—	2125	5945	2525	—	10595
VK7RY	—	—	385	—	—	385
VK8HA	—	55	4025	2885	4825	11790
VK9GN	—	1520	4945	3775	4485	14705
VK9WD	—	55	2370	4100	1255	7780
VK9XI	—	—	3770	2030	—	5800
ZL1AJU	—	450	7710	7285	3520	18965
ZL1DV	—	1425	6380	7030	2170	17015
ZL1LIL	—	—	4600	5495	3440	13535
ZL1APW	—	—	3420	3605	2385	9410
ZL1VD	—	440	3305	1405	990	6140
ZL1TZ	—	—	3200	—	1960	5160
ZL1HW	—	—	—	5155	—	5155
ZL1HV	—	—	2460	680	830	4595
ZL2CD	—	1215	4200	4185	—	9600
ZL2DM	—	—	5585	—	—	5585
ZL2AZI	—	—	410	—	—	410
ZL3QH	—	—	8190	5340	2330	15860
ZL4BO	—	210	1150	7025	6220	15625
ZL4OP	—	—	—	—	2115	2115

Listeners' Section

Call	Phone:		Total
	WIA	R.P.T.	
VK2-	—	—	—
WIA-L2074	—	—	580
VK3-	—	—	—
WIA-L6021/VK3	—	—	16215
R.P.T.	—	—	1345
VK4-	—	—	—
WIA-L4144	—	—	12050
VK5-	—	—	—
WIA-L5080	—	—	925
WIA-L5086	—	—	325
VK6-	—	—	—
WIA-L6042	—	—	8945
WIA-L6038/P	—	—	540
VK7-	—	—	—
WIA-L7031	—	—	2145
ZL-	—	—	—
ZL149	—	—	18980
VK3-	—	—	—
WIA-L8042	—	—	6515
VK6-	—	—	—
WIA-L6042	—	—	11700
OVERSEAS			
Phone Section			
Oceania			
DUIFH	16440	KH6IJ	16359
KOILL/KG6	3150	W3DWG/VR6	188
KG6AQI	4611	VR2DK	2530
North and South America			
HP1JC	6512	WA4PCP	138
KP4CK	1906	K5JEF	1749
LUIDAB	1898	WA8EPQ	14625
PY2SO	2010	KOGJD/6	12768
TG3IA	80	WBALK	8897
VE8IN	3103	WBSVL	814
VE7ABG	4051	W6ISQ	627
W6ACUJ	8017	W6QJW	351
WA0EMS	4710	W7SFA	9287
KOHGW	468	W7YEX	62
W1BII	198	W8LKI	2389
K2DJP	2376	W9CKK	441
W2IUV	245	YV1EL	2240
WANBV	5870	YV5BPJ	2200
W4HOS	232	—	—
Japan			
JAIADN	2146	JA5LI	2080
JAIJNM	189	JA5PU	1541
JAIJNW	168	JAGAD	4686
JAIJSJ	168	JAGAF	4456
JAIJVV	75	JAGWI	1881
JAIJNZ	10	JAGATV	1241
JHIGTQ	8	JATCDL	5949
JAIJNK	3	JA7FC	4401
JA2FTJ	890	JA7DX	756
JA2IA	920	JA8SW	1786
JA2HFB	75	JA8AM	480
JA3GRO	72	JA8BM	320
JA4FM	804	JA8GR	12
JA4QR/5	450	—	—
Asia			
UA9OH	1287	ZC1CN	2200
UC6AW	10	EP2BQ	2820
Europe			
CT1MW	266	OH2GU	108
DJ2MV	500	OH7PI	5096
DJ2TL	7140	ON4DE	960
DJ2TO	88	ON5KY	676
DJ4AX	3255	OZ3KE	372
DJ6TK	138	OZ4FF	876
DL1AM	18	OZ6RH	940
DM2AD	1400	PA2NT	2
DM2CZL	2670	PA2VE	9
F3II	270	SL1CP	90
FYKWF	2964	SM2AGD	912
GS1AE	897	SM3BS	48
G3KSH	182	SM4CGM	280
HA0LC	13	SM4ARQ	18
HA1SB	10	SM5API	3981
HA5FE	8	SM6AEK	3510
H89AKJ	16	SM7CRW	2441
H89DX	112	SM8WB	456
WG0TA/LA	5760	SM9BUD	540
OH1UR	40	SP5BT	42
OH2BAD	52	YO3ZM	80
OH2BR	189	OX3BX	1170
U.S.S.R.			
UA1KBW	2680	UA4KED	336
UA2KBD	224	UB4KMK	5120
UA3AVV	296	UB5WJ	732
UA3AYN	175	USARTEX	432
UA3DR	648	UC2AA	5088
UASKBO	4056	UC2BF	182
C.w. Section			
Oceania			
FO8BJ	17	VR2DK	1770
KH6IJ	7200	—	—

North America			
Call	Phone	Total	
VE8AU	1180	W5BUK	1890
VO1FB	60	WA8EPQ	14820
W1EVT	9728	W6LCC	8874
W1BII	3208	W6GPK	4928
W2LWI	4878	W6YV/W6JU	3120
K2COR	368	W7FGX	14608
W2NRV	113	W7SFA	11310
W6RWN/8	6014	W8DMWF	—
W3MFV	1552	W8MWF	45
W3DFJ	1185	K8MXX	—
W3VKD	612	W8KYD	—
W3QOR	224	W8KXX	574
W3UHN	38	W9IHN	490
W3CBF	6	W8LKI	204
W4NBV	3796	W9QWM	272
W4HOS	819	WA0CJU	1170
W5WZQ	7954	—	—
South America			
HC1TH	1008	PY2OU	132
PY2BJH	1282	—	—
Japan			
JA1MIN	4611	JA3FYC	741
JA1ADN	4538	JA3GRO	270
JA1THL	2805	JA3HCJ	260
JA1JGK	2064	JA4BJO	2116
JA1SJV	644	JA6BFN	650
JA1WVY	288	JA4AQR/5	189
JA1BSB/1	60	JA6GPR	270
JA1PIG	30	JA7CDU	5270
JA2LA	1580	JA7ARW	1024
JA2ITH	964	JA8CEU	358
JA2HFB	560	JA9BGW	840
JA2AUV	385	JA9BFM	240
JA3YKM	2772	—	—
Europe			
DL7AA	6978	OH2BDV	484
DM2AND	3240	OH5RZ	374
DL8KJ	2100	OH2BAH	300
DM2CZL	1980	OH2WO	288
DM3SBM	1453	OH7NW	144
DJ3WU	1892	OH2BAD	114
DM2AUC	1618	OH5WH	108
DM2BJD	432	OH2YL	96
DL1AM	380	OH2BR	80
DJ6TK	272	OH1UR	18
DM3YPD	232	OK2RO	638
D			

Moon-Bounce Schedule

The following information was received from the Foreign Section Editor, V.E.R.O.N. V.h.f. Bulletin, Schiedam, Holland (Box 13).

SPECIAL BULLETIN

From: Crawford Hill V.h.f. Club, W2NFA, Homdel, New Jersey, U.S.A.

Issued: January 10, 1968.

Subject: EME TEST—An EME Test is scheduled for April 12-14, 1968, on 1296 Mc. All stations having adequate 1296 Mc. equipment are invited to participate. Schedule request will be honored in advance by mail. Please state equipment capability.

An alternate test period is also provided in the event that local weather or technical difficulties prevent operation on the above dates. The alternate test periods will be April 19-20, 1968.

Station equipment at W2NFA: Transmitter power, 200 watts minimum output; transmitter frequency, 1296,000 plus or minus 5 Kc. Mode of transmission, c.w. or f.s.k. Antenna, 80 ft. parabolic reflector, estimated gain 44 db. above isotropic. Polarisation, right circular transmit, left circular receive (I.R.E. definition). Receiver n.f., 3 db.

Moon visibility at W2NFA (40.1 degrees N, 74.2 degrees W):

Moon Rise 2300 GMT, April 12, to Moon Set 1028 GMTH, April 13. (Friday night orbit—we may start late).

Moon Rise 0018 GMT, April 13, to Moon Set 1057 GMT, April 14.

Moon Rise 0620 GMT, April 19, to Moon Set 1520 GMT, April 19.

Moon Rise 0705 GMT, April 20, to Moon Set 1832 GMT, April 20.

Procedure: Echo testing will commence at moon rise and continue for one half hour prior to any schedule. Estimated echo S/N in a 1 kc. bandwidth is plus 11 db.

All reports of reception will be greatly appreciated.

Official liaison station: WB2NDH will assist as official liaison station on either 14,235 kc., 21,385 kc. or 28,690 kc.

ATTENTION VE.FEBERS

During the early months of 1968, Iceland will be represented on 144 Mc. From approximately 25th Jan. to 15th April a station will be in operation at Keflavik on the 7, 14, 21, 28 and 144 Mc. bands, using maximum legal power (150 watts input). Sufficient system gain should be available to almost guarantee contact with the U.K. on 144 Mc. Skeds with other countries will be desired.

Publications Committee Reports

February Meeting.—The committee received correspondence from VKs 2ALK, 3AHS, 3ASC, 3AMK, 3ZGC, 3ZKC, 4ZAL. Technical articles arrived from VKs 2AOU, 2JR, 3UG (3) and 4EM. These contributors will, as usual receive acknowledgment through the mail.

It was decided that we would in future hold our meetings on the first Monday in the month unless the second Monday falls no later than the eighth of the month. By this means, we can avoid late meetings and the exclusion of monthly reports through meeting nights falling due after "A.R." has been passed to the printer.

The financial position of "A.R." was considered, and as a result we resolved to publish fewer pages for the next few months and to approach Federal Convention for a price increase. The future of "A.R." depends on their decision.

After reviewing all the technical articles published in the previous year, it was decided that the Awards for Technical Articles should be made to Messrs. K. A. Kimberley and F. T. Hine. Many names were considered for the Higginbotham Award. It was agreed that this award should go to Ian Berwick, VK3ALZ, as recognition for his consistent submission of articles on original work and research he has done.

March meeting.—Technical articles were received from VKs 2ZPM and 6ZCB, whilst correspondence was received from VKs 2AFD, 4ZAL, 4ZIM and Owen Mace of Project Australis.

Discussion centred round the unsatisfactory position with the mailing service, and the possibility of making a change will be again investigated. A number of letters have been received on the subject of the new regulations and particularly the code speed requirements. These are, at the time of writing, with Federal Executive for vetting, and will all be published in the May issue.

A HANDY D.C. SUPPLY

(Continued from Page 7)

stability of the 20v. rail. I found a fair solution by using a 6.2 + a 7.5v. zener diode together with a germanium transistor, the 2N388, as amplifier.

All three supplies rely on a charge of the reservoir condenser to near peak transformer voltage for proper performance. Therefore, the transformer diode combination must have the required peak current capabilities.

Switch 3 is left in the low position for light loads and is put into the high position if the output voltage drops under load. There is a possibility that the output may drop under high load in the 6v. position of S1. If that occurs, the lead from S1a pos. 1 can be connected to the 12v. tap and the switch No. 3 put to low, thus applying 9.45v. to the rectifier.

The top supply, or pre-regulator, keeps a more or less constant current in the 3.9K collector resistor of the amplifier. This current is then distributed between the base and collectors connected to the right hand side of 3.9K according to input voltage level and load and Mr. Kirchhoff.

The first emitter follower, the BCY11, also benefits from a constant collector supply.

Now then, with a fairly well stocked parts shelf, some patience and the above words, plus circuit, you can, if you wish, go to it. Shouldn't take you three months.

SUBSCRIPTIONS DUE

All members of the W.I.A. are reminded that annual subscriptions are now due and should be paid promptly to their Divisional Secretary. Non financial members will not receive a copy of "A.R.," and back copies may not be available upon request. To preserve continuity of your files of "A.R.," please pay your annual subscription now.

VK-ZL-OCEANIA DX CONTEST

(Continued from Page 15)

Listeners' Section

A3942	2074	REF18783	1296
A5224	3082	SP2-7143	380
BR8-26481	6264	SP1-7055	80
GW7796	114	UA1-74512	816
DL12080	3004	UA3-37602	460
DL10101	44	UA3-12982	678
DM2542/L	126	UA4-14144	56
DM2589-M	320	UB5-068-3	58
DM2468-N	928	UA9-2847/UA3	1240
DM0772/J	18	UA8-9721	448
DM2164/F	18	UB5-5970/UA4	1274
DM3696/F	182	UB8-8451/UL7	968
DM4029/L	616	UQ2-037-10	1864
DM2109/M	1388	UQ2-22421	1022
HA3-153	60	UB5-48067	4600
HA6-020	280	VES-11806	24
IT1-12567	720	VU-SWL0020	620
JA7-1819	868	WPE2PZD	1120
JA0-1820	1562	WPE2MLU	1708
ONL-2013	1204	WPE7BLN	2228
ONL-388	10912	WPE8A	560
NL819	585	W9-6260	43
REF17535	360	YU2RS-233	410

Check Logs

E15F	OZ7KV	ZS6D
JA1MIN	PZ1CQ	SM7MO
JA7FC	PZ2AH	SM5BXP
LZ1YW	SP2BMM	PA0JPC
OE3WVB	UA3KBA	G3WP
OH3NY	UB5FG	DM4HD
OH5VY	VK3HL	DM3WSO
OH5SM	W1WY	DM3BE
OZ3GW	WITX	DM2BTO
OZ3PO	W4AZR	DM2BLJ
	Y0AKCA	

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DX

Sub-Editor: ALAN SHAWSMITH, VKASS
35 Whynot St., West End, Brisbane, Qld., 4101

Conditions seem to be holding up on all bands. Ten is a little quiet and the signals seem to lack strength. 80 also is not showing much life. Just the odd European around 1830Z. Fifteen is still open day and night to here and there and is not far behind 20 as the best band. Some Africans have been workable on 7 Mc. around 1900Z, but Europeans at this time are notably absent. This equinox period may help live up things a little as it has been prone to do in the past.

NOTES AND NEWS

Tadzhik: UJ8AZ 14024 0425.
Pitcairn Is.: VR6TC has a sked with W50LG each Monday at 2100 on 21350. Call W50LG if you want a QSO or write to Box 261, Grapevine, Texas. This arrangement has been in operation for some years and works out okay.
Ivory Coast: TU2BX on 14025 kc. about 1145Z.
Rio de Oro: EA9EJ, Justo continues QRV 14113 s.s.b. 1758, 14195 s.s.b. 1915.
Kerguelen Is.: FB8XK 14040 c.w. 1630, 14090 c.w. 1810. QSL via FR7ZD.
Galapagos Is.: HC8RS, 14150 s.s.b. 2330.
Gulf of Fonseca Gp.: HR4SN 14151 s.s.b. 0300.
Salvador Navarrete P.O. Box 2.
Volcano Is.: KG6IC, 14250 s.s.b. 0749, 0950.
Dora also operates 21405 and 28580 s.s.b.
Mauritius Is.: KG6IF 14250 s.s.b. 0756.
Bonin Is.: 14250 s.s.b. 0832, also 21410 s.s.b. 0151.
Sao Luis: PY8NB 14130 s.s.b. 1900.
Rio Muni: EA0TU 3596 c.w. 0530, 3600 s.s.b. 0535, 21005 c.w. 0655, 28558 s.s.b. 1445. Albi's QSL manager is HB9AHA.
San Andres: HK0BKW, Fred, 14228 s.s.b. 1945, 14179 s.s.b. 2222.
Palmer Archipelago: KC4USP, 14226 s.s.b. 0750, 21235 s.s.b. 1950, and often around 14330 s.s.b. QSL via 5130 Hillcrest Dr., Clarence, New York 14031.
Midway: KM6DE, Box 43, F.P.O., San Francisco, Calif., 96614. KM6BI heard 21340 s.s.b. 0300. QSL same as for KM6DE.
Crete: SV0WL 14200 s.s.b. 0840, 21258 s.s.b. 1723, 28550 s.s.b. 1626. QSL via W2CTN.
Rhodes: SV0WE, Mac, 21303 s.s.b. 1123. SV-0UW 28700 s.s.b. 1005. P.O. Box 66, Rhodes.
Mauritius: VQ8AI is ill with heart condition and would appreciate letters. Drop him a line, he has given many Hams their first QSO.
Raoul Thomas, Thompson Rd., Vaccas, Mauritius.
Ocean Is.: VR1L 14238 s.s.b. 0813, 14253 s.s.b. 0830, 14277 s.s.b. 0815, and reported U.S.A. 21300/400 s.s.b. week-ends 0100/0430.
Greenland: XP1AA, Frank, 14225 s.s.b. 1615. QSL to CMR 1279, A.P.O. New York, N.Y. 09023.
Algeria: 7X0AH, Harry is on two or three times each week—on the YL Int. S.s.b. System 14332 Kc. at 2000Z, stays on an hour or so. QSL to P.O. Box 2, Algiers, Algeria. (Wants two I.R.C.s and light-weight envelope for reply.)
Cape Verde Is.: CR4BL, Melo, 14253 Kc. at 0203Z. P.O. Box 64, Prala, Cape Verde Is. Also CR4BC, Julio, 14222 Kc. at 2300Z. CR4BB 28070 1700 and later.
Central African Rep.: TL8DL 14196 kc. at 1925Z.
Cyprus: ZC4RB, Rolly, 14210 Kc. at 1400Z.
Faeroes Is.: OY5NS 14202 Kc. at 2000Z.
Falkland Is.: VP8JR 14005 Kc. at 2220Z.
Fernando Poo: EA0FP 21004 1141Z and also 1719Z.
Franz Josef Land: UA1KED, 14053 c.w., with the routine QSL address, Box 88, Moscow.
French Polynesia: FO8AA, Tahiti, 14014 Kc. c.w. at 0745Z.
Fanning Is.: VR3I is expected to be the call for KP6AP/K6CAA while on Fanning Is. Those who have assisted ED have their schedules for individual QSOs. Others should not have any difficulty in working him because he expects to be there for a couple of weeks.
Gabon: TR8AC on daily 14184 Kc. listening 14205 Kc. about 2130Z.
Gibraltar: Jake ZB2BC 14194 Kc. at 1420Z.
Republic of Guinea: W1EWT has cards for several TG1A contacts of Sept. 1965 made by "W" stations. Send s.a.s. to W1EWT.
Iceland: TF2WKP daily 2000/2200Z, 14195 Kc. listening 14210 to 14220 Kc. QSL: E. Daigre, Box 22, U.S. Naval Command Stn., F.P.O. N.Y. 09571. Worked here 14040, 1930Z.
Iraq: Y12AC heard 14202 Kc. c.w. 2145Z.
Jan Mayen: JX6RL at 2125Z, 14218 Kc. QSL via Norwegian Embassy, Reykjavik, Iceland.

Chagos: VQ8CDC QRV from Garcla Delgo Is. 14 s.s.b. 1600. No other information.
Cuba: CO8RA 14198 1840. He listens in the U.S. phone section 14200 plus.
Ghana: 9G1EV 14238 2300.
Guyana: 8R1S is a YL named Maggie. 14238 0200. QSL WA4UOE.
Lesotho: 7B8AR is ex-ZS8L. QSL W4BRE.
Kirghiz: UM8FZ 14170 0200.
Leeward Is.: VP2IS in St. Lucia, 14220 1900.
Malagasy Rep.: 5R8AX 28810 1700. QSL to TG9EP.
Mozambique: CR7IZ 14018 0300. Also worked here 7006 1930.
Ruanda: 9X5AA 21310 2000. QSL P.O. Box 28, Kigali.
Somali: 6O1GB 14214 1400.
S. Georgia Is.: VP8IR 14205 2300.
Svalbard: JW5YG 14210 2200. QSL via Norwegian Bureau.
Nauru: VK9RJ will be active for two years, so everyone should get a QSO. 14 s.s.b./c.w.
Brunei: 9M2BD, 9M2NF, 9M2XX and HS3DR plans to make the trip and operate during April. The call will be VSSRS and all bands will be used, including 160.
South Yemen Rep.: New prefix for here is said to be 7O (Seven Oscar).
Mongolia: JT1KAA is active s.s.b. 14210 Kc. around 0900Z. c.w. on various bands.
Wrangel Is.: It is reported that there is no legal station active from here. UW3FD is unknown in the Moscow area.
Cayman Is.: ZF1YX is active s.s.b. 14170 Kc. around 2300Z. Will answer c.w. calls.
Bouvet Is.: N.R.R.L. Traffic Dept. states that the call 3Y0EB has not been issued.
South Orkneys: VP8JH Bud replaces VP8JD as from 26th Jan., '68. Bud is active around 1900-2300Z, c.w. 21054, 14016, s.s.b. 14127, 14186.

ACTIVITIES

Dave VK3QV reports much line noise on ten due to the hot, dry spell, but did manage these when the band was useable. 28 s.s.b.: DJ7BD, DM2CDL, VE6AJ, VE7IQ, VR1L, 9J2DT, also lots of Js and all the W areas. Dave reports that 9J2NW, Tony Willis, will be QRT very soon from N'dola.
Merv VK4DV reports from the "Wet" that conditions are not too bad. These were logged on 20 s.s.b.: FG7XX, 9N1MM, SP6AH, VK0GP, PJ3CC, VK0JW, HC1SJ, VY4UE, PZ3BW, PJ2CE, ZP3AL, VQ8DH, VE3GJY, KC4USA, VE8BSJ, 4STPB, UT5LE, SP9ANH, VR3DY. On 15 mx: CE0AE, MP4MBB, DJ6NE, DL5AO, SM0TG, ZE1AV, ZETJR, ZS1CD. QSLs received: MP4MBB, VQ9JW (Aldabra), 4S7BR, VS9ARS, PZ1BW.
Dud VK4MY lists the following, mainly on 20 mx. S.s.b.: MP4MBB, KG6IF (Marcus), JT1KAA, MP4BBA, UF6CR, CE6EZ, VP7NH, UG6VA, HL9TV, 8F6AF, UW9AF, KG4AN, UA2AO, ZS2RM, DU9FC, IS1RUA, VP8IU, FG7XL, CP8AO, CR4BC, KG6IC (Iwo Jima), KG6IG (Bonon), YS1XEE, 20 mx c.w.: YJ8BW, UM8AP, LZ2KPD. Dud reports that Hege VU2DIA will be leaving the Andaman Is. in April for Goa. This latter is now no longer a NEW country.
Barry VK5BS has picked up a few nice ones on 14 c.w. They are YV5CKJ, JT2AB, FG7XX, VQ9B, OA4UO, 6Y8GS, UQ2KBC, AF5HQ, XW8BP, TG0AA, EP2BQ. Barry has received the QSL of H18XAL for an 80 mx QSO.
"KK" VK6LZ, who is ex W3ZVK, DL4IZ, VK2BKX and currently WA9RYN, breaks the ice in this column with a nice list of DX worked on 20 s.s.b., such as UW3UJ, U18LC, EA2DV, HS4AK, ZS5JY, EL2AB, YAI DAN, HS3TM, T2PAS, VPFNA, CR4BL, CP5CC, VPTNS, FR7ZD, CN8BB, EL2AK, FO8BK, YN1GLB, KC4USA, 3V8BZ, 9L1GQ, CR3DY, EL2AK, TG9EP, VR4CR, CE8AA, VP7NV, 9V1NR, AP2MR, OH2JT, DJ8NB, EL2AB, VP9PC, T2IA, HS3DR, KC6CK, EL2AK, OA4XN, ZS5OE, ZS6CC, 9J2BK, KP4AST, HK2YO, PY1CNA, SP5CIK, T2CEG, XE0EUQ. These on 15 mx: WH6GKD, OE1JHC, KL7AGU. On 3.5 Mc.: W2GO, W2FZJ at 1150Z. 7 Mc.: W2GO, W8EWS, VE8HC/W4, WA2UJS, W0W0, etc. 160 mx operation is planned. Rig at present is 3-el. Telrex up 60 feet for 20. (Some more news please, OM.)
Fred VK4RF is back on the air after 18 years' absence and has made DXCC in five weeks neat, on 20 s.s.b. QRP. The scene sure has changed, says Fred. (Welcome back to DX OT's! Let's have some personal activity notes please—Al.)
Peter VK4PJ, still climbing the Totem Pole, reports conditions as "pretty good". The following are to his credit: 20 s.s.b. PZ1AG, T12AO, CT1MW, PZ1BW, 822BV, 6Y5CB, 9Y4AR, VP2GAI, F9VW, ZB2BM, F8UM, VS9MB, F8YJ, 4X4RW, FA1AP, PZ1BI, PJ2CZ, CO8MH, 9Q5EP, 7X0AH, UV3TP, H18XDA, PJ3CR, YUIKG. On ten, DM2ATD, DL1SO, VS6CO, DJ0KO, DL2AW, UB5AJE, G3BHW, CT1BH, HB9QQ, UB5WF, V51AE, UA3KBO, plus others. Most of the above QSOs were made between 0800-1100 and around 2000.

SOME QTHs

VR1L—K6UJW.
VS9ARS—G3VIT.
VQ9JW—G3ONU.
FY7YM—VE1KG.
8P6AH—VE3DL.
PZ1BW—VE3EUJ.
VK0JW—VK3UQ.
CE0AE—WA5PUQ.
VK0GP—via VK3 Bureau.
VQ9DH—P.O. Box 191, Mahe.
KC4USA—C/o, U.S.C.G.C., "Westeind," F.P.O. New York, N.Y. 09501.
CR4BC—P.O. Box 36, St. Vincent, Cape Verde.
JT1KAA—P.O. Box 639, Ulan Bator.
6Y5GS—1 Balmoral Ave., Kingston 10.
TR8AQ—P.O. Box 157, Libreville, Gabon.
8R1C—P.O. Box 739, Georgetown, Guyana.
BV2A—P.O. Box 101, Taipei.
GD3AIM—5 Elizabeth Rise, Isle of Man.
TU2BA—P.O. Box 172, Abidjan.
VQ8CC—P.O. Box 14, Curepipe.
ZD5X—P.O. Box 45, M'banne, Swaziland.
FL8RA—Pavillion 23, La Vaise, 21 Genlis, France.
FL8HM—P.O. Box 215, Djibouti.
YS1XEE—WB4BOJ.
5U7AK—Rev. D. Keppel, Pros. Mission, Tera, Niger.

The QSL manager list is a growing and formidable one. It reads like a Town Crier's "Hear Ye Oh Yez". It seems that there are almost as many managers as rare operators. Lists being received here show contradictions. Often it is not possible to determine the right QTH. Managers come and go like stars in the galaxy. The operator-QSL manager relationship is being badly overplayed and it is not the rare station that is primarily at fault. Such an operator is besieged by offers from U.S.A. and Europe to take over the QSL situation at absolutely no cost to the "rarie". The hot-polloi callwise (that's us) pays for this service. I leave you to ponder on the ethics of such. True, the right QSL manager does a good job but not all those involved are doing honorable service. Too many are on the "petty status" band wagon.

STOP PRESS

The Miller Saga.—KOTCF has relinquished the QSL job for W9WNV. New man is W0QQC. KOTCF has given him all the cards received for operations from Cocos-Keeling, Blenheim, Nelson and Geyser Reef. It is not necessary to send new cards for these.

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE			
VK5MS	317/338	VK4HR	293/309
VK3AH0	315/327	VK4FJ	279/298
VK8R0	305/328	VK3TL	262/266
VK6MK	304/321	VK2APK	257/264
VK5A0	300/314	VK4TY	251/258
VK2JZ	295/310	VK2AAK	246/250
New Members:			
Certificate No. 80—VK3AKS	.....	109	
" " 81—VK4PJ	.....	104	
" " 82—VK3AMK	.....	124	
" " 83—VK2AGO	.....	142	

C.W.			
VK2QL	295/315	VK4HR	268/290
VK2ADE	291/313	VK3NC	267/286
VK3CX	291/312	VK3ARX	263/271
VK4FJ	291/313	VK6RU	262/283
VK3AHQ	290/302	VK3XB	258/272
VK2AGH	282/295	VK2APK	257/264
New Member:			
Certificate No. 80—VK4TY	.....	248/259	

OPEN			
VK2AGH	311/320	VK4TY	298/308
VK6RU	308/331	VK2EO	295/316
VK2VN	306/320	VK4FJ	295/318
VK2ADE	305/329	VK3TL	281/285
VK4HR	305/327	VK3ARX	281/289
VK6MK	305/322	VK2ACX	276/300
New Member:			
Certificate No. 106—VK4DV	.....	102	

SWL

Sub-Editor: D. GRANTLEY, WIA-L2022
P.O. Box 222, Penrith, N.S.W., 2750

PERSONAL NOTES

Welcome to the page for Steve L5088, of Croydon, S.A. Steve has just started to move along in the s.w.l. field, under the care of Alan Rafferty. Steve has a methodical approach to the QSLing side of the game and to date has heard 120 countries with recent loggings including VP8AU, VK0JW, UA1KBW, 9X5CE, Z59L, XW8BS and KP4DFC.

Welcome home to Ernie Luff, who, following another spell in hospital, left these fair shores for a pleasure cruise which took him to VR2. Despite this inactivity he is doing well in the QSL field and with 238/171, he looks like moving into my position on the ladder ere long. His most recent QSLs are VSSHRV, YO6CN, VP2SAB, UH8BO, UP2KNP, UA2AO, FB8YY, JT1KAA, VK4HG, VP1LB, VP1SE, FH8KJ, VRL1, W5GUZ and GC3FKW. He has just received the Saskatoon Wheat Belt Award, which is not normally available to s.w.l.'s, but an Honorary Certificate has been issued in Ernie's case.

Talking of awards, I have received a letter from one of our best known, and least heard of listeners, namely Chas Thorpe, of Rockhampton, 4700. Chas. has been with us for many years and has a fine record. He corrects an error which I made when I mentioned that Ernie was the 1st VK S.w.l. to receive the Calgary Award. In fact, Chas. was the first, his certificate being No. 251, issued on Jan. 3, 1967. As well as this award, he has over 50 others, including the Klondike award (1st VK S.w.l.), 30 Canadian Cities (1st Oceania S.w.l.), worked all ZL, worked all Pacific (1st VK S.w.l.) and was the first person to receive the worked all VK9 award. No chaps, please don't ask me how to get these awards, but maybe Chas. will drop me a line with the details and we can publish them.

Mac Hillard over in Campsie has been having a ball with 10 metres, with openings from early afternoon until well into the night. This has compensated somewhat for the indifferent conditions on 8 metres. It is interesting to note that from all over the world I am getting reports of these fantastic conditions from 10 metres. Ray Mosely, Bernard Hughes and John Simons from G land all proclaim the fine conditions, whilst Art Borredalle in Spain mentions it.

Another sidelight to this is a tape of dub-bings which Ray Mosely from Nottingham in England made from Citizen Band transmissions emanating from the 11 metre band in the States. These guys using 5 watts are skipping their way regularly across the Atlantic.

We have our moments, and the best of these was during the latter part of January when I logged F9NV/FC, SV0WB (Greece), MIB (Geom Maria Graziana, Piazza Dello Stradone, San Marino) and to make the session more interesting, FG7XT, CE0AE, TICEF (Box 4492, San Jose) and many of the more regular ones made an appearance.

Just a stop press from Ernie Luff in reference to the Klondike award. There may have been some confusion over these awards between Chas Thorpe and Ernie, however to give the exact data on the Klondike award, Ernie was issued with No. 14 and Charles No. 37. It is good to see competition amongst listeners in our country, for let's face it, the S.w.l. is not a fighting force in Amateur Radio, in fact in very many quarters he is a despised relation.

DX NEWS

New call signs 70A-70Z (the O being a letter not a figure) has been issued by South Yemen. 9X5AV, Box 104, Kigali. 9X5BW, Box 608, Kigali, heard 2034z on 20 s.s.b. ZF1DX, QSL via K6KDS, but if you heard the one signing himself (I believe) Doc, then you have acquired yourself a pirate. VS8RCS will be on from Brunel for a week late March or early April. I understand the operators to be 9M2BD, NF and HS3RD, and they will try to use top band if required.

Zone 23 is not easily recognised, but here are a couple to help you. UA0YC, YT, YO YR and KYA. The first two on 14015 c.w., remainder on s.s.b. TT8AN on c.w., QSL via W0LYR. The T19 Cocos Is. treasure party are at the time of writing, /MM. PA0MDG from the W. Frelsans on 1245z s.s.b., TAIIB on 28053 c.w. at 0935z, and has been heard on 15 metres using c.w. and a.m. His QTH, Box 689, Istanbul. The new address of the KP4 bureau

is Box 1061, San Juan, 00602. The foregoing has been received from Bernard Hughes, of the I.S.W.L. for the benefit of our chaps.

The following Amateurs can be QSLed via the I.S.W.L. bureau: W2FLK, ZL1APZ, G2KO, W4UTV, WB4BMV, VE2DCX, WA8TQK, W7HDL, K6MHD, HB9UE, WB4THL, ZD6X and G3VYV. HC8QF heard on 28 is a special Hungarian prefix. If you hear H883J on c.w., don't waste time, as he is a pirate. Another rare prefix for the prefix hunters is PE2EVO from the Netherlands. 4L7A heard last October was in fact from Georgia and was the UP-2KNP club.

ST2SA is on 14021 c.w. 3C8RX was operating from Zone 1. Did you hear GB5QM/MM up to Dec. 9? He was on board the Queen Mary on her final trip. CE0PK via WB6GOV, ZS9F via K7GHZ. The QSLs for the aforementioned final voyage for the Queen Mary go to A.R.A.L.B., Box 7493, Long Beach, Calif., 90807, U.S.A. A note in Monitor says that Garry VE3GCO is still handling Don Miller's s.w.l. cards. The calls concerned are the VQ8 series and VK2ADY/VK8. Amateurs are cared for by K0TCF. (Is VK2ADY legitimate? It is not in the Call Book nor published amendment lists.)

TOP BAND

Whilst it is very unlikely that any top band loggings of note will be made here, there has in the past month been quite a lot of world wide activity on this band. With winter conditions still holding in the northern hemisphere, it is possible that you could hear something, so watch out for DL9KRA, GD3MQR, GM3SVK, GI3VYV, VQ9JW, ZB2AP, ZC4RB and 9V1LK on or near 1802 and 1987 near 2400z on Fridays and Saturdays. As this is in daylight hours here, loggings at this time are improbable, however I understand that there has been JA activity between 1807 and 1812 kc. and as VK and JA share the same period of darkness, maybe you can catch something from there. The foregoing news items have been acquired from the I.S.W.L.

COMMENT

Over the years, there has been a simmering of discontentment amongst s.w.l. ranks as to what is being done for them by the W.I.A.

There are many rumblings from s.w.l.'s about lack of value per dollar paid to the W.I.A., but are these shouts entirely justified? I am not at all happy with the s.w.l. position here in VK and I am far from alone in this. But let us analyse the situation. What is the responsibility of the W.I.A. towards the s.w.l.? Each State has its Council, who have authorised formation of various sub-groups such as V.h.f., Disposals, Bulletin, S.w.l., and so on. But these groups are more or less self contained, and control their own affairs. If an individual group fails to provide for their members, it cannot be blamed upon the VK2 (for example) Division as a body. It must be placed firmly at the door of the sub-group in question. Thus the point is, any lack of activities and poor attendances resulting from this are the fault of that group and the office-bearers, nobody else.

The W.I.A. have granted permission for the formation of S.w.l. Groups, they have made provision for every member to be issued with a universally accepted listener's number. What else can they do? The VK2 Group has been in existence for around ten years now, others may have had a longer existence, but in every case they have had the responsibility of electing their own officers and it is these officers, not the W.I.A., who are responsible for the success or failure of the group.

The suburban members can, if they desire, or if there is sufficient incentive, attend the

s.w.l. meeting and again this support is of vital importance to the well being of the group. In the 1966 Call Book, 89 S.w.l.'s were listed in the Sydney metropolitan area, with a large number in the outer western suburbs. Travel to Sydney from these areas is difficult and if the meetings don't offer some value, then members won't attend. (I have attended one meeting in 10 years, this when I was on holidays from Albury.)

Of the 59 country members listed, Bob L2283 at Kingswood seems to be the closest, and if he were to attend a meeting he would get home at 1 a.m. My listed QTH is postal, and in fact I live at Hazelbrook, some 23 miles further out than shown in the Call Book. So we must assume that country members have to rely on either country radio clubs, which often have little in common with a DX minded s.w.l., or keep to themselves and make their results known through "A.R.," and use the facilities of the W.I.A. for their activities.

What can the W.I.A. offer an S.w.l.? For one who is solely interested in capturing DX, and sending QSL cards, he has a well conducted bureau and although I am still not very happy with the way we get our inward cards, the whole bureau system still represents a saving for the chap who sends out a large number of cards. For the S.w.l. who likes to do his own constructing, etc., or maybe use the other facilities the Institute presents good value (try and do a correspondence course for your ticket from a training institute?), and when we consider what the W.I.A. has done, I personally feel that in the interest of the Amateur Service as a whole, we as members of that body should do all we can to uplift rather than drag down and criticise an organisation which I feel is responsible for us retaining the frequencies which we have today.

Again I repeat, the W.I.A. has made provision for S.w.l.'s to exist and share the facilities, it is up to those S.w.l.'s themselves to provide a sub-organisation which will be of benefit to all, then and only then can we flourish. The country member is not able to participate, he has no voting power unless by proxy. He should be given the provision of a postal vote, so that he may have a say in elections, and one important matter, chaps, if an elected officer is not doing his job, a vote of no confidence will probably have him removed, if there is somebody to take his place. It can be done, in fact I've seen it at the only meeting I've attended, and in the interests of the Institute it is up to the S.w.l.'s themselves to make sure their office-bearers are doing their job.

Finally, for the country member, or the city member who needs a more exacting S.w.l. fellowship, I feel that as well as belonging to the W.I.A., membership in either the I.S.W.L. in London (35/- sterling per annum), and/or the Newark News Radio Club in New Jersey (35 U.S.) would be of benefit.

I might add that I am not a member of the VK2 S.w.l. Group, however I am entitled to a S.w.l. listing, thus under the rules I use the number WIA-L2022. However, I am a member of the VK2 Div. and, as a vote of confidence, I intend to remain therein. I do utilise the facilities of the I.S.W.L., who have been of great assistance to us here in VK, and I believe I have been made a member of the N.N.R.C., as well as being a member of the Elizabeth A.R.C. in VK8. However, if this batch of notes appear a little longer than usual, 'tis nothing to do with my absorption with the writings of 5FS, rather 'tis due to the fact that we had no notes last month, I will hold the ladder over until next month, by which time all cards will have been cleared from the mail holder and we should have some fresh scores. 73, de Don L2022.

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OTL/70

VHF

Sub-Editor: CYRIL MAUDE, VK3ZCK
2 Clarendon St., Avondale Heights, Vic., 3034

V.H.F./U.H.F. OPERATORS PLEASE NOTE

Portable operation during Easter will be undertaken by Des VK5CU, Barry VK5ZMW and Eric VK5ZEJ, from a hill near Palmer, S.A., 35 miles on a bearing 80 degrees east of north from Adelaide. Hours of operation: Sat., 13th April, 1900-2200; Sun., 14th April, 0600-1000 and 1900-2200; Monday, 15th April, 0600-1000 hours, S.A.T.

144.090 Mc.: 100 watts to 10 element beam. Will call for three minutes on the hour on a.m., listen for two minutes. If no contact, will call on c.w. for three minutes commencing five minutes after hour, then listen for two minutes.

433.650 Mc.: 100 watts to stacked 8/8 skeleton slots. Commencing 15 minutes after hour S.A.T. Will call on a.m. for three minutes, then listen for two minutes. If no contact, will call for three minutes on c.w., commencing 20 minutes after hour, then listen for two minutes.

During above schedules aeriels will be pointed on a line through Deniliquin, N.S.W., which is midway between Mt. Kosciusko (Keith VK-2ZVL) and Mt. Ginini near Canberra (Eddie VK1VP). Calls will also be made at other times bearing VK3, VK4 and VK7. Skeds may be arranged with distant stations on request. Contacts with any stations will be welcome as time and band conditions permit. Further information from Eric VK5ZEJ.

VICTORIA

Activity on the v.h.f. bands in the Melbourne area at least has been at a very low level. Over the Xmas period no exotic DX was worked. If it was, then those concerned did not advertise very well. On the equipment side of things, there appears to have been much activity in the workshop with a number of s.a.b. signals making their appearances on both 6 and 2 metres, and I am told about 25 stations are active on 432 Mc.

The V.h.f. Group's 6 metre converter sales far exceeded the Group's original plans by a factor of three and this has delayed the appearance of the 2 metre and 432 Mc. versions. Prototypes of both of these are working and by next month more details should be available. Anyone with suggestions for further projects are asked to write to the V.h.f. Converter Committee, P.O. Box 36, East Melbourne, 3002. Until May, 73, Cyril SZCK.

Eastern Zone, January.—50 Mc.: The season started off early with some good openings to ZL, VK2, 4, 5 and once to VK8 (Nov. 19, 23, 26, 27, 28, 29, 30, Dec. 3 and 4), then quiet until Christmas (Dec. 23, 24) and opened again over New Year (Jan. 2, 4, 5, 9, and 13). However, nothing unusual happened. No VK1, 7, 8 or 8s heard, also no one logged the VK0 beacon in Gippsland. No short skip under 470 miles observed, hence no Es opening recorded on 2 metres.

144 Mc.: Consistent good openings to VK2, 5, and 7 throughout the season. The VK5VF beacon received strongly in the Morwell area on Dec. 8, Jan. 4 and 14. Morning of the 4th it was interesting to note that 45 minutes after the 5VF beacon faded out on 2 metres, the 6 mx band then opened up to Adelaide Es wise, hence nearly two propagation modes simultaneously—extended GW and ES! VK2ZEO and VK2BLR/2 were the only VK2s worked. Active zone stations are VKs 3ZAT, 3ZCG, 3ZDP, 3ZGA, 3ZNB, 3ZOS, 3ZSS—all are looking out for DX.

432 Mc.: Four or five stations are becoming interested and building gear, also we propose to build an a.t.v. station as a group project.

February.—52 Mc.: No 6 mx openings observed in Gippsland, however the m.u.f. peaked above 34 Mc. to the north including Japan and U.S.A. on 22/1/68. M.u.f. also peaked up over 40 Mc. for several days between 11th to 16th (28-day cycle); watch the band around these dates over the next three months.

144 Mc.: Some good extended ground wave openings have occurred. VK2ZEO Deniliquin worked into Gippsland on 29th Jan.; same night we had for the first time excellent snow-free t.v. from ABSN8 Bega up to 2200 hours, not seen before or since. Sunday morning Feb. 4 we worked VKs 5ZLJ, 5CJ, 5ZKR, 5ZDR, 5HP at Mt. Gambier and worked VK5ZDR again on Feb. 13, 73, George VK3ZCG.

SOUTH AUSTRALIA

Since the completion of the Ross Hull V.h.f. Memorial Contest six metre activity has been very sparse. However, there have been numerous reports of JA signals heard on 50 Mc. during February, but as yet no signals have been heard or worked on 52 Mc.

Two metre activity on the other hand has been extremely high. Early in January, Mick VK5ZDR moved QTH temporarily to Tantanoola in the South East, approximately 15 miles north of Mt. Gambier. Mick reports that he has his 10 element long yagi firmly planted 70 feet high and running his usual 100 watts. Signals from Mick into Adelaide have been consistent and always readable 5 with signals approaching many decibels over strength 9 on most occasions. Supplementing the activity from South East areas are John 5HP, Col 5CJ and Col 5ZKR, who have also been putting very strong signals into the Adelaide area. The most notable opening of late on 2 metres was on Tuesday, Feb. 13, when many Adelaide stations worked into the Kanlva and Yanac areas of VK3. During the same evening the South East stations were working into Melbourne and Mick 5ZDR reports working 24 VK3s around that area. Also on Feb. 7 Mick worked VK7ZAH both ways on 2 mx for the first time from his new QTH, having worked previously twice from his old location.

Again an upsurge in 576 Mc. activity has occurred and an Australian record of approximately 145 miles is to be claimed by John 5QZ and Graham 5ZJL. John was located 17 miles south of Kingston and Graham at Mt. Barker in the Adelaide Hills. 16 element collinears were used at both ends and John 5QZ was using stabilised gear. Signals were R5 S8 both ways. Consequently, activity is high on 576 Mc. and it would appear that this record is bound to fall in months to come.

On 2nd Feb. the annual general meeting of the V.h.f. Group of South Australia was held, and the officers elected for the ensuing year were: Chairman, Eric 5ZEJ (re-elected); Vice-Chairman, Edwin 5ZTS; Sec.-Treas., John 5QZ; Councillors, Barry 5ZMW, Rick 5ZFQ. Extensive discussion was had on topics and projects for the coming year and the committee are presently formulating a programme to be followed. From all indications it appears likely that 1968 will be the greatest year ever for v.h.f. activity in VK5. 73, 5ZHI.

NORTHERN TERRITORY

Barry VK8DI is running 30 watts a.m. on 52.3 Mc. to a 6 element beam. Mick VK8ZMR runs about 25 watts a.m. to a 5 element beam and is using commercial gear, ex U.S.A., and is v.f.o. controlled and usually nets on caller's frequency.

VK8AU has s.s.b. about 45 watts p.e.p., is located at Batchelor and is surrounded by tropical jungle. His QTH looks lousy, but seems to work okay. VK8ZEB is still building his gear with assistance from VK8ZMR. Doug VK8KK has moved from Alice Springs to Darwin and is not active at the moment. Jim VK8ZSJ, ex VK3ZSJ, has 6 watts to a 5/8 whip on 6 metres and 8 watts to a 3 element beam on 2 mx. The main activity has been JAS with a few VK4s and the Southern States. 73, Jim VK8ZSJ, ex VK3ZSJ.

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

AMATEUR RADIO STATION AT INTERNATIONAL CONFERENCE

Editor "A.R.," Dear Sir,

The following information is provided as a news item which you might pass on to our fellow Amateurs through the medium of your Amateur Radio journal or bulletins.

In April this year the 24th Session of ECAFE (Economic Commission of Asia and the Far East) will be held in Canberra, A.C.T. This is a very important International Conference and many top government officials will be present.

Eight technicians and myself as Project Manager will be handling the complete electronic side of the Conference for the company which employs us. The electronics include simultaneous interpretation equipment, tape recording, closed circuit television coverage and radio frequency paging.

Three of the technicians including myself have Amateur operator's licences and intend

setting up an Amateur Station at the site of the Conference as a social recreation, for the technical team.

The Department of External Affairs will publish the details of the Conference Bulletin so that any delegates who are Amateur operators or interested in electronics may join in the social activity.

Because of the importance of the occasion, the call of VKIEC (Economic Commission) has been issued for the three weeks of the Conference.

Operation will be s.s.b. or a.m. mainly on 20 metres. Some operation will take place on 40 and 80 metres if sufficient interest is shown by VK stations.

Although not regarded as a new country or rare DX, all stations contacted will receive a QSL indicating the importance of the occasion and details of the operation.

Also we as the Amateur operators who will carry out the exercise, believe that because of the many overseas countries represented at the conference and the interest shown by the Commonwealth Department concerned, this is an opportunity too good to miss, to publicise our hobby and the international goodwill it fosters.

Please assist us by conveying this information to the Amateur fraternity by any means at your disposal.

—Dennis Wheaton, VK2AWW.

N.Z. ELECTRONICS CONVENTION

Editor "A.R.," Dear Sir,

As you may be aware another National Electronics Convention—Nelson II.—is being held in Auckland this August. This convention will once again reach a high technical level and form a meeting place for electronics personnel from all branches of the industry. Previous experience has shown that these conferences are attended by research workers, designers, engineers, technicians and other enthusiasts from all branches of Government—D.S.I.R., Broadcasting, Post Office, Defence, Railways, Forestry, Civil Aviation, etc.—as well as Hospitals, Power Boards, Universities and assorted manufacturing and industrial concerns both working in electronics and employing it in their processes.

We enclose for your information copies of the first two circulars which contain details of papers, trade exhibition and enrolment. We would appreciate any publicity which you can give to this conference which last time drew 450 delegates and 80 papers.

We will ensure that future circulars are sent to you and assure you that any further information can be obtained from the writer.

Thanking you in anticipation of your assistance,

—Robin H. E. Beckett,
Publicity Officer.

CONTEST CALENDAR

6th/7th April: "CQ" W.P.X. Phone Contest (s.s.b. only).
11th/12th May: 17th OZ-CCA Contest (c.w. only).
6th/7th July: "Summer" Top Band Contest (R.S.G.B.).
12th/13th October: 21/28 Mc. Phone Contest (R.S.G.B.).
26th/27th October: 7 Mc. Phone Contest.
7th/10th November: 7 Mc. C.w. Contest.

V.H.F. CONVENTION THE SOUTH EAST RADIO GROUP OF VK5

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MT. GAMBIER

SAT., SUN. and MON.,
8th, 9th and 10th JUNE, 1968

Further details in May "A.R." and
in Divisional Broadcasts

BOOKS OF INTEREST FOR AMATEUR OPERATORS

- ★ A.R.R.L. — **THE RADIO AMATEUR'S HANDBOOK** — 45th Ed., 1968 Edition Price \$6.10 Posted
The standard reference work and text for everyone—Hams, Experimenters, Students, Engineers, Laboratory Men, Technicians.
- ★ ORR — **THE RADIO HANDBOOK** — 17th Edition Price \$13.45 Posted
Tells how to design, build and operate the latest types of Amateur Transmitters, Receivers, Transceivers and Amplifiers.
- ★ STONER & EARNSHAW — **THE RADIO TRANSISTOR HANDBOOK** .. Price \$6.65 Posted
This up-to-date Handbook covers a wide range of communication for both Amateur Radio and Commercial Applications.
- ★ A.R.R.L. — **THE RADIO AMATEUR'S V.H.F. MANUAL** .. Price \$3.00 Posted
- ★ A.R.R.L. — **UNDERSTANDING AMATEUR RADIO** Price \$3.00 Posted
- ★ A.R.R.L. — **THE A.R.R.L. ANTENNA BOOK** Price \$3.00 Posted
- ★ A.R.R.L. — **SINGLE SIDEBAND FOR THE RADIO AMATEUR** .. Price \$3.73 Posted
- ★ A.R.R.L. — **THE MOBILE MANUAL FOR RADIO AMATEURS** .. Price \$3.73 Posted
- ★ A.R.R.L. — **THE RADIO AMATEUR'S LICENSE MANUAL** Price 85c Posted

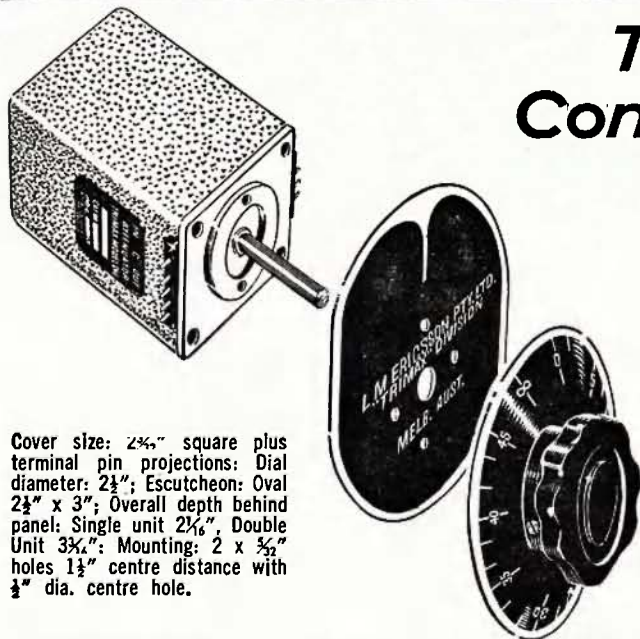
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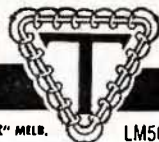
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FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL

LICENSED AMATEURS

Following are figures for November 1967:—

	Full	Limit.	Total
VK1	74	18	92
VK2	1321	404	1725
VK3	1122	530	1652
VK4	470	184	654
VK5	490	222	712
VK6	284	131	415
VK7	132	79	211
VK8	19	6	25
VK9	64	13	77
VK0	8	0	8
Totals	3984	1587	5571

W.I.A. POSTAL MOTION 1/67

All Divisions have indicated an AYE vote to this motion. Accordingly, the W.I.A. Federal Contest Committee will be maintained by the Western Australian Division for the ensuing year, 1968-9, contrary to W.I.A. policy that this committee be maintained by each Division in tri-annual rotation.

INCORPORATION OF THE Q'LAND DIVISION

In the Public Notices section of the Brisbane Courier-Mail for January 24, 1968, a formal notice has been inserted advertising the intention of VK4 Division to become a Company. The Divisional Secretary, Alan Simpson, indicates that their efforts to become incorporated are almost completed, so this action will pave the way for adoption of the new Federal Constitution as then all Divisions will be incorporated societies and able to become members of the Federal Company.

FEDERAL CONVENTION AGENDA

Motion sheets are being prepared and should be in the hands of Divisions early in March. Motions were received from all Divisions, and any further matters will have to be raised as General Business items as the deadline for receipt by F.E. has passed.

OVERSEAS MORSE REQUIREMENTS

Following the reduction in Morse speed requirements for Australian Amateurs, it may be of interest to note conditions existing in overseas countries (Receiving Tests):—

U.K.—Receive 36 words (5 letters/word) in plain language in three minutes, and 10 five-figure groups in 1½ minutes; more than four errors in plain language and more than two in the figures will result in failure.

U.S.A.—Examinations for General, Advanced and Extra classes of Amateur licence are conducted by an F.C.C. engineer. Exams. for all Novice, Technician and Conditional classes are conducted under F.C.C. procedures by a volunteer supervisor (holder of General class or higher licence is usual) in the field. F.C.C. code examinations are given by machine, volunteer examiners mostly use hand sending. The applicant is required to send and receive, at the specified speed for one minute out of a five minute test without any error.

Europe.—Countries with 12 w.p.m.: Germany, Finland, Netherlands and Norway. Sweden is 16 w.p.m., and France, Switzerland are 10 w.p.m., the latter with a five-minute test and a maximum of three mistakes. (It need not be pointed out that I.T.U. headquarters is in Switzerland!)

AMATEUR OPERATION IN INDONESIA

The Minister for External Affairs, The Hon. Paul Hasluck, recently replied to a query regarding this matter. The Australian Embassy in Djakarta informed the Minister that the Indonesian Government law prohibiting Amateur Radio operation is still in force—it is described by an Indonesian representative of Djakarta Amateur Radio operators as "an old order law". He felt that the Indonesian Communications Council would be prepared to seek the withdrawal of the law and has undertaken to approach the Communications Council.

A.R.R.L. has informed us that on 30th December, 1967, General Soeharto signed a decree authorising Amateur Radio. It is understood that in a couple of months the Indonesian Government will notify I.T.U. that it no longer objects to Amateur Radio communications and

that the ban can be lifted. There are several "amateur" groups in Indonesia, and currently two of these are showing signs of making application to I.A.R.U. for membership. Which of these is the proper outfit is at this time somewhat indeterminate!

Australian Amateurs are reminded of para. 78 of the "Handbook" which would seem to preclude communication with Indonesian Amateurs until such time as the P.M.G.'s Dept. has been notified by I.T.U. that the position which has existed for some years has been formally and officially altered.

FEDERAL QSL BUREAU

The following changes in the A.R.R.L. QSL Bureau list have been notified:—

W1—Hamden County Radio Assn., Box 216, Forest Park Station, Springfield, Mass., 01108.

W4 and K4—H. L. Parrish, K4HXF, RFD 5, Box 804, Hickory, N.C., 28601. (Cards for WA4, WB4 and WN4 continue to go to WA4WIP as before.)

KP4—Mrs. Alicia G. Rodrigues, KP4CL, Box 1061, San Juan, Puerto Rico, 00902.

The new QSL manager for the Canberra Radio Club, Box 1173, Canberra City, A.C.T., is Andrew Davis, VK1DA.

Boys Town Amateur Radio Society, WA0G1, Boys Town, Nebraska, 68010, U.S.A., advises that Father Flanagan's Boys Home celebrated its 50th year during 1967 and the Club Station issued 500 Golden QSL cards to all stations who QSLed us in 1967. However, due to poor equipment and no set operating times, very few of these cards went to DX stations. In order to give any DX station a chance to work them and receive a special award, they will operate at the following times and dates: 14.270, 2400 GMT to 0600 GMT; 21.405, 1900 GMT to 2130 GMT, Feb. 25, Mar. 3, 10, 17. For each QSLed contact they will return one of the awards.

Tubby Vale, VK8NO, ex VK3NO, advises that he has not kept the best health of late and the doctor has ordered him back south. This move may take a few weeks to become effective. VK8UG will continue in operation on 100 per cent. phone basis.

—Ray Jones, VK3RJ, Manager.

FEDERAL AWARDS

DXCC NOTES

The following operations were listed by the A.R.R.L. during 1967 as being unacceptable for DXCC Credit. As the W.I.A. DXCC is based upon the A.R.R.L. list, no credit will be given locally.

- K1IMP/KC4—Navassa Is.
- PY0XA—St. Peter and St. Paul's Rocks.
- VK2ADY/0—Heard Is.
- VU2WNV—Laccadive Is.
- VQ9AA/C—Chagos.
- IAGSBO—Bishop's Rock.
- IB9WNV—Blenheim Reef.

An addition to the Countries List is Farquhar. Farquhar, formerly one of the Seychelles, is now one of the islands making up the British Indian Ocean Territory. Contacts made with Amateur stations on Farquhar, November 10, 1965, or later, will be counted as separate from the rest of the Seychelles.

SILENT KEYS

It is with deep regret that we record the passing of the following Amateurs:

- VK2SE—Bert Wright.
- VK2AGK—Alf Girling.
- VK3CD—J. Rich-Phillips.
- VK3NB—A. F. Nickson.
- VK3TI—Charles Godden.

NEW AWARDS MANAGER

The Federal Awards Manager is now Geoff Wilson, VK3AMK, and any applications for DXCC, VHFCC, WAS (VHF), or WAVKCA should be sent to him direct at:—

7 Norman Avenue,
Frankston, Vic., 3199.

DXCC listing changes should also be forwarded to the same address.

Sufficient postage to cover return of cards must be enclosed with application.

NEW SOUTH WALES

FEBRUARY MONTHLY MEETING

The meeting was held at Wireless Institute Centre on the 23rd and was opened by President-Chairman, Keith Finney, VK2KJ. After the usual formality of reading the previous minutes new members were admitted and approved and welcomed to the W.I.A.

President Keith then gave the customary report of Council activity in which he drew attention to the renovations to the building and the re-decorating which is most impressive.

Continuing, Keith drew members' attention to the Conventions being held over Easter and appealed to members to attend and assist the Division and the W.I.A. to make this historic event a complete success. He went on to mention the new Handbook of Regulations now available from the Divisional office, the P.M.G., and the Equipment Store. Keith concluded by saying that ALL members should have a copy and carefully read it.

Chairman Keith advised that the March meeting would be the Annual General Meeting and election of Council would take place then. The election would not be at the April meeting as announced earlier.

The March meeting would also contain the Annual Report of Council in which answers to some contentious items and current rumours would be given. A clear statement of the Council's policy would be given with recommendations for the incoming Council.

Concluding the report, Keith advised that renewals of subs. were over 800 already and the new cards were arriving at the rate of 50 a day. By the way, have you sent yours in?

Four lectures were the evening's entertainment, the first on early Gramophones complete with a demonstration was given by Ivan Agar, VK2AIM; the second on Antennas by Hans Ruckert, VK2AOU, proved very interesting. The third was a description with biased slides of the team of Burfoot and Molen on going to a mountain for the National Field Day. The trials, tribulations and joy in such an exercise left the audience cautious of mountain operation, but no doubt interested in going mobile, portable, etc.

The last lecture was given by Sid Molen on "getting back 93 per cent. of QSL cards". Quite a humorous talk, supported by verse, no actual proof of the method doubtful in itself was presented. There will be no lecture at the March meeting and the April lecture was not confirmed at the time of writing.

A visitor to the meeting was Al K7LWE, of Seattle, on R. & R. leave after having been wounded in Vietnam. Al told many stories of that do which can only be described as incredible. Chris VK2ZDD escorted Al to the Gosford field day where he was well taken care of Amateur style. 73, Stan VK2ZRD.

HUNTER BRANCH

In the usual true democratic fashion, the annual election of officers of the Branch was held on Friday, 1st March, when a small but enthusiastic audience was present. The Divisional President, Keith 2KJ, was there to see that no unworthy practices took place and, since the whole procedure was over in a matter of less time than it takes to write it down, he could hardly do otherwise. The Patron of course remains as Frank 2APO, but there has been a considerable reshuffle in the other positions. The President this year is Rodney 2CN and it is indeed good to see a new member of the executive. The retiring President, Frank 2ZFX, who did such a good job in organisation of both committee and general meetings during the year, has found it impossible to continue in the top place, but he has agreed to continue in the vice-presidential

position with his colleague as Bill 2XT. Both Treasurer and Secretary remain unchanged, Gordon 2ZSG and Len 2ZFD being the capable men to fill these posts. Zone Correspondent is again Keith 2AKX with Joe 2ZJO to assist. The v.h.f. liaison officer's post is ably filled by Mac 2ZMO while Bill 2ZWM remains social secretary and Stan 2AYL is QSL manager. But here the similarity with last year ends. Two new committees have been formed to deal with broadcasts and publicity and another for activities. Activities committee members are Tony 2ZCT, John 2ZJG and Bill 2ZWM, while on broadcasts and publicity there are Stan 2AYL, Keith 2AKX and associate member Neville Threlfo.

The thanks of all Branch members go to Frank and his 1967 team for a job well done and best wishes are extended to the incoming executive for a successful and interesting year in 1968.

Bill 2XT reports sensational increases in signal reports since he lifted the beam (umbrella type) to the top of the 70-foot mast at the Coal Point house. At the same time, Alan 2KB must have decided on some modifications or additions since his aerial suffered the buffeting in the recent gales. As for Bill 2ZL, his aerial is resplendent with various hanging wires at present in an attempt, so he says, to find where it is resonant. It seems that this is the price one must pay for owning s.s.b. gear.

Probably the smallest but highest gain aerial of the month is that built by Tony 2ZCT who used it for the 432 Mc. fox hunt at Gosford. It is cunningly mounted through the roof vent hole in the Rommel wagon. And to show that ordinary 80 metre dipoles are still the delight of some, Bruce Morley, our QSL associate from Toronto, has constructed one just such for receiving purposes. The two glistening poles which support this fine edifice are nearly as much a landmark in Toronto as those of Jim the DX man. And as for Paddy 2AXU, not only did he get on the air again this month, he even is talking of putting up an aerial also, much to the delight of his mates on 80. The poles for the rather hush hush design have come from the home of John 2XQ who is moving house to Hamilton.

Other than the AGM, probably the most popular event of the month has been the well known Gosford Field Day. In the experience of some this has yet to be rivalled by any such event in Australia and certainly some of those that get a three-page spread in the R.S.G.B. Bulletin (sorry there, Communication) are no better than our local do.

Some have been complaining about the scarcity of contacts on v.h.f. of late and most likely the criticism is justified, since, if it reflected as a general thing on 146, then there's nobody on! It is to be hoped that the inauguration of the new activities committee will make the difference needed to get things going again. Broadcasts too have suffered some revision with the elimination, for a trial period, of all callbacks. However, the station signing 2AWX will be on the air 15 minutes before the broadcast with requests for reports. It is to be hoped that the events which dogged the broadcast on the last February Monday will not recur, since these resulted in a complete absence of signal outside the shack—which wasn't a good thing.

In case you've forgotten, the Branch meetings are held each first Friday of the month in the Clegg Building, Room 6, at Newcastle Tech. College, Tighes Hill, and the commencement time is 8 o'clock, in the evening of course. Perhaps you'll consider coming along to the next one which is, depending on your mailman, either 5th April or 3rd May. Either way, you are assured of a good night's instruction, gossip or whatever and you'll meet no end of people you haven't seen for years including that bloke who has the very same problem as yourself or even myself—in my case, money. So see you there, 73, 2AKX.

CENTRAL COAST RADIO CLUB

The Gosford Field Day was held on Sunday, 25th Feb. Ideal weather helped to make the day an outstanding success, with attendance of over 300.

The feature of the day was the 432 Mc. mobile fox hunt, attracting a field of eight competitors. This is believed to be the first time a 432 Mc. hunt has been held and judging by the enthusiastic support, will certainly not be the last.

The following is a list of prize winners: Mobile Scramble. H.f.—1st, Les 2RJ; 2nd, Harold 2AAH; 3rd, Noel 2ASQ. V.h.f.—1st, Vic 2ZCF; 2nd, Dave 2AWZ; 3rd, Paul 2ZPJ. 146 f.m.—1st, 2ZSA; 2nd, Bob 2ASZ; 3rd, Paul 2ZPG. 7 Mc. Fox Hunt—1st, Bill 2ZCV; 2nd, Dick 2ZCF; 3rd, Harold 2AAH. 144 Mc. Ped. Fox Hunt—1st, Bob 2ASZ; 2nd, Peter (from Lawson); 3rd, Colin 2BCC. 432 Mc.—1st, Harold 2AAH; 2nd, Dave 2AWZ; 3rd, Mac 2ZIM.

OBITUARY

CHARLES GODDEN, VK3TI

Charles passed away on 1st February, 1968, aged 61 years. He had not enjoyed the best of health for some years and recently retired from active work, and at the time of his death he was employed part-time at broadcast station 3MA.

Charles was first licensed in May 1937 and remained active throughout the period right up until his death.

During the war he served with the group M, The Australian Special Unit A.I.F. Wireless, and was discharged with the rank of Warrant Officer II. Returning to Mildura after discharge, he continued in the radio service business up to his retirement.

Charles was also active on and off on all bands including a short spasm on 2 metres. He also held broadcast operators certificate of proficiency and from time to time did part-time work with the local broadcasting station 3MA.

We, the Mildura Group, extend our deepest sympathy to his wife and four sons.

144 Mc. Long Distance—1st, Bob 2ASZ; 2nd, Les 2RJ; 3rd, Mac 2ZIM. 144 Mc. Ped. Fox Hunt—1st, Leon Skeers; 2nd, Colin 2BCC; 3rd, Peter (Lawson), Ham Quiz—1st, Paul 2ZPJ; 2nd, A. Wyatt; 3rd, Keith 2AKX. Ladies Quiz—1st, Mrs. Richmond; 2nd, Betty Gerdes; 3rd, Jean Williams. Ladies' Scavenger Hunt—1st, Jean Williams 14/20; 2nd, Patricia Skeers; 3rd, Mrs. E. Agar. Home-brew Equipment—Large, 2AJJ, detahet rx; small, P. J. Charlton, 7 and 14 Mc. sniffer; most original, Florence Bertoff. Prize for longest distance—Al KTWLE, on leave from Vietnam.

Acknowledgments: Ampex, A & R, Mico, Mullard, M.S.P., W.I.A., Adcola, Rola, Ducon, Tech. Book Co., E.E.B., Electronic Parts, Miniwatt, Pye, Warburton Frankl, Sydney, Sideband Eng., Aust. Electronics Hobart, Mosman T.V., G.E.S., 2RU, 2AXS, 73, Bill 2TS.

VICTORIA

The following agenda items have been selected for the remainder of the year for the monthly general meeting nights:

- April—Antennae.
- May—Annual Meeting and White Elephant Night.
- June—S.s.b. Construction.
- July—Bains.
- August—The Megamatch.
- September—S.s.b. Linears.
- October—Whip Antennae.
- November—Portable Equipment.
- December—Transistors.

The speakers selected are all specialists in their field and interesting evenings are assured.



PRESENTATION OF MERIT AWARD TO VK3ATN

Presentation of A.R.R.L. Technical Merit Award to Ray Naughton, VK3ATN. The presentation was made by Mr. E. J. Wilkinson, of the P.M.G.'s Department. Mr. Max Hull, VK3ZS, looks on. For story see "A.R." December 1967.

EASTERN ZONE

Our Zone held their get together picnic on 4th Feb. at the Moondarra Dam, and a pleasant day was spent by all. Stan 3ZPL was control station and portable stations were set up by Stan 3ZAB, George 3ZCG and John 3AED.

The A.O.L.C.P. class got away with a good start on Feb. 19, with 18 attending, and the next week (Feb. 28) attendance increased to 22. David 3ZOZ is the first lecturer, and will be followed by Lee 3ZSS, Trevor 3ZGA, George 3ZCG, and Stan 3ZPL, with others assisting. This class will run each Monday evening at the Women's Aux. R.S.L. Hall, Morwell.

3ZAT is now working down in Melbourne so we are sorry to lose you, Aud, and we all wish you the best in your new career. However, looks as though we will gain a new member, John 3AAA (triple "A"), hopes to transfer from Colac to Yallourn around June. Also, Peter 3ZWW makes frequent visits to Bairnsdale, operating mobile and from Bairnsdale on Ch. A f.m. Barry 3ZQC, Mirboo North, over the next three or four months, will be working in the Orbost and Eildon areas. Rod 3UG (ex 0CR) is now living back in Gippsland and working at Wragg.

The Eastern Zone Convention will be held over the week-end of April 20 and 21, near Mirboo North, at the Gippsland Educational Hostel, 2 miles out along Thorpdale Road. Build up a 2 mx snooper to track down the hidden transmitter. We welcome visitors and short wave listeners, so for further details please write to our Secretary, 3ZAB, 10 Chenhall Cres., Traralgon, or phone the President, Morwell 43953. See you all at the Convention, 73, George 3ZCG.

QUEENSLAND

IPSWICH AND DISTRICT RADIO CLUB

Once again we must report a very active month, climaxed by the club's participation in the John Moyle Memorial Field Day. A beautiful location was chosen about 2 miles from Mt. Crosby, high and over looking Ipswich some 10 miles away, and it proved to be excellent for reception and transmission, all bands from 3.5 Mc. to 52 Mc. were used and a great number of contacts were made for a total of some 500 points. We learnt a lot from our experience which we hope to apply to our next Field Day. A humorous interlude at the Field Day was when a passing motorist stopped and came over to see what all the people were doing, and politely asked when the land sale was to start—his comment almost started a land slide!

The club membership is on the increase once again and we would like to extend a welcome to three new members—Ralph 4JZ, Roy 4ZRM and Max 4ZMV. We are all pleased to have you in the club chaps; another recent member to our A.O.C.P. class is Allan, who lives at Mt. Glorious and attends our classes each Thursday night and has a mighty long drive home after class. Hope our instructor does not keep you in after class Allan, it might be hard to explain to the XYL.

Six metre DX is coming in now and one member Alex 4QT seems to be getting his share of JAs. I believe he worked 10 on his way home from work and eventually went QRT with a real pile up calling him. If this keeps up, our QSL manager Bill will be sending large batches of QSL cards to the JA Bureau.

The club house now sports a set of front steps and they take some getting used to. We have not had them before so now we are planning an official opening in the near future, perhaps a set of railings will be next before the official opening to keep all the celebrating members from falling off the landing.

The long awaited get together with the Bundaberg Club was held at Borumba Dam near Gympie, and about 12 club members made the trip up to the Dam. Seven cars went up, operating 8 mx mobile en route, and an enjoyable time was had with the Bundaberg troops. The area about the Dam was very scenic and we had a visit from Andrew 4AT on the Sunday. The members from Bundaberg present were Roy 4ZWR and Geoff 4GI, also Bob 4UD. It appears 4ZRW was also present but no one actually had an eyeball contact with said gent.

Members of our club included Ron 4RG, Dave 4HW, John 4ZJE, George 4ZLG and yours truly 4GT, also s.w.l. Tom who slept in his car and was walking some 2 feet lower for some time on Sunday until he was able to straighten out. Activities included a fox hunt and a screening of club films. We are looking forward to another outing on similar lines with the Bundaberg Club. We all missed Rusty 4JM at the get together and hope he is not

missing his appendix too much and will be back on his feet again soon.

We have welcomed back an absent club member, namely Bob 8JR, who will be staying with us only a short time as he takes up a new posting in VK2 in April—nice to see you back again Bob.

Well chaps, enough for this month, see you all again next month. 73, Warren 4GT.

CENTRAL QUEENSLAND BRANCH

Some considerable time has elapsed since the activities of the Central Queensland Branch have been chronicled in print, but endeavours will be made to ensure regular contribution of news during the forthcoming year.

The annual general meeting of the Branch was held on 18th Feb. at the Clubroom in Quay St., Rockhampton, with a splendid attendance of members. The President, Mr. F. Nolan, 4FN, delivered an excellent report on activities during the year, wherein mention was made on the sound financial position, the consistent support at social and club gatherings, and general keen interest shown by all members in Amateur Radio.

Election of officers for the ensuing 1968 year resulted in the following members being appointed as main office-bearers: President, H. Hobler, 4DO; Vice-Presidents, F. Nolan, 4FN, and R. Greenwood, 4NG; Secretary, C. Bennetts, 4ZBG; Asst. Secretary, F. Roden, 4ZFR; Treasurer, G. Fox, 4FK; Publicity, L. Merrill, 4ZIM.

During the past few months, we have been fortunate in meeting and welcoming many VK visitors to Rockhampton—I bring to mind 8ZMR (Mike of Darwin), 3Z2S (Philip of Ballarat), 4QW, 4ZPL, 4ZFF, 4ZGJ, 4ZMG, 4ZDN, 4UD and also 8AG (Arnold of Rabaul), to mention a few. Some of these gents had an impression that Rockhampton was rather quiet (radio-wise) but a CQ on 6 mx brought forth so many replies that the resultant dog-pile took some sorting out! So all you visiting VKs, please note that a CQ on 53.032 (or anywhere in the band, for that matter) will produce results here in Rocky!

Regular participants in the VK4 Sunday morning W.I.A. hook-up are Hal 4DO and Geoff 4FK, who keep the Rockhampton group name to the forefront. Mention should be made about 4DO's new linear final for "the thing"—a recent acquisition which is gaining him more DX than ever! And Geoff 4FK who has been seen around the village in a new car—looks like ornithology will be ousting Ham Radio! Report has it that Silas 4SB has his s.s.b. device all ready, but receiver troubles are now the problem—maybe soon we'll hear him on air! It has been reported that Joe 4CL has been hospitalised for some time, but is making progress—best wishes to you from the group for a return to good health.

Activities of the v.h.f. group are at the usual high level. New call signs during the year have swelled the ranks and the 6 mx band is really populated in this area. An early morning (0700) group flourishes on 53.032 for a quick QSO before departure to various "salt mines". Regular fox hunts for the mobile gents are held, and good attendances are recorded each time; driving force behind these events is Lyle 4ZLD, whose organisational ability and enthusiasm deserves special mention.

During the recent southern DX season, it was noticed that the local 6 mx gents were right "with it"! Hardly an opening occurred but that the gang were there in strength—old stagers Lance 4ZAZ and Bob 4NG showed the lads how to rattle up QSOs, but one must say that Frank 4ZFR, Doug 4ZDK, Lyle 4ZLD, Gordon 4ZGA and Lyndsay 4ZIM were well to the forefront. A glance at the various log books shows the keenness of the group, with a varied galaxy of call signs including 9ZAK of Moresby!

With the advent of the early openings to JA land this month (Feb.), the beams have swung north and once again the regulars are working into JA practically every day. Some good openings have occurred and QSO tallies are mounting—one keen character has passed the 60 mark since 10th Feb. I'm told! Considerable activity in the region down to 46 Mc. has been noted, with f.m., r.t.t.y., and t.v. signals from eastern sources a commonplace logging—at strength to R9 plus 20, quite often. In closing this month's news, we must make mention of our country members—John 4NZ of Mount Morgan, a member of the well known 40 mx early a.m. group, and Don 4ZFB, the gent from Biloela who thinks nothing of driving 90 miles each way to attend club meetings. Don rejoices in an 80 ft. tower plus yagi beam on 8 mx and, judging by his JA QSO tally, will rate as "Don-san" soon!

And a final word to any visiting Amateur. C.Q.B. members would like to meet you, call CQ on 53.032 or use the 600 ohm system to an office-bearer—you will be made welcome. That's the lot for the moment. 73, Lyndsay 4ZIM.

TOWNSVILLE AND DISTRICT

Although this will appear in the April notes, please do not think it is the usual joke as no notes have been sent for the last three months. The reason being that the writer has been away once again on his usual yearly jaunt to the southern climes, as the XYL says, to beat the heat in Sunny Nth. Qld. What a joke that was. With the sweltering heat I experienced in Victoria and South Australia!

This time I forgot to take along the call book and was unable to ring the chaps as usual. As I remember them all as Tom, Dick, Harry, etc., I did try to remember the initials of the famous scribe from South Australia, but there were too many PARSON'S in the phone book, so offer my humble apologies.

In the local press there was quite an article on "Pirate Radio Russian Style", which really made the hackles rise as the poor old Amateur came in for all the blame. As we really know that the Amateur in the U.S.S.R. really has an extra stiff exam. to pass and seems proud of his ticket and the Amateur would not be operating outside his own bands.

What with the postal trouble in sending mail, I was unable to let the boys in Sydney know of my arrival and missed out in seeing them. On my return to the Sunny North, I found that old Sol had covered his face and was weeping, ever so much, that there were floods everywhere and over 50 inches of rain was recorded in ever so many days, wettest for 90 years. The southern climes are still in the throes of drought (Feb. 27) at the time of writing, and that there heat beats all past records.

The local club got away to a fine start in this new year with many promises to try and get the local club building under way. The Z boys are still working the 52 Mc. band into Japan and the Southern States, but nary a break through to KH6 or ZL boys. DX is appearing for the others in the 14, 21 Mc. bands although I find it hard to hear any on 28 Mc. The trip to the far northern boys did not eventuate because of the flooded nature of the highways, so see you boys perhaps in the Tourist Season. 73, Bob 4RW.

SOUTH AUSTRALIA

The February meeting of the VK5 Division, which was a Joint Annual General Meeting and a Monthly General Meeting, was held to a very good roll-up of members and visitors, a very good sign of the their enthusiasm because this type of monthly meeting has very little to attract a good attendance, although for some reason or other the Feb. meeting has always been noted for a good roll-up. Very little can be written about this type of meeting except to say that a lot of questions were asked and answered, a few grievances were aired, and a few pats on the back were bestowed, much to everybody's satisfaction.

Whilst on the subject of annual general meetings, there was a good attendance of members at the VHF AGM, 36 to be exact, and the President for the coming year, Eric 5ZEL, and the Secretary, John 5QZ, must have been more than satisfied with the opening of the new administrative year.

It was surprising the number of members at the Divisional meeting who queried the absence of any Divisional notes in the Feb. issue of "A.R." despite the fact that for more years than I care to remember, this issue of the magazine has never carried Divisional notes, due I think to the fact that the printers take their holidays in January and the magazine therefore has to be printed so far ahead that no notes are possible. Anyway, it is good to see that the notes were missed, apparently we have a few readers here and there.

Heard on the grapevine that Rupe 7RM will be visiting VK5 over the Easter period, and no doubt will renew many old friendships, and no doubt note the many gaps in our ranks since he was a member of the Division.

A number of VK5 associate members, who are keen s.w.l.s, are not very happy at the moment with what they get out of the membership in the W.I.A. This question of what to do for the s.w.l. member of the W.I.A. has always been hard to answer, most s.w.l. members join the W.I.A. and eventually become licensed, but the confirmed s.w.l. becomes a different matter when it comes to providing him an outlet for his hobby, which after all is just as important to him as any other section of the Division. Several times some enthusiast has attempted to form an S.w.l. Group but after a while the enthusiasm wanes and everything settles back into the doldrums. Being small in number, the s.w.l. undoubtedly has a genuine grizzle on a number of matters, most of which never get heard because of the said small numbers.

Talking of s.w.l.s, I notice that Ernie Luff, WIA-L2245, recently received an Honorary Saskatoon Award from Canada, and he claims to be the only one in the world to receive it. Incidentally, if anybody is interested in doing anything for the s.w.l. within the Division, have a chat with him as to just how much the s.w.l. gets out of membership in the W.I.A., plus a few grizzles on the lack of awards available in VK to the s.w.l.

By the way, if perhaps any reader of these notes feels at times that the world is against him or that he is getting a raw deal from life, I would suggest that he take time out to read the story of Richard WN6YUB in the January issue of "QST" (page 57). Deprived of three important senses—sight, speech and hearing—he passed the F.C.C. exam. at the age of 23 years, and his story should be an inspiration to us all to stop grumbling, get to work and move ahead.

The first meeting of the associate members of the VK5 Division for 1968 was quite a success and speaks volumes for the work put in by the organiser, Wayne Kitchener. In view of the fact that it was close to the approaching P.M.C. examination, the main item for the night was "The Amateur Radio Operator's Certificate" and members were able to ask any questions on this subject. John 5UL and Geoff 5TY answered the questions to everybody's satisfaction, and all in all the meeting was a huge success.

Harry 5MY, our close-fisted Treasurer, is at the moment of writing on the high seas en route to Pago-Pago, and from all accounts is having the time of his life. This area is no stranger to Harry and the XYL, if my memory serves me right, their last vacation was taken either here or Suva. What it is to be in the spandulicks!

Son of Geoff 5TY was recently accepted as a junior associate. This is a good idea to increase the membership of the Division, but just what does Geoff think of the QRM growing up within the four walls of his QTH? Probably he is too busy with W.I.A. matters to care.

Col 5CY, from Balacava, was sighted in the city on holidays recently, and if rumour is correct, he has joined the ranks of the idle rich. He will be more or less knocking off to carry bricks, because he will be playing around with radio as an Amateur instead of working on radio, etc., as a vocation.

Brian 5BI is reported on the re-building racket once again. This joker never seems to stand still for a minute and will start re-building at the drop of a hat. No news of the Admiral lately Brian?

VK5 has never had a YL operator for very long periods, the only one I remember was Betty Geisler from Murray Bridge, and I don't think she was very active after she passed her 1st Class Commercial. Anyway, if all is to be believed, it won't be long before this position is remedied as my spies tell me that Lorraine Earl, from Mallala, is a keen addict at the Amateur hobby and will one day vacate the s.w.l. ranks to sit for the ticket. Good work, Lorraine, you will never regret the effort.

Max 5OF not very active these summer days. In fact Amateur Radio has taken second place to that of the art of yachting, an art at which I am led to believe he excels. If he cares to take me for a sail any time I will be only too pleased to stand on the front and signal every time we turn round the corner!

Talking of sailors, those two intrepid adventurers, Carl 5SS and Frank 5MZ, recently went up to Murray Bridge and boarded the paddle steamer Avoca and sailed all the way to Tallen Bend, and in one afternoon at that! The occasion was the picnic organised by a section of the Electricity Trust of S.A. (E.T.S.A. to you) and a good time was had by all, with plenty of cups of tea made with the famous Murray water, and a potent brew it certainly was, with an aroma that could be heard and smelt for miles. So much so that Carl put a few days in bed with a septic throat on the following week and whilst no nasturtions will be made, Carl is at the moment right off tea, with or without the famous Murray water.

Alan 5DU was another daredevil on board the Avoca who sampled a cup or two of the famous brew that laid Carl low. He has been heard on 7 Mc. of late with quite a strong signal at my QTH.

Occasionally one bumps into a couple of the boys who live in close proximity to each other and cannot seem to work together very harmoniously as to their air time. Then again there will be three or more in the same boat and they all work in perfect harmony as to their air time, as is evidenced by Ken 5IM. This joker has a sked with a couple of rascals in VK2 around 5-6 p.m., and come rain or shine, always manages to sign off at the right time to permit another well known sked in the area to start on time. This is the spirit that makes for good relations in our hobby.

I notice that Allen 5FD is now the State Secretary of the VK5 Youth Radio Scheme following the State Convention held at Elizabeth on the holiday week-end of January. A similar convention has been arranged to be held in June following the National Convention to be held in VK3.

Uncle Tom 5TL was sleeping the sleep of the pure and innocent the other early morning when the telephone disturbed his slumbers. When he answered the call, it was from the police to inform him that a window had been found open at the Glenelg Post Office and they would like him to rendezvous with them and check the premises. Tom, at the unearthly hour of 1.30 a.m., set sail for Glenelg and with the police made a thorough check of the premises, returning empty handed at about 2.30 a.m., much to his XYLs disgust at the disturbed night's sleep. He reacted in a somewhat coarse manner to my query as to whether he had a listen on the receiver upon his return from the post office. No dedication, that's the trouble!

My little paragraph last month regarding the credit alongside the name of Geoff 5TY must have inspired his Man Friday, because the same magic word appeared at a later date alongside the name of Treva 5ZIS. I also noted the name of Uncle Tom 5TL in the pass list, and when one compares the ages, this is as good as a credit to him.

Notice that the W.I.C.E.N. Group are holding a Scavenger Hunt instead of the usual Fox Hunt this month—nothing like variety they say. I suppose if I want to find out just what is the difference I will have to attend, but I don't. The word scavenger seems too close to home!

Jack 5LR has at last completely settled in at the new QTH at Victor Harbour, and applied the last brush of paint on the front door this week. The last six to eight months have been very busy months for him, and also the XYL, Flo, and they are both entitled to sit back and take pride in their efforts. He has been on the air a little with a piece of wire dangling on the nearby fence, worked a little DX at that, but will now have more time to concentrate on the bands.

Had a card during the Xmas season from Jack 5JD who is still sailing the seven seas as a radio op., and sounds as happy as a lark in the process. He sends his 73 to those who may still remember him and hopes the VK5 Division is still as strong as ever.

Noticed Johnny 5KO getting quite a mention in the R.S.G.B. Bulletin recently for his work on the "top band" and the list of contacts were certainly impressive, especially as his contact with WQ8CCR, of Rodriguez Island, gave him his 160 mx W.B.E., certainly the first

known one by a VK, and congratulations are in order.

Uncle Tom 5TL recently had just completed a contact with a VK2 on c.w. when Freddie 5FH called him and asked him to report his telephone out of order. No idea when the service was restored, but Freddie had been spending a lot of time washing up following the announcement of his daughter's engagement and the subsequent number of callers. Sounds like the telephone must have run hot, but anyway Freddie reckons that c.w. is still the best after all, as he had to use it to get his phone working!

John 5YA is off on a 2-year trip to Nauru in the near future and it was announced at the meeting that he was keen to borrow a transmitter, etc., for the period, in order to keep in touch with home sweet home.

I notice that the winner of the W.I.C.E.N. scavenger hunt, mentioned earlier, was none other than John 1ZDZ/5 who apparently was home for a period. Barry 5ZMW was second, and equal third were Phil 5NN and Murray 5ZQ. Quite a good roll-up and although more work has to be put into the preparation for the hunt than is required for a fox hunt, it would seem that the change was appreciated by all.

Incidentally, the young son of Geoff 5TY christened Murray, and now a junior associate member, was well to the fore at the hunt, and with Tom 5TL in the driving seat, probably formed the youngest and oldest operational crew.

Bob 5ZDX and Treva 5ZIS were recently put on to some maintenance work due to a strike where they work. Imagine their feelings when half way through the said maintenance, to find the strike called off, but no chance of start for the men. It seems reasonable to think that the maintenance was bustled along a little.

Well, this month has been a bad month for news gathering, in fact I never remember it so bad. I listened on all bands, but very little activity in VK5, probably the heat and no inclination to go into the shack. Here's hoping next month will be better—if not I will be out of business—and VK4 and VK6, plus Ye Ed. will be overjoyed! 73, de 5PS—PanSy to you.

— . . . —

WESTERN AUSTRALIA

It is pleasing to be able to report that the attendance at our meetings each month has maintained the general trend and is creeping ever upward. The last couple of meetings strained the seating capacity to the utmost. Seems as though the present time and place is convenient for most members, and judging by the extremely poor response by country members to the questionnaire in the local Bulletin, a change is not indicated at present.

Remember the disposal sale way back at the January meeting? Well, one of the items auctioned off was a thirty-foot tower complete with beam. The purchaser was an American visitor to our sunny shore who was due to depart the aforementioned shores within several days. For some strange reason, shipping and airline companies tend to look askance at passengers toting thirty-foot towers among their personal belongings, hence our friend reluctantly stepped aboard the transport without so much as the co-ax. concealed on his person. To make a long story even longer, Dale kindly donated his purchase back to the Institute! This is about where we came in isn't it? However, it was decided by those present at the February meeting, that tower and beam be removed from its present site at Bayswater and be re-erected at Sunset Home. Great interest in Amateur Radio has been awakened in a number of patients at the Home, due almost entirely to Bill 6WY and his small band of helpers. There have been two demonstrations of Amateur Radio in action, each being somewhat handicapped by lack of an efficient antenna. It is hoped that with a little bit of encouragement and instruction, there will soon be another station on the air from VK6.

News to hand indicates that Tom 6TR has kindly offered a home for the v.h.f. beacon to be set up at Mt. Barker. Things are really getting under way down South.

Jack 6BU and John 6GB have been noted doing their bit toward keeping the 80 metre band "habitated" during the evening hours.

Heard an unusual sound on 40 the other Sunday morning. Turned out to be Bob 8BT. When challenged about the unusually large amount of carrier and that extra sideband, Bob ruefully admitted that he was on "ancient modulation", his sideband rig having "blown up". However this sad state of affairs has its brighter side because Bob intends to build a new rig, amid the ruins of the old, so to speak. Heavy commitments at the salt mine may disrupt Bob's appearance on the band for some little time.

What do you think of the new Handbook? One thing is for sure, its bright cover is certainly more attractive than the sombre grey of its predecessor. Makes quite interesting reading, too, particularly when consumed with the appropriate comments as published over the last few months in "A.R." The new Morse requirements seem to have stirred up a good deal of activity in some quarters, too!

Don't forget to book in for the Kalgoorlie Hamfest on the long week-end early in June. It promises to be bigger and better than the last one. From then on its over to you Narrogin X-group. 73, Ross 6DA.

HAMADS

Minimum 50c for thirty words.
Extra words, 2c each.

Advertisements under this heading will be accepted only from Amateurs and S.W.'s. The Publishers reserve the right to reject any advertising which, in their opinion, is of a commercial nature. Copy must be received at P.O. Box 36, East Melbourne, Vic., 3002, by 5th of the month and remittance must accompany the advertisement.

FOR SALE: Complete Amateur Station, VK2IW (Fred Borcharo). Best offer. Write to Les Hauck, P.O. Box 110, Broken Hill, N.S.W. Phone 2411.

FOR SALE: Four Oregon Masts, 70 feet high, complete with guy wires and aerial wire. All in perfect condition. No reasonable offer refused. W. A. Humphrey, 4 Catrossie Ave., Montmorency, Vic.

FOR SALE: Galaxy "Relecto" Audio Notch Filter, and home-brew ext. VFO, \$50 the lot. Bendix LM10 Frequency Meter with power supply, \$50. Alf Chandler, VK3LC, 1536 High St., Glen Iris, Vic., 3146. Phone 50-2556.

FOR SALE: Galaxy V. Transceiver and power supply, with remote VFO, VOX, crystal calibrator, and tape recorder; \$550 the lot. Will also sell as separate items if necessary. VK3AXL, J. A. Ferguson, 594 Plenty Rd., East Preston, Vic., 3072. (No phone)

FOR SALE: Hallicrafters HT37 transmitter, Dow Key antenna relay, etc., \$300. Eddystone 888A Receiver as new, \$180. Trio JR-60 Receiver, 14 tubes, d/conv., inc. 144-148 Mc. band, new, \$130. Pye Reporter on 53.032, 12v. also ext. 240 supply, \$30. 144 Mc. Conv., 3-tube, xtal i.f. 3 Mc., \$12. FL1000 Linear Amplifier, \$220. All gear very clean and little used with instruction books. Ian McCosker, P.O. Box 299, Moree, N.S.W. Phone 1060.

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amateur radio

Vol. 36, No. 5
MAY
1968

30c

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—ALEX OUTTRIM

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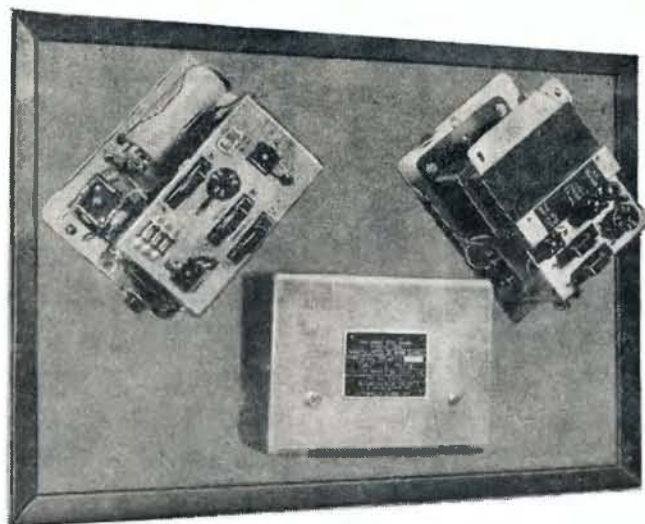
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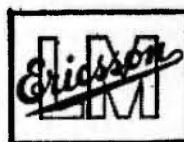


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A PRESIDENT RETIRES!

This story begins in 1950 when a member of the Victorian Division rose to his feet at a general meeting and stuck his neck out by challenging your scribe, then Federal Vice-President, to do some work on behalf of his fellow Amateurs.

Unfortunately for the member concerned he picked an inopportune moment to issue his challenge.

Reason, the Federal Secretary, Major W. T. S. Mitchell, was about to depart for England on a tour of duty in an Army establishment. Federal Executive was looking for a new Secretary, here was a ready-made victim. Hence, counter challenge was issued—result, one George Maxwell Hull entered into a life of toil and self sacrifice.

During the first six years of his servitude he bore the Secretary's yoke, patiently and well, suffered the usual amount of frustration, received the usual amount of abuse, which he accepted philosophically and came up for more.

In order to appreciate fully the value of the service rendered to members by the Federal Secretary, particularly before the days of paid assistance, it is necessary to bear in mind that in 1950 the membership was over two thousand—spread over eight call areas, administered by six Divisional Councils.

This meant, and still means, that in addition to maintenance of communications with the International Radio Union (I.A.R.U.) and its member organisations, the Postmaster-General's Department, and other relevant Government Departments, the Secretary has to satisfy the demands of six Federal Councillors, six Divisional Secretaries and individual members. Furthermore, he must handle the correspondence associated with the co-opted officers filling the posts of Contest, Award, QSL Managers and carrying out other duties—**all in an honorary capacity!**

So much for the tasks undertaken by the said G. M. Hull during his initiation period. Tasks which he performed well and diligently, emerging a sadder and wiser man, still undeterred, however.

No doubt his earlier training in the R.A.A.F. and the advice contained in that old motto, "Nil Basturdum Carborundum" aided considerably in his acceptance of the vicissitudes of his chosen path.



MAX HULL, VK3ZS

Max rose through the rank of Federal Vice-President to Federal President, without any increase in emolument, a position which he has successfully filled for a total of seven years. During this period he has been elected Honorary Life Member of the Victorian Division (1962).

Had the distinction of chairing Federal Conventions in every State of the Commonwealth.

Been a member of the three-man team representing the Institute at the television hearings in 1956.

Seen W.I.C.E.N. grow from infancy to its present stature.

Was an active member of the Federal Executive which brought about the acceptance of Institute's representative as a member of the Australian Delegation to Geneva I.T.U. Conference in 1959, at which the late John Moyle served us so well.

With other members of Federal Executive arranged with the P.M.G.'s Department the contract enabling the Institute to produce annually an up-to-date "Australian Call Book". As well as obtaining many other concessions for the Australian Amateur.

The completion on acceptance of the Uniform Divisional Constitution, commenced in the 1933-1939 period, took place during his term of office as Federal Secretary.

Witnessed the introduction of new techniques, such as s.s.b. and Moonbounce and aided in the formulation and acceptance of rules governing the Amateur operations in these fields.

Recorded the deaths of three Federal Officers: John Moyle (ex I.T.U. Liaison Officer), Gordon Weynton (ex member of Executive and Federal Awards Officer), and Alf Kissick (Federal Awards Officer at the time of his death).

This story would be incomplete unless the field of service expected from and given by Max as Federal President was outlined.

The Federal President, in addition to overseeing all the tasks of Federal Officers, is responsible for maintaining good relations with the authorities and associated societies. He is also responsible for the public image and initiating action to improve the lot of the Australian Amateur.

As an active member of the Institute for nigh on forty years, the writer can attest to the fact that based on eighteen years' association with Max, during the whole term of the latter's office, that the Institute has gained much from the enthusiasm and devotion to duty that Max has brought to the offices he has occupied.

You will all undoubtedly agree that it is fitting that his last year of office as Federal President has become noteworthy for the success such achieved in the finalisation of such matters as the re-writing of the "Handbook for Operators of Radio Stations in the Amateur Service".

The completion of plans for Federation of the Institute under a new Constitution. A view that was first expounded in the 30's and received a further fillip when the Uniform Divisional Constitution was accepted.

The growth of membership to over five thousand.

The holding of the first Region III. Conference in conjunction with the (1968) Federal Convention in Sydney.

Past and present members of the Federal Council and Executive who have had the pleasure of serving with George Maxwell Hull are proud of their association with him and the work achieved during his term of office and we are sure all members will join with us in expressing gratitude for his service and express the hope that he will continue to serve the Institute in some less arduous capacity.

—G. GLOVER, Federal Historian.

FEDERAL COMMENT

An Introduction to the Field Effect Transistor

G. S. BYASS,* VK3ZWA (Ex-VK6ZDB)

THE Field Effect Transistor, or FET, has only recently started coming into the consumer electronics field and their prices are now becoming competitive with conventional transistors. A number of articles about FET's have appeared recently in overseas Amateur Radio publications and at least one Amateur receiver, the Davco DR30, is employing these devices.

The purpose of this article is to give an introduction to the Field Effect Transistor, their characteristics and their uses. It is not intended to delve particularly deeply into the theory of their operation as there are a number of good articles on this subject (Ref. 1 to 7), so the theory given in this article will be restricted to a minimum. The operational characteristics of FET's will be compared with those of conventional transistors and vacuum tubes to enable an appreciation of the advantages and disadvantages of the various devices to be gained.

The theory of the field effect transistor was described by Shockley in 1948 but it was not until about 1960 when semiconductor manufacturing techniques had reached a relatively high state of development that it was possible to produce the FET commercially. In a similar fashion to the development of the conventional transistor, the first FET's were low frequency devices and their prices were high. However, this position is rapidly changing and units capable of v.h.f. operation are now readily available and comparatively cheap.

THEORY OF OPERATION

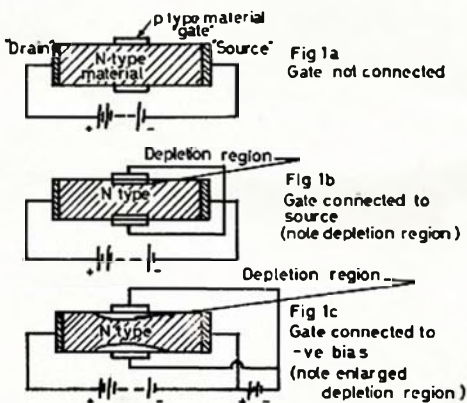
A pure semiconductor material is characterised by a low conductivity because the molecular structure gives rise to very few "charge carriers" within the material. The two most commonly used semiconductor materials are germanium and silicon, and in practice the pure material is "doped" with carefully controlled amounts of impurities to provide the required "charge carriers". A "charge carrier" is a term for either an excess electron or a shortage of an electron within the semiconductor material; a lack of electrons gives rise to P-type semiconductor while an excess of electrons results in an N-type material.

The electrons in the N-type and the holes (or lack of electrons) in a P-type semiconductor material are referred to as the "majority" charge carriers, however in practice there are always present a few carriers of the opposite type and these are referred to as "minority" carriers. Conventional transistors as we know them, make use of both types of carriers and are hence known as "bipolar" transistors. In the case of the FET only the majority carriers are required and hence the FET is sometimes referred to as a "unipolar" device.

In the FET the presence of minority carriers cause undesirable leakage currents and every effort is made to minimise the number of minority carriers present in the material.

The conventional, or "bipolar", transistor relies for its operation on a current flowing between the base and emitter giving rise to an amplified current flow between the collector and the emitter, hence they are referred to as current amplifying devices. The base-emitter looks like a forward biased diode while the collector-emitter looks like a reverse biased diode in the absence of any base current flow. The ratio of collector current to base current is known as the current gain of the device.

The field effect transistor can be imagined as a bar of semiconductor material with a metallic contact at each end, one of these contacts will be known as the "source" and the other as the "drain". Because the contacts are metallic, there is no rectification taking place and the bar of material merely acts like a resistor. Assume that the semiconductor bar is N-type (i.e. has been doped with impurities giving rise to an excess of electrons) and that mid-way between the drain and the source some P-type material is joined to the bar. This will be referred to as the "gate". (See Fig. 1a).



If a voltage is applied between the drain and the source, leaving the gate with no connection at this stage (+ve on the drain and -ve on the source), a current will flow through the device, the magnitude of the current depending on the applied voltage and the resistance of the material.

Assume that the gate is now connected to the source (as in Fig. 1b), and it will be found that drain current will drop sharply and that no current is flowing in the gate circuit. The junction formed by gate and the bar is in actual fact a reverse biased diode although the reason for the presence of the reverse bias is not readily apparent. However, by considering the voltage gradient between the drain and the source it can be seen that because

the gate is between the drain and source, the voltage of the semiconductor bar near the gate must be positive with respect to the source.

If the voltage on the drain is +20 volts with respect to the source, and the gate is midway along the bar, then the voltage in the region of the gate will be 10 volts positive with respect to the source. Thus the PN junction formed by the gate and the bar has a reverse bias of 10 volts and the only current flowing is a very small amount of leakage current which plays no part in the operation of the FET and is undesirable as it lowers the input resistance of the device.

The reason for the drop in drain current is that in the area immediately adjacent to the reverse biased junction formed by the gate there is a "depletion" region formed where no negative charge carriers can exist. As all the current flowing through the device is conveyed by the negative charge carriers and must pass along the bar past the gate area, the reduced area available causes an increased drain-source resistance and hence a reduced current flow. The size of the "depletion" region varies according to the reverse bias on the gate and hence the current flow is dependent on the gate-source voltage for a given applied drain-source voltage (see Fig. 1c). If the reverse bias on the gate is made large enough, it is possible to cut off the drain current completely.

The geometry of an actual device is not the same as this example but the end result is similar and it is easier to visualise the operation this way. There are a number of different types of FET's on the market ranging from audio to v.h.f. types, triodes and tetrodes as well as junction and metal oxide types. The most common is probably the triode junction FET or JFET similar to the type just described although P-channel and N-channel types in both silicon and germanium material are available. These devices are quite rugged and require no more care in handling than conventional transistors.

The metal oxide FET or MOSFET is constructed differently from the junction type as the gate is formed by a metallic layer over the semiconductor bar or channel but separated by a very thin insulating layer of oxide. By this means the input resistance of the device is extremely high, however the insulating layer between the gate and the channel can easily be punctured by high voltages on the gate. The most likely occasion that this insulating layer can be punctured is when the device is being handled before being inserted in the circuit and even the small electrostatic charge applied to the gate while handling the device with the fingers can cause a voltage high enough to break down the gate insulation because of the extremely high gate resistance (up to a million megohms) and the small capacitance of only a few pico-

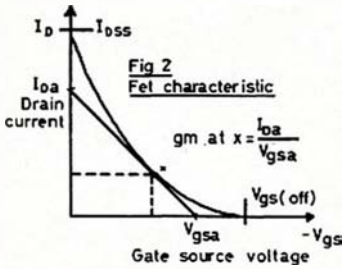
* Flat 14, 274 Domain Rd., South Yarra, Vic., 3141.

farads. Hence the leads of the device should be shorted together until after it is inserted into the circuit when the circuit component leakages and capacitances will protect the FET from damage.

Recently some FET's have been produced as tetrodes and these, similar to tetrode vacuum tubes, employ two control elements, or gates, as they are referred to in the case of the FET. The second gate can be used as a control or signal input electrode, but it is usually connected to the source as this results in decreased feedback capacitance which is highly desirable for stability purposes in r.f. amplifiers.

CHARACTERISTICS

The characteristics of a FET are very similar to those of a pentode vacuum tube in that the drain current for a given value of gate bias remains relatively constant over a wide range of applied gate-source voltage. The FET is an almost perfect square-law device which means that the graph of drain current to gate bias follows a square-law curve or a parabola with the transconductance (slope of the curve) increasing with decreasing bias and hence increasing drain current (see Fig. 2). This square-law characteristic means that the harmonic distortion in a FET is essentially second harmonic only and when correctly biased they will give results at least equal to and in most cases far better than conventional transistors or vacuum tubes as regards intermodulation and crossmodulation performance. When operated at the lower portion of the characteristic curve the operation as a mixer is very good because the square-law characteristic ensures that the only unwanted frequencies present after the mixing process are the second harmonics of the mixing frequencies and no other intermodulation byproducts appear.



At low frequencies the input impedance of a FET is very high and almost purely resistive, but as the frequency increases the effect of the gate capacitances start to take effect and the input impedance falls and becomes increasingly reactive in nature. The FET also has the advantage that it is theoretically capable of a lower amplifier noise figure than either vacuum tubes or bipolar transistors and even at this early stage in their development it is only in the u.h.f. region that their performance is surpassed by bipolar transistors.

So far the FET appears to be considerably superior to tubes or conventional transistors, but it is not as simple as all that because there are some inherent disadvantages in the currently available devices. The first of these is

the relatively high (2 to 4 pF.) drain-gate capacitance of the junction FET which means that in common source amplifiers at high frequencies the device becomes unstable. The feedback capacitance in the MOSFET can be somewhat lower than that for the JFET but it can still be a problem in some circuit applications where, similar to the grid-plate capacitance of a triode, it causes positive feedback in certain circuit configurations and hence high-frequency instability. A second difficulty is the effect of increasing temperature which causes a rise in the gate leakage and a decrease in drain current which can cause difficulties when d.c. coupling or d.c. amplification is required. These effects are not, in general, as severe as with bipolar transistors and in any case the majority of Amateur uses employ a.c. coupling between stages where the variations in individual stages is of relatively small importance.

which is the frequency at which the power gain is unity. This is given by the following:

$$f_{co \ max} = \frac{Y_{fs}}{2 \pi C_{iss}}$$

(This is similar to the case of conventional transistors where the Figure of Merit is designated f_r .)

APPLICATIONS

Amplifiers.—As shown in Table 2, there are three FET amplifier modes—common source, common gate and common drain, corresponding to grounded cathode, grounded grid and cathode follower modes for vacuum tubes. Of these three, the most often used is the common source mode as this gives high voltage gain together with a high input impedance. A comparison of the characteristics of the various amplifier modes is given in Table 2.

In Amateur service the FET, in its present stage of development, can be

FET Parameter	Tube Equivalent	Description
I_{DSS}	—	Gate Cut-off Current, i.e. the leakage current flowing in the gate with the gate reverse biased.
I_{DSS}	—	Zero Gate Voltage Drain Current, i.e. the drain current flowing with zero gate bias.
$V_{GS \ off}$	—	Gate-Source Cut-off Voltage, i.e. the reverse gate bias that cuts off the drain current flow.
$| Y_{fs} |$	gm	Small Signal Common Source Forward Transfer Admittance.
$| Y_{os} |$	—	Small Signal Common Source Output Admittance.
C_{iss}	C_{input}	Common Source Short Circuit Input Capacitance.
C_{rss}	C_{rd}	Common Source Short Circuit Reverse Transfer Capacitance.
$V_{BR \ GSS}$	—	Gate-Source Breakdown Voltage.

Table 1.

Another disadvantage with the currently available FET's is their wide tolerance spread—rather like the early bipolar transistors—and this means that either the circuit must be designed for the worst-case device and consequently considerable negative feedback to allow for the better devices or the circuit values must be tailored to suit the individual FET used. For example, the transconductance of the TIS34 silicon N-channel junction FET is stated as a minimum of 3500 and a maximum of 6500 umhos with the drain current at zero bias varying between 4 and 20 mA. No doubt better manufacturing and sorting techniques will be developed soon to minimise these wide variations between devices with the same type number.

FET PARAMETERS

Some of the more important parameters used for describing FET's are shown in Table 1 together with their vacuum tube equivalents where these are applicable.

In high frequency operation a useful comparison between different devices is given by the Figure of Merit, $f_{co \ max}$,

used in the majority of low power applications from audio frequencies to the v.h.f. region. At present FET's capable of high power output are not readily obtainable in either the audio or radio frequency regions, but this is one of the few areas where they cannot be used in the place of conventional transistors or vacuum tubes.

The main fields of use for FET amplifiers in Amateur service are probably as r.f. and i.f. amplifiers in receivers where low noise and freedom from cross-modulation are required and for low level audio pre-amplifiers for both receivers and transmitters. The FET employs similar supply voltages to bipolar transistors with operation possible with very low drain currents, in fact with MOSFET's, the voltage gain is a maximum when the drain current is a minimum and operation is possible with only a few microamps. of drain current.

In r.f. amplifiers it is usual to use the common source mode as this gives a slightly lower noise figure and higher gain than the common gate configuration, however as previously mentioned, neutralising is usually needed at the higher frequencies. Thus if noise figure

is not important and the lower gain can be tolerated the common gate mode is often used. A further alternative is the use of cascode operation which gives a slightly higher gain than the common source stage and in most cases neutralising is avoided, however two FET's are required instead of one.

The input impedance of a common source r.f. amplifier decreases with increasing frequency because of the gate-source and gate-drain capacitances and at 100 Mc. the input impedance is in the order of 10,000 ohm for a TIS34 (the common source output impedance for the same transistor and the same frequency is about 20,000 ohm).

gate has to be forward biased, to a value depending on the device geometry, before gate current will flow. If it is desirable to have "gate current" flow, to stabilise the oscillator amplitude for example, an external diode between gate and source can be used.

There is probably little need to use the FET in a crystal oscillator circuit unless the requirements are particularly stringent as conventional transistors are usually quite adequate for the job and are usually cheaper. It is in the field of self-excited oscillators or v.f.o.'s where the FET is useful.

The high input impedance of the FET means that the tuned circuits are

not "loaded" as much as would be the case with bipolar transistors and the small amount of heat produced means that temperature compensation is less of a problem than with vacuum tube v.f.o.'s. The capacitances in the bipolar transistor depend on both temperature (both positive and negative coefficients depending on the actual temperature) and on the collector current flow. This means that full compensation is particularly difficult and about all that can be done is to isolate the transistor as far as possible from the tuned circuits. On the other hand, capacitance compensation in the case of the FET is somewhat easier as the capacitance has a positive coefficient with temperature and is almost independent of current flow through the device. Thus capacitance compensation is a practical proposition in the case of FET's.

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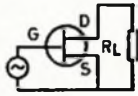
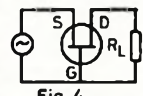
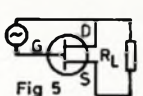
	Common Source	Common Gate	Common Drain
	 Fig 3 Common source	 Fig 4 Common gate	 Fig 5 Common drain
Input Impedance	High	Low	High
Output Impedance	Moderate	High	Low
Voltage Gain	More than 1	More than 1	Less than 1
Phase Inversion	Yes	No	No
Equiv. Tube Circuit	Grounded Cathode	Grounded Grid	Cathode Follower
Equiv. Trans. Circuit	Common Emitter	Common Base	Emitter Follower

Table 2.—FET Amplifier Configurations.

Mixers.—When two signals of frequency f_1 and f_2 are mixed together in an ideal mixer (unbalanced type) the frequencies appearing in the output are the original frequencies together with their sum and difference, i.e. f_1 , f_2 , $(f_1 + f_2)$ and $(f_1 - f_2)$. In conventional mixers there are also present harmonics of the mixing frequencies together with intermodulation by-products of the form $(1 + n) f_1 - n f_2$, or $(1 + n) f_2 - n f_1$. The FET, because of its square-law characteristic, approaches the ideal and the only significant spurious frequencies generated are the second harmonics of the mixing frequencies, i.e. $2f_1$ and $2f_2$. The gate voltage range, however, must be limited to that portion over which the square-law characteristic holds good and a value of bias giving a drain current of $\frac{1}{2} I_{DSS}$ is a good starting point.

The mixer transconductance is proportional to the oscillator injection voltage, hence by varying the injection voltage the mixer gain can be altered thus giving a further stage to which a.g.c. can be applied. When the injection voltage is small the signal voltage can occupy the entire range of permissible gate voltage which is desirable as maximum gain reduction is required when the signal amplitude is very large.

Oscillators.—Because of the similarity between the characteristics of FET's and triode vacuum tubes the oscillator circuits are very similar except that the analogy between gate current and grid current is not followed. For example, gate current flow is not possible in the case of the MOSFET as the gate is insulated by a layer of oxide from the channel material. The junction FET

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ASYMMETRICAL CRYSTAL FILTERS

Although articles written in this series several years ago were designed to assist with the design and construction of phasing exciters (and I have been referred to in conversations on the air as "The Phasing Man") I wish to make it known that I have had more filters in my shack than many have ever seen. Some have been the result of weeks of abortive experiment to make them symmetrical, but have steadfastly resisted all attempts to squash them into shape. Even some of the "bought" filters have shown a goodly amount of difference in the height of the upper and lower peaks until they were properly terminated, often with quite a deal of capacitive termination.

Many of the early FT241 "surplus crystal" filters, as described for the "Edmunds" (W1JEO) exciter used purposely asymmetrical filters, using shunt crystals to increase the attenuation of the unwanted sideband, and did it very effectively, too. The filter I made used crystals around 430 Kc, because the 80 metre band falls between the 8th and 9th harmonic of this frequency, and for no other reason. Channels from 30 to 35 are suitable.

The method of making and adjusting such filters is described in about three articles in the earlier editions of the A.R.R.L. Sideband Handbook and a filter of this type is used in the "Sideband Package" transmitter which is included in the latest edition of the book. There is no need for further treatment here but the means used to change sidebands by heterodyning with the required signals will be described.

There have been similar filters made at higher frequencies, viz. about 5 Mc., but they have been special designs. The classical example of such a filter is that used by Hallicrafters in their HT32 transmitter, which still sounds as good as anything one can hear on the bands—perhaps better than many of the modern narrower filters.

I have heard of a filter designed by some VK3s which uses six crystals all on the same frequency (exactly) and of the same type and construction. Although I have suitable crystals available, I have not achieved a 100% filter yet and may have to de-tank some of the crystals to reduce their capacitance. I am anxious to avoid this if possible, and still have a few more measures to be tuned. A VK7 has a filter working, so I must not give up yet. I am told that suitable crystals in the 4 to 6 Mc. region can be obtained from Taxi systems where many crystals on the same frequency are extracted from scrapped mobile f.m. transceivers. Your v.h.f. boys who buy these sets for net operation may be able to put you onto these. It is a good idea to select a frequency which does not place harmonics in one of our bands. My crystals are on 4456

Kc., which misses all bands by a reasonable amount.

Those FT243 crystals are not always suitable unless you can find matching sets from the same maker in the "all-bakelite" holders, since the metal name plates can cause bother in filters. The plated FT243 crystals should be avoided, too, as their capacitance is high and they are not easily altered. They cannot, of course, be etched.

The system used to produce upper or lower sideband in the "Sideband Package" is shown in Fig. 1. The original upper sideband signal is mixed in one case with the fourth harmonic of the 430 Kc. carrier crystal to produce upper sideband again on the 5th harmonic at 2150 Kc. In the second case beating back from the sixth harmonic produces lower sideband, also on the 5th harmonic.

This output frequency has then to be mixed with other crystal and tuned oscillators to place the output sideband in an Amateur band.

Figs. 2 and 3 show two schemes for mixing the sideband signal with a v.f.o. on the final frequency, in this case, in the 80 metre band. Unfortunately, in Scheme "A" it is necessary to mix the sideband twice after the filter, and levels in the mixers must be watched carefully to avoid unwanted signals. The v.f.o. must be well shielded to avoid "feed-through" and the final balanced modulator must balance well.

Scheme "B" mixes the v.f.o. and carrier crystal to produce the desired upper or lower mixing signal, but the sideband is mixed only once, and the v.f.o., if correctly screened, is less likely to feed through.

The circuits to achieve all of this may get complicated, but in these days of cheap FETs and small components to go with the transistor age techniques, the whole upper/lower sideband generator can be built into a compact unit. Transistor v.f. oscillators seem to radiate less than valve counterparts too.

For the balanced mixers in transistorised equipment, I have found the Collins 4-diode circuits hard to heat, but the balanced FET types using Motorola MPF102s or their 2N3819 equivalents are supposed to be excellent in h.f. exciters. Noise is low and they balance out the carriers better than the equivalent transistor modulators and mixers.

Since very low signals must be used in mixers for best linearity, the final signal requires quite a bit of "lift," and what better to do it these days than one of these integrated circuits now being used to give all the gain required in the i.f. amplifiers of modern f.m. radio transceivers. My own experiments with 9.0 Mc. amplifiers using the uA703 integrated circuits are promising, and will probably be included in my i.f. cards in the transceiver at VK5NN.

I sometimes despair of ever completing this transceiver, but as a transistor "training test-bed" it has enabled me to find out a great deal about transistors—sometimes in advance of the younger and cleverer fellows at the "salt mines".

As a final word of warning with transistors—watch your polarities. When checking polarities make certain the red lead on the multimeter is in the positive terminal hole on the case, and the

(Continued on Page 11)

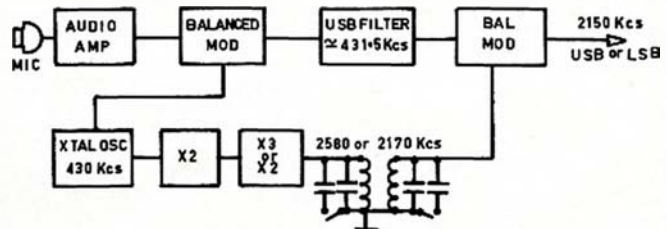


FIG. 1. USB OR LSB GENERATOR AS USED IN THE "SIDEBAND PACKAGE"
(Output on $F_{osc} \times 5$. Fixed Frequency.)

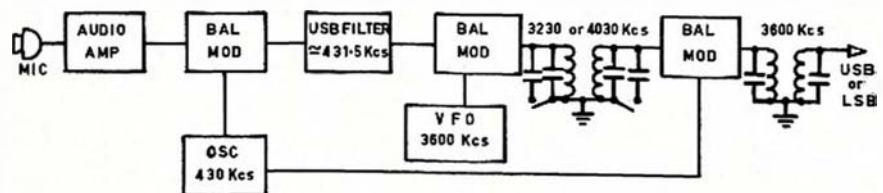


FIG. 2. SCHEME "A" MIX USB TWICE TO FINAL FREQUENCY.

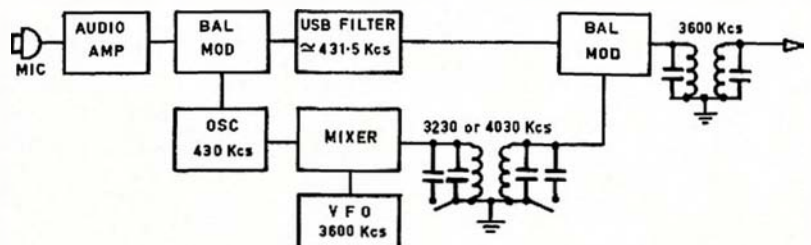


FIG. 3. SCHEME "B" USB MIXED ONCE TO FINAL FREQUENCY.

RADIO AUTOMATIC TELETYPE MADE EASY

D. R. STOKES,* VK2ZPM

GENERAL PRINCIPLES

Two main systems exist. They are FSK, Frequency Shift Keying, and Two Tone Transmission.

FSK.—In this system the transmitter carrier frequency can be shifted by a specified amount either side of the centre frequency by the operation of the teleprinter keyboard. This shift is usually 425 cycles either side, giving a total shift of 850 cycles. When the signal is being received, the receiver b.f.o. is used to detect this shift in carrier, the resultant two tone signal is then used to key the teleprinter. These tones are usually 2125 cycles for a mark and 2975 cycles for space.

Two Tone.—In this, the transmitting terminal has a two tone oscillator and the frequency of this is controlled by the operation of the teleprinter keyboard. The oscillator is an audio type set to 2125 cycles and shifted to 2975 cycles by the operation of the keyboard contacts. This tone is then amplified and fed into the modulator of any transmitter that is capable of transmitting audio signals. In this case the b.f.o. in the receiver is not required as the audio tones are already present and fed directly into the converter.

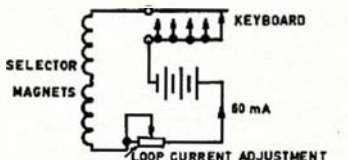


FIG. 1. SIMPLE LOOP CIRCUIT ONE TELEPRINTER.

MACHINES

Many different types of teleprinter exist, the more popular types being made by the American Teletype Corporation. These are Models 14, 14E, 15, 19 and 28. The Model 14 Teleprinters use an 11/16 inch paper tape and the

* Flat 712, 55 Morehead St., Redfern, N.S.W., 2018.

message is printed on this. In some Model 14s, coded holes are also punched into the tape so that the message may be re-transmitted.

The Model 15, 19 and 28 Teleprinters are page printers similar to an electric typewriter.

The teleprinter consists of an electric motor which actually causes the machine to function, and a selecting mechanism that switches the machine from mark to space. Each character is made up of a number of mark and space impulses, which go to make up the five-unit teletype code. The motor requires a.c. while the selector magnets require almost any voltage between 24 volts and 100 volts d.c. with 60 mA. flowing.

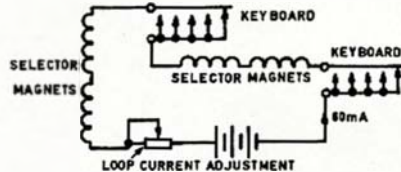


FIG. 2. LOOP CIRCUIT USING TWO TELEPRINTERS.

The selector magnets are actually two coils that can be connected in series or parallel. For series operation, 60 mA. is required, while only 30 mA. is required when they are in parallel. I have found that the 60 mA. operation is more suitable for better copy.

As each machine is fitted with an electric motor, these must always be operating at the same speed, in other words sending and receiving teleprinters set to the same speed.

Most printers are fitted with a keyboard. When a key is depressed contact is made and a definite teletype code is set up. The keyboard is mechanically coupled to the motor but not electrically. The keyboard contacts are not directly connected to the selector magnets, but must be placed in series with them, to operate the machine on a local loop.

THE CONVERTER

The two tone output from the receiver is fed to a 12AX7 limiting amplifier, via a matching transformer. The 12AX7 is cathode coupled, limiting at about minus 4 dbm. This is coupled to a 6C4 which amplifies the tones before application to the discriminator filter. The filters are tuned to exactly 2125 cycles and 2975 cycles. The incoming tones are fed across both filters, but only the required tone will be allowed to pass, as the filters will have a low impedance to all other frequencies present. The output from each filter is passed on to a voltage doubler, consisting of two diodes in each side. These can be either OA85, OA5 or similar, the d.c. voltage being developed across the 470K ohm diode load resistor in the grid circuit of the 12AU7. This d.c. will cause one side of the valve to conduct, thus causing the polar relay in the anode circuit to move to that side. Both sides of the discriminator will operate in the same manner.

A normal reverse switch is fitted between the output of the filters and the diodes so that the mark and space frequencies can be reversed. In the cathode of the 12AU7 a variable resistor is fitted so that the converter can be balanced and each side will draw the same current for mark and space. Another variable resistor is fitted between the anodes of the 12AU7, this is the relay bias and is set so that the two coils of the relay will be balanced. When this is being adjusted, the two cathodes of the 12AU7 are connected together and earthed via a 4K ohm resistor. Once the bias is set it need not be adjusted again unless a new relay is fitted. The balance potentiometer is normally used to balance the mark and space signals.

TRANSISTOR KEYS

The contacts of the polar relay can either key a 100 volt d.c. loop to operate the teleprinter, but arcing of the relay contacts will occur. This also

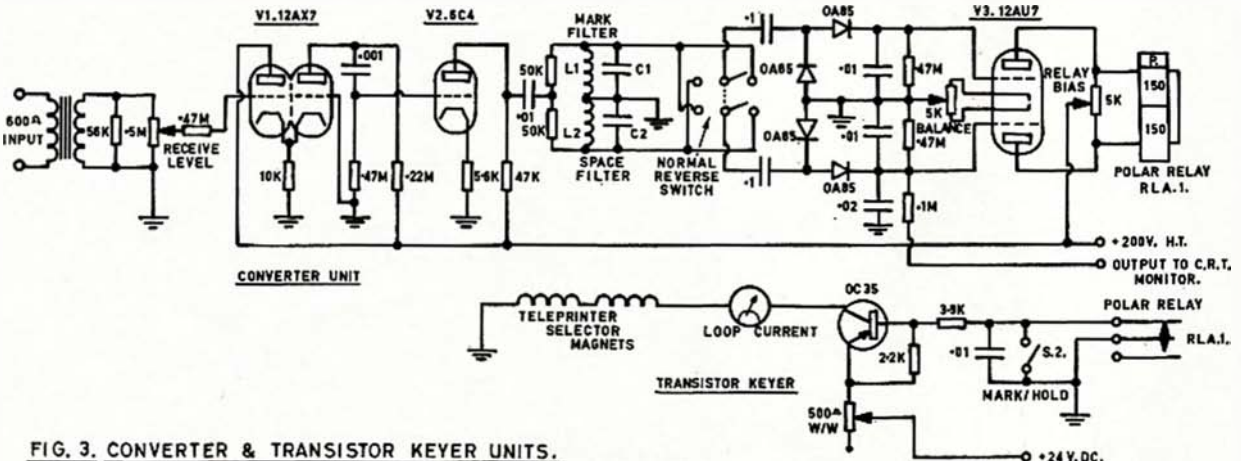


FIG. 3. CONVERTER & TRANSISTOR KEYS UNITS.

causes radio interference. A more suitable system is to use the relay contacts to key the base circuit of a transistor, where there is little current, and using the transistor as the switch. The transistor has to be able to sustain the 60 mA. loop current, OC35, OC36, etc., were found to be suitable.

24 volts d.c. is used to provide the local loop circuit via the transistor switch. The loop current control is set for 60 mA. on a mark. It will be found that a small current will flow in the loop on space but it will not be enough to upset the keying pulses.

TWO TONE OSCILLATOR

This consists of a 12AT7 oscillator on 2975 cycles, using a centre taped coil of about 88 millihenries and capacitors to set the frequency. A "dry shift" keying circuit using two diodes (OA85, OA5, etc.) connect extra capacity across the coil when the keyboard contacts are closed, thus lowering the frequency to 2125 cycles. The 0.03 uF. capacitor across the coil is adjusted for the 2975 cycles tone, the second half of the valve acting as a straight audio amplifier.

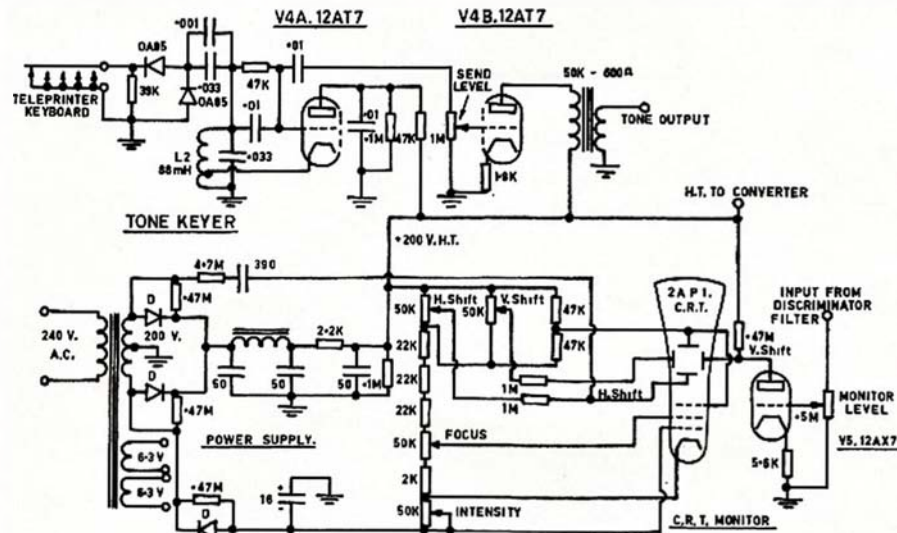


FIG. 4. C.R.T. MONITOR - TONE KEYER & POWER SUPPLY.

C.R.T. MONITOR

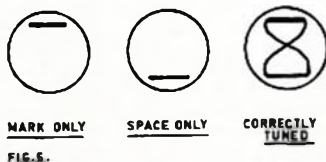
A 2" cathode ray tube is used for a tuning indicator. Either the mark or space d.c. signal to the grid of the 12AU7 is fed to the grid of a d.c. amplifier, which used half of a 12AX7. The anode is directly connected to the vertical plates of the c.r.t.

A small portion of the 50 cycles a.c. is used as the horizontal sweep. The 4.7 meg. resistor and the 390 pF. capacitor are adjusted so that the trace just extends across the face of the tube. The gain control in the grid of the 12AX7 controls the amount of separation from mark to space.

When the teleprinter speed is set for 50 bauds, 67 words per minute (w.p.m.), the figure eight pattern on the c.r.t. will appear stationary, due to the 50 cycles sweep frequency, but when the incoming signal is at 45 bauds (61 w.p.m.) the trace will switch back and

forth. By this means the speed of the incoming signal can be seen.

When the receiver is correctly tuned the mark or space voltage at the grid of the 12AU7 will be at a maximum and this can be viewed on the monitor.



FILTER CONSTRUCTION

The filters consist of two band pass filters tuned to 2125 cycles and 2975 cycles. The basis of each is a coil having an approximate inductance of 88 millihenries. These coils can be either old P.M.G. telephone loading coils, in which case the two coils are connected in series aiding to give the required inductance, or wound on Ferroxcube "D" type cores. These require approximately 720 turns of 26 B. & S. enamel wire to obtain the 88 millihenries. This

relay to one side. A tone of 2975 cycles is then fed into the converter and this will move the polar relay to the other side.

Frequency stability of the receiver is essential, but most good quality communications receivers are suitable. A period of time should be allowed for the receiver to stabilise before a station is printed.

When the receiver does drift, the resultant two tone signal frequencies will fall outside the pass band of the receive filters and only rubbish will be printed.

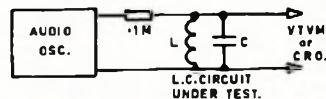


FIG. 6. FILTER TEST CIRCUIT.

The teleprinter keyboard and page printer can be checked by simply placing them in series in the local loop and typing. Alternatively, the output from the two tone oscillator can be fed into the input of the converter. This is known as "back to back" testing and proves the operation of the teleprinter and the converter.

One additional switch was fitted in the converter. This is a "mark hold". When this is operated, the receiver can be returned or altered. The switch is across the contacts of the polar relay and places the teleprinter on a permanent mark.

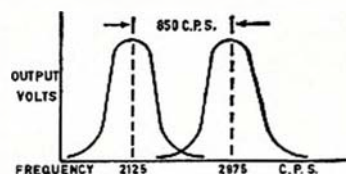


FIG. 7. TYPICAL RESPONSE CURVES FOR TWO FILTERS.

A simple 100 volt loop current supply can be made by placing an OA210, OA211, etc., as a half wave rectifier across the 115 volts motor supply. **Note.**—This must not be placed on the transistor keyer.

If a tape recorder is in the shack and it has a reasonable frequency response, the two tone signal from the receiver can be recorded and played back into the converter for test purposes when there are no stations on air.

SIDEBAND

(Continued from Page 9)

black lead in the negative hole. Failure to do this with an Avo "8" was responsible for a rather expensive debacle which came to my notice. My own JA multimeter has this one covered as the red lead will not go into the black hole in the meter case. Diodes in the power supplies are good insurance—but don't overlook "bias" supplies.

73 for now, Phil VK5NN.

inductance is not critical, but the coils want to have a reasonably high Q.

To test the filters a simple circuit (Fig. 6) can be set up. A 100K ohm resistor is used to isolate the audio oscillator from the filter under test. Capacitors are placed in parallel with the coil until a definite peak is found at the required frequency. After this, a frequency response curve can be easily obtained by plotting output volts against frequency.

A vacuum tube voltmeter or c.r.o. is the best to measure the output voltage, but a high resistance voltmeter can be used. It does not matter if the response curves are a little broad as this will make any frequency drift in the receiver less noticeable.

CONCLUSION

After the converter has been set up an audio tone of 2125 cycles is fed into the converter. This will take the polar

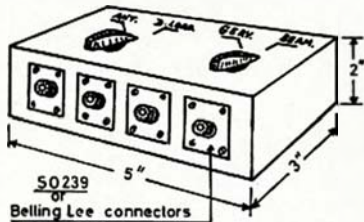
SIMPLIFIED ANTENNA SWITCHING FOR H.F. BANDS

GEOFF WILSON,* VK3AMK

Operation on the h.f. (80-10 metres) bands requires the use of at least two separate antennae if reasonable efficiency is to be achieved and a fair share of DX worked. An antenna designed, say, for 20-10 metres will obviously be useless when 80-40 metre operation is desired (perhaps with the exception of the G5RV, etc., but 20-10 metre operation really requires something with a little more gain and directivity) By the same token the 80 or 40 metre dipole, which performs so well in its own right, leaves much to be desired on 20-10 metres.

The operator who likes to work all five bands must therefore have an antenna system for 80-40 metres and one or more for 20-10 metres, and be able to change quickly from one to the other without hunting for co-axial cables or unplugging or unscrewing various connectors. Sooner or later the connectors start to wear, contacts become dirty or fail to make firm electrical and mechanical connection, etc.

Having experienced these troubles, I decided to take steps to remedy the situation and make antenna changing as easy as band switching. After looking at currently available commercial co-axial switches, I discovered there were several drawbacks: (1) Price! (2) My requirements were not readily catered for in commercially made switches unless I bought several and interconnected them. (3) Placement of the connectors on the switch housing was inconvenient, requiring special mounting and/or a number of right angle connectors which add considerably to the cost.

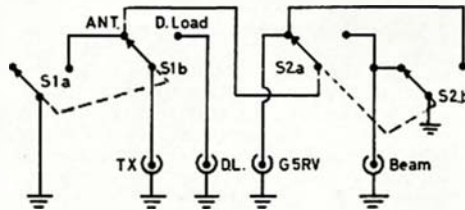


My requirements were (a) to be able to switch the transceiver to a dummy load, for tune up without radiating a signal or for testing on full input while monitoring on a c.r.o., (b) to enable rapid change over from the G5RV used on 80 and 40 metres to the 3 element tribander for 20-10 metres. Often it is desirable to listen briefly on the lower bands to see what is happening and then revert to the higher bands. It becomes pretty tedious if plugs have to be changed for such a short period and even tends to deter one from operating on bands requiring another antenna unless there is a definite sked or a station to be worked.

The end result was a cheap, simple and effective switch that was constructed in a matter of an hour or so and has proved to be a real winner in operating convenience and cost.

* 7 Norman Ave., Frankston, Vic., 3189.

Let me make it quite clear that it is not meant to rival a commercial unit rated at 1 kW. to 500 Mc., but these stringent requirements are not what I am asking of it. Mine operates with a linear producing 400w. p.e.p. at 28 Mc. and is quite satisfactory. Cross talk is kept to a minimum and in the dummy load position, NO signal is audible in the receiver from either the G5RV or TH3.



The constructional details may be varied to suit individual requirements but all leads should be kept as short, direct and heavy as possible. The braided outer conductor of thin co-axial

is ideal. The actual switches used were Oak type two-pole, two-position, but since constructing my unit an article has appeared in "CQ" using slide switches in the same application. No doubt many types could be used, but a little experimentation may be required to find the most suitable.

Switching must only be carried out with the transmitter on stand-by. R.f. arcing may ruin the switch contacts (and the final tube) if these precautions are not observed.

The switches are housed in a metal box 5" x 3" x 2" with a metal cover on the back for shielding and this can also serve as a method of attaching it to a wall if a couple of screw holes are drilled in the back plate. The connectors used were SO239, but Belling-Lee types, etc., can also be used. For my own requirements, the connectors were mounted on the edge of the box but once again this depends on just where the switch will be placed, and the choice of position is left to the constructor, as also applies to the placing of the switches.

Improving the Signal-to-Noise Ratio of Receivers

(That incorporate the use of 6BE6 Mixers)

JIM JONES,† VK2ZET/T (Ex-VK3ZEW)

Many of the cheaper Amateur receivers incorporate the use of a pentagrid mixer such as the 6BE6. This tube would be one of the noisiest modern tubes available today, having an equivalent noise resistance of 250K ohms.

The use of such a tube in an Amateur receiver, even with an r.f. amplifier, is the noisiest link in the whole receiver. The main argument for their use seems to be, you get a little more gain, but what is the use of this gain if the receiver noise is much higher anyway?

As the 6BE6 is a seven-pin miniature, this limited the number of tubes we could choose from, that also had a low noise figure. Finally, after looking in the junk box, we came up with the 6J6.

The 6J6 has an equivalent noise resistance of 2000 ohms approx., which is a vast improvement on the 6BE6. This modification only requires the re-wiring of the 6BE6 socket and the replacing of a couple of components.

This circuit is very commonly used in most s.s.b. rigs, both transmitter and receiver, and is known as a product detector.

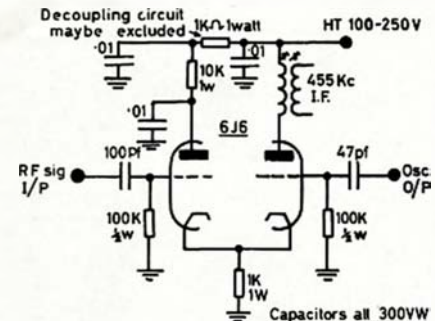
THEORY OF OPERATION

The r.f. signal is fed on to the first section grid of the mixer. This first section is only a cathode follower (which has a gain less than unity).

The main reason for incorporating this circuit is that both inputs to the

mixer are isolated, thereby cutting down spurious signals generated by the interaction of the two.

As the cathode is common to both sections, the r.f. signal is cathode injected into the second section. (Note the cathode must be unbypassed.)



The oscillator is coupled through a 47 pF. capacitor on to the second grid. The two signals are mixed and amplified together by this section. At the anode there are four frequencies—the two inputs, the sum and difference frequencies.

The i.f. transformer is in the anode circuit and selects the correct frequency and the others are bypassed.

The only disadvantage of the circuit is that there is a slight loss of gain, but the signal-to-noise ratio is vastly improved, so the loss can be overcome just by the fact that we can hear signals which (even with the extra gain) were down in receiver noise level.

† 1 White St., Darlington Point, N.S.W., 2708.

STATEMENT FROM REGION III. CONGRESS

Sydney, Australia, 15th April, 1968

At this inaugural meeting the following countries accepted an invitation to attend and were Japan, Philippines, New Zealand and Australia.

Support for this meeting and apologies were received from Nepal, India, South Korea, Laos, Thailand, United Kingdom and Hong Kong.

The President of the I.A.R.U., Robert Denniston, W0DX, was also present and was requested to be Chairman for the discussions.

It was resolved that an organisation be formed in Region III. and the following objectives were agreed to:—

AIMS

The aim of the organisation is to assist the officers and headquarters of the I.A.R.U. in their objectives. Specifically these are—

- The promotion and co-ordination of two-way radio communications between Amateurs of Asia and Oceania.
- To effect co-operative agreements between the National Amateur Radio Societies in Asia and Oceania.
- The advancement of the radio art.
- The representations of two-way Amateur Radio common interests in international communication conferences.
- To promote such additional activities allied to Amateur Radio communications.

FURTHER OBJECTIVES

Further objectives, to deal with problems peculiar to this area, are—

- To approach government officials in all countries in Region III, to encourage them to improve their attitudes towards Amateur Radio and to ensure the retention of the Amateur frequency allocations.
- The development of educational assistance programmes.
- The introduction and establishment of Intruder Watch activities.
- The establishment of essential emergency communications within the respective countries.

ORGANISATION

It was resolved that there will be a board of directors, one from each society represented and appointed by that society. The President of the I.A.R.U. also to be a director. The Wireless Institute of Australia is to provide a Secretariat and will be appointed by this Institute in consultation with the W.I.A. Director.

It was further resolved that monies will be contributed by the Societies of Japan, Australia, New Zealand and the Philippines in proportion to their resources, such monies to be applied to purposes approved by the directorate.

The meeting resolved that the Secretariat formulate draft rules to be circulated amongst Directors for discussion, and that subsequent opinions will be collated by the Secretariat and re-circulated to the Directors with a view to their adoption at the next Plenary.

It was resolved that Directors and Secretariat plan future Directors' meetings.

The meeting placed on record its gratitude for the offer of J.A.R.L. to hold the next Plenary meeting in Tokyo in 1971.

The visiting delegates expressed their great appreciation for the initiative of the Wireless Institute of Australia in convening the first Region III. Congress and for its excellent facilities and gracious hospitality.

DELEGATES PRESENT

Representing I.A.R.U.:

President, Robert Denniston, W0DX, VK2BBH.

Representing Japan:

President J.A.R.L., Kenichi Kajii, JA1FC.

Foreign Liaison Director, Kiyoshi Mizoguchi, JA1BK.

Representing Philippines Amateur Radio Association:

M. Emilio Asistores, DU1EA.

Representing N.Z.A.R.T.:

President, Harry Burton, ZL-2APS.

Tom Clarkson, ZL2AC.

Representing W.I.A.:

Geo. Pither, VK3VX.
David Rankin, VK3QV.
Peter Williams, VK3IZ.

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CONTEST CALENDAR

11th/12th May: 17th OZ-CCA Contest (c.w. only).
11th/12th May: Sangster Shield—3.5 Mc. (N.Z.A.R.T.).
6th/7th July: New Zealand Memorial Contest —3.5 Mc. (N.Z.A.R.T.).
5th/6th October: VK-ZL-Oceania DX Contest, Phone Section.
12th/12th October: VK-ZL-Oceania DX Contest, C.w. Section.
12th/13th October: 21-28 Mc. Phone Contest (R.S.G.B.).
26th/27th October: "CQ" W.W. DX Contest, Phone Section.
26th/27th October: 7 Mc. Phone Contest (R.S.G.B.).

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AWARDS

Korean DX'ers Society.—Now available is the Korean WAK Award. Requirements are as follows: Confirmed contacts with one HMI and one HL9 station after Sept. 1960. Any band, any mode. Submit certified list to Award Manager, HM1AP, P.O. Box 235, Kwangshamoon, Korea, and 8 I.R.C.s or equivalent.

Benelux Award.—The OSA, Antwerp CW DX Club issues this award to any Amateur for confirmed contacts with Belgian, Luxembourg Amateurs as follows: DX applicants need four ONS, four PAOs, and two LXs. S.w.'s need seven ONS, seven PAOs and two LXs. Contacts after Jan. 1, 1947. QSLs need not be submitted. Send certified (by two officials). Log details and seven IRCs to ONSAX, Antwerp, OSA DX CW Club, Post Box 331, Antwerp.

NEW CALL SIGNS

JANUARY 1968

VK1WB—W. B. R. Brooks, Cottage 64, H.M.A.S. Harman, Canberra, 2600.
VK2BCB—G. A. Rutter, Station: Lot 185, Broadview Ave., Culburra; Postal: 21 Hall Rd., Hornsby, 2077.
VK2BEM—E. M. McDonald, Station: 340 Warialda St., Moree, 2400; Postal: P.O. Box 299, Moree, 2400.
VK2BIT—I. N. Thomas, 18 Alton Ave., Strathfield North, 2135.
VK2BMT—M. R. Travena, 63 Coveney St., Bexley North, 2207.
VK2BPM—P. A. McGrath, 32 Wright Rd., Drummoyn, 2047.
VK2BSR—W. S. Ringrose, R.B.M. 175 Cliff Rd., Forster, 2428.
VK2ZHZ—B. C. T. O'Connor, 594 Victoria Rd., Ryde, 2112.
VK2ZIZ—H. P. Robinson, 29 Orchard Rd., Erina, 2251.
VK2ZOS—H. Schroder, 37 Rangers Ave., Mosman, 2038.
VK2ZSY—R. Soulie, 1/120 Mount St., Coogee, 2034.
VK3AHV—P. E. T. Weaver, 45 St. John's Ave., Camberwell, 3124.
VK3API—Technicians' Training School Branch, A.P.I. Vic. Division, 453 Auburn Rd., Hawthorn East, 3123.
VK3AUY—S. A. Sibly, 17 Suck St., Eltham, 3095.
VK3AYT—T. A. Rowan, 34 Elstone Ave., Niddrie, 3042.
VK3AZT—P. P. Addis, 100 Mathoura Rd., Toorak, 3142.
VK3ZCN—B. P. Jones, 309 Christolm St., Ballarat, 3350.
VK3ZHX—H. E. Jones, 3/1102 Dandenong Rd., Murrumbidgee, 3163.
VK3ZWJ—N. D. White, 59 Charles St., Ascot Vale, 3032.
VK3ZXX—D. Scragg, 26 Cheam St., Dandenong, 3175.
VK3ZYK—G. H. Gaspars, 22 Hudson St., Caulfield North, 3161.
VK3ZYK—K. G. Malcolm, 40 Saniky St., North Clayton, 3188.
VK3ZYN—D. R. Appleton, 34 Deakin St., East Bentleigh, 3165.
VK3ZZK—A. E. Humphreys, 50 Romoly Dr., Nunawading, 3131.
VK4GU—J. G. Kaarsberg, 30 McDowall St., Toowoomba, 4350.
VK4LO—J. L. Murray, 9 McIlwraith Ave., Balmoral Heights, 4171.
VK5DT—F. J. Rayment, 43 Blencowe St., Elizabeth Grove, 5112.
VK6FS—H. D. Spence, 212 Broome St., North Cottesloe, 6011.
VK6HB—H. G. Buckley, 386 Fitzgerald St., North Perth, 6006.
VK6JJ—A. J. Pearce, Flat 208, 131 Mounts Bay Rd., Perth, 6000.
VK6KC—K. C. Williams, C/o Pearls Pty. Ltd., Kuribay Station, Kuribay, 8725.
VK6ZDG—B. Nosedda (Rev. Fr.), Kalumburu Mission, via Wyndham, 8740.
VK7ZGJ—J. E. Gelston, 144 King St., Westbury, 7303.
VK8CQ—R. H. Mould, 47 Third St., Boroko, Port Moresby, P.
VK9KA—G. S. Dahl, Station: Kurimum St., Lae, N.G.; Postal: C/o Pioneer Surveys, P.O. Box 387, Lae, N.G.
VK9KC—C. M. Hayes, C/o D.C.A., Cocos (Keeling) Islands.
VK9SN—J. B. Bell, Station: Hombrom Bluff, via Port Moresby, P.; Postal: P.O. Box 304, Port Moresby, P.

CANCELLATIONS

VK1JT—J. P. Talbot (Mrs.). Not renewed.
VK1PA—J. W. Talbot. Not renewed.
VK1ZAF—W. B. R. Brooks. Now VK1WB.
VK2EM—E. J. Mulholland. Transferred Interstate.
VK2QA—N. T. Durham. Not renewed.
VK2AUP—F. D. Power. Not renewed.
VK3ZTT—Technicians' Training School Branch, A.P.I. Vic. Division. Now VK3API.
VK4BY—E. J. Foster. Deceased.
VK4LY—L. A. Dancy. Transferred Western Australia.
VK4VU—J. H. Dexter. Transferred Victoria.
VK4ZBL—J. L. Murray. Now VK4LO.
VK5BW—B. C. W. Smith. Ceased operation.
VK6CK—C. M. Hayes. Now VK9KC.
VK6DE—H. G. Austin. Ceased operation.
VK6FM—R. H. Mould. Now VK9CQ.
VK6HH—H. Harness. Left country.
VK6LW—W. M. Peterson. Ceased operation.
VK6ZHB—H. G. Buckley. Now VK6HB.
VK7DS—H. D. Spence. Now VK6FS.
VK9ZCF—B. M. Chester. Transferred to Western Australia.

PROJECT AUSTRALIS HI-BAL.

AN INTERIM REPORT ON THE AUSTRALIS II. PROJECT

BY LES JENKINS, VK3ZBJ

The receiving antenna used was an inverted ground plane of conventional design, whilst the transmitting antenna was a turnstile, horizontally polarised.

Power for the package was provided by alkaline re-chargeable cells normally carried by the balloon. The supply voltage was 13.5 volts and the total current drain 750 mA.

It is hoped that many more flights of this nature will take place during the next few months, so keep an ear to receivers on 7.100 Mc. on Monday evenings at 2000 hours E.A.S.T. and also on 148.00 Mc. f.m. for details.

Finally, I would like to take this opportunity to express my thanks to all those who helped to make the first flight so successful. This is particularly so of the launch crew at Mildura, led by Eric Curwood, of the Dept. of Supply. Also, the venture would not be possible without the co-operation of the American Atomic Energy Commission, by whose courtesy space on the flight is made available.

I would like also to thank all the Amateurs who participated in the experiment, particularly Ken VK3AKK, who made continuous tape and chart recordings of the entire flight, also Noel VK3AGF who placed his station at our disposal for liaison purposes during our stay at Mildura.

There are two people left whose names have not yet been mentioned. They are Ralph VK2ZRG and Cliff VK2ZLW. The package which was flown was designed and built by them at Sydney, and is the result of nearly a year's work. Congratulations to both on a remarkably fine effort.

This report would not be complete without a list of the stations who worked through the repeater. This list may be incomplete due to lack of information, so we would appreciate any reports in this regard: VKs 3AKK, 3AGF, 5QZ, 3FW, 3ZER, 3ZCG, 5ZMW, 3ZDI, 3ZJQ, 3ZPI, 3ZBJ/Mobile Mildura, also 5QX at Woomera and 5TN Adelaide.

The crew at the launch consisted of Richard Tonkin, of the Melbourne University Astronomical Society, and myself, Les Jenkins, VK3ZBJ.

At 0605 E.A.S.T. on Thursday, 28th March, under ideal weather conditions, Hi-Bal. flight 391 rose smoothly from its launcher at Mildura Airport. Tucked away inside the 500 lb. payload was the first experimental package of the "Australis II" project, having a total all-up weight of 13 lbs. In Melbourne, 310 miles to the South-East; in Adelaide, 200 miles to the West; at Sydney, 530 miles to the East, Amateurs listened to the net frequency of 7.1 Mc. for news of the event.

At Mildura, Noel VK3AGF talked with the team at the launch site on 148 Mc. At the same time his signal was being relayed via the airborne package on 432.150 Mc. The first Australian Amateur balloon-borne repeater was in flight and working.

The balloon rose slowly above the airport, ascending at about 800 feet per minute. It would be at least an hour before it reached sufficient height to be received by any of the stations listening anxiously at a dozen locations in three States.

At 0700 hours contact was established between VK3AGF and Ken VK3AKK at Springvale, 15 miles South-East of Melbourne on 40 metres. News of the successful launch was passed to Ken, who was maintaining a constant watch on 432.15 Mc. During the contact, at 0710 hours the pen recorder attached to the receiver slowly started to rise. Ken began an immediate transmission on 146 Mc. At Mildura his signal was heard on 432.150 Mc. Contact with Melbourne had been established.

For the next half hour, as the balloon continued to rise (and operators likewise), more and more stations were heard calling and working via the prototype of what will be Australia's first Amateur communications satellite.

The next four hours saw the balloon reach its full height of 103,000 feet (approx. 20 miles) and during the flight contacts were made between Melbourne, Adelaide and Mildura. Signals were also received at Woomera and although faint beat notes were heard in Sydney, no contact was established. Signal strengths of S9 and over were reported by many stations and good readability was maintained throughout the flight, in spite of interference created by some of the equipment belonging to the main experiment carried on the balloon.

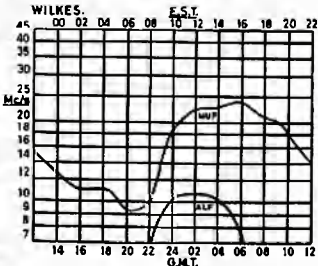
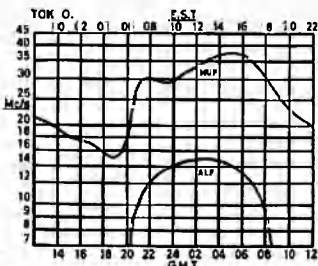
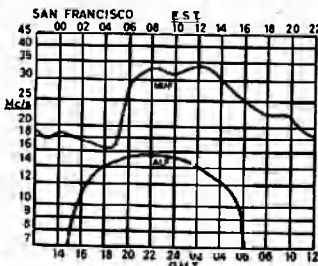
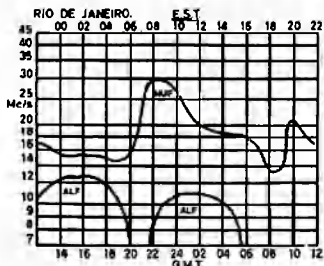
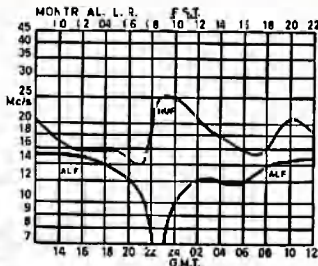
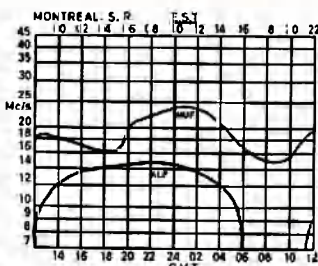
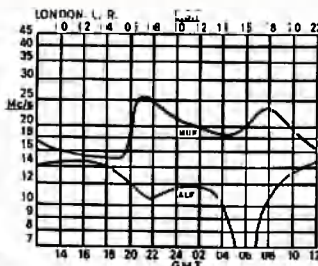
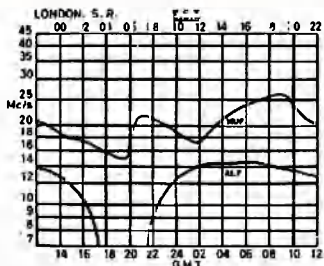
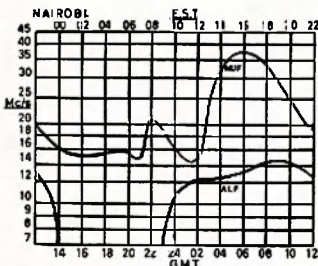
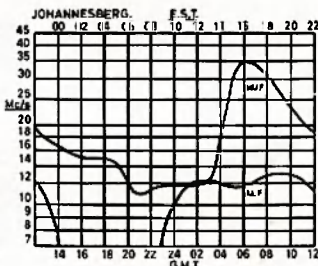
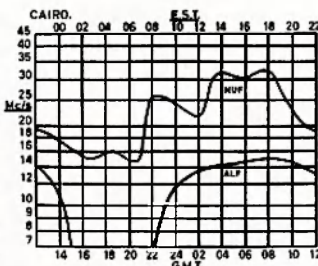
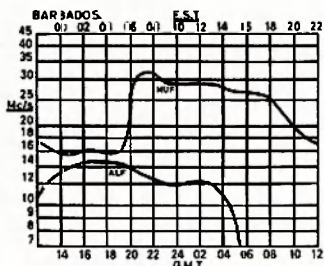
Some of you may be wondering what this is all about and perhaps know nothing of the "Australis II" project. "Australis I" has been covered by this magazine before, and is scheduled for launch later this year. This will be followed by a second satellite, which, it is hoped, will be a high altitude semi synchronous orbiting linear translator. Exact details of input and output frequencies have not yet been decided, so we are using the balloon-borne flights to gather data on the performance of various systems in an effort to ensure that the right one goes into orbit.

EQUIPMENT USED

The system which was used in the flight described is as follows: Signals transmitted by ground stations on 146.000 Mc. f.m. are received by the repeater using a high grade, but otherwise conventional f.m. receiver. The signal is de-modulated and passed on to an exciter which generates a phase modulated signal at 13.5066 Mc. This is then frequency multiplied to 108.03 Mc. and raised to a power level of 6 watts. This power is then applied to a Varactor quadrupler and thence to the transmitting antenna. Power output is 3 watts.

PREDICTION CHARTS FOR MAY 1968

(Prediction Charts by courtesy of Ionospheric Prediction Service)



1967-68 ROSS HULL MEMORIAL CONTEST RESULTS

TROPHY WINNER

VK3ZER—R. W. WILKINSON

RESULTS TABLE

(Award winners given in bold type)

Call Sign	7-Day Score	Sec- tion	No. of Contacts per Band (Mc.)	48-Hr. Score
VK1VP	421	B	49 10	216
1ZCG	320	B	61	105
VK2ZCF	988	B	86 169 14 7	357
2ZFB	922	B	164 12	283
2ASZ	277	B	66 22	134
VK3ZER	2158	B	6 101 26	794
3ZOS	1165	B	22 51 11	472
3ZYG	1137	B	120 68	459
3ZCG	704	B	17 125	243
3ZVV	686	B	45 118	214
3ARM	659	B	61 48	278
3ZYT	395	B	77	200
3AZG	113	B	7 28	53
3AUN			10 6	122
VK4ZMG	936	B	147	399
4ZFR	552	B	69	146
VK4ZIM	546	B	64	296
4ZZE/3	130	B	27	40
VK5HP	1864	B	34 105 9	610
5ZKR	1474	B	50 40 9	535
5ZMW	728	B	87 16	279
5ZEJ	319	B	29 17	122
5TN	67	B	10	46
VK6ZAS	607	B	178 28	205
6ZAA	393	B	105 21	135
6ZFY	221	B	80 22	78
VK7DK	974	A	17 72	458
7ZAH	534	B	52 22	167
7ZCW	71	B	31	37
7ZKJ	30	B	10	78
VK8ZMP	14	B	4	11

Listener's Section:

VK5-L5088 452

EXCERPTS FROM COMMENTS

RECEIVED WITH LOGS

"Enjoyed another Ross Hull Contest; very happy with the Rules and point scoring, but completely disgusted with the poor conditions experienced on 6 metres over the Contest period. New Zealand stations were almost non-existent and no 2 metre openings. It takes all the fun out of it when one has to sit by a dead band for hours or days to be rewarded with a 10-minute opening to the next State only."—VK2ASZ.

"In general the Contest does do a lot to stimulate interest of the v.h.f./u.h.f. bands. It should be retained if at all possible even if the actual number of logs submitted is rather low. I do not think the number of logs returned reflect the true interest in the Contest. I found operation very enjoyable and did not find any reluctance on the part of other Amateurs to exchange numbers.

"I feel that log requirements are one of the keys to greater interest in the Contest. There is quite a lot of work in submitting a log and anything not essential should be dropped. The 'Emission/Power' column has nothing to do with scoring whatever, so why have it? Perhaps an inclusion on the summary sheet would be sufficient.

"With regard to distance, I feel that the distance in miles should not have to be stated unless it is more or less on the border-line. For instance, a 6 metre contact is worth 5 points, 501 to 1050 miles; if a station is worked between, say, 550 and 950 miles, what point is made by quoting the mileage?

"The scoring table seems to be okay apart from some of the lower mileages on 6 metres and I feel that the scoring on 2 and 6 metres should be the same up to 300 miles.

"The exchange of numbers for local contacts and a one point score, while not helping much in the Contest, do seem to stimulate interest and for that reason should be retained."—VK3ZYG.

"I wish to make one complaint re the rules of this last Ross Hull Contest, and is also the feelings of my fellow Amateurs here in the Eastern Zone, also the VK3 and VK4 (southern) v.h.f. fellows, that it was not fair, as the band was open, especially from VK3 to VK4 and VK4 to VK5, and neither the VK4s nor VK3s could come on because of TV Ch. 6 on air, so I recommend future Contests, either 144 and above OR VK3 and VK4s compensated in their scoring tables. 73."—VK3ZCG.

"Rules okay, but would like 50-100 miles on 6 metres to be worth 5 points. It is a much easier distance on 2 metres, and is worth 5 on that band."—VK3ZVV.

"I enjoyed taking part in Contest and feel that it does create a lot of interest on v.h.f.

"Filling out of logs is a bit tedious—why not leave out power as it does not have any bearing on results. Points for local contacts should be retained, because while you are talking to locals, you may be heard further away.

"Suggest some recognition for station in each State with the most contacts.

"How do you make a JA understand you want a number for a contest?"—VK3ARM.

"I have participated in the Ross Hull Contest since 1961 and would not like to see it abolished for any reason. I have not entered a log for the past few years owing to poor conditions on the v.h.f. bands in which I operate and hence a very low score. The 48-hour division is a good scheme and to confirm my interest in the Contest I am submitting a log for this section. The rules and scoring table are F.B."—VK3AUN.

"(1) Would like to see the duration consist of either 7 or 9 days, but to be consecutive days of operation. This would ensure more sustained activity during the peak period of the Contest. As one can now simply pick and choose, there is nothing to hold one to the true spirit of the Contest.

"(2) It could also still be in the overall interest of the Contest for an award to be made for the highest scorer in each call area covering the full period of the Contest, in addition to the 7-day period. This would give the die-hards who claim the shorter period has spilt the Contest to still give it a go if they have the time, which they apparently have, while allowing the shorter period for those not so fortunate to have holidays or simply to spare time for a month or so.

"(3) The scoring table still contains anomalies I feel. As I suggested in earlier correspondence, the table would be ideal or close to it if the scoring for 52 Mc. for 51 to 100 miles was raised to the same as 144 Mc., namely 5, and the 101 to 200 scoring for 52 Mc. raised to 10, in line with 144 Mc. Otherwise, the table seems okay.

"(4) Fully agree with E.A.S.T. for an Australian Contest.

"(5) Would not like to see Contest discontinued, despite what entries may be received this year. The band conditions were so consistently poor for the average contestant that only those favourably situated, e.g. in Victoria or South Eastern S.A., are likely to have consistent scoring, as they are within 144 and 432 Mc. range continuously, whatever the day or conditions. The rest must depend upon 52 Mc. openings for consistent logging, and this was not possible this year on a par approaching anything like some previous years.

"(6) I feel the Contest Committee at present handling affairs is doing a very good job, and I have no criticism to offer."—VK3ZLJ.

"Rules will never let W.A. entrant win Australian trophy due to lack of 144 and 432 Mc. activity in W.A. country areas, especially compared with Eastern States! "Ross Hull Trophy should revert to 52 Mc. band only as it used to be and/or other trophies established for 144 Mc. band; and for 432 Mc. and for 576 Mc. and up."—VK6ZAA.

"Conditions again very poor—my personal score would have been far better had the Contest started three weeks to a month earlier. As it was I was 'on the band' on each occasion it was open. Two metre activity in southern VK7 is almost nil."—VK7ZKJ.

"Well, another Ross Hull Contest is over and my scores are going from bad to worse—not for the want of trying. I would like to make some comments about two aspects of the Contest (1) Scoring, and (2) Conditions.

"(1) With respect to the scoring method at present being used, I see little benefit in such a method. I would like to point out the fact that 'if 6 mix opens it's open, and if 6 mx

does not open, it isn't!' and nothing we can do will alter the propagation. The same I am sure goes for 144 Mc. Possibly the scoring method at present in use is good for frequencies above 148 Mc. I think a better method for 6 and 2 mx would be, say, 1 point local contact, 2 points DX plus multipliers for States worked—10 for first contact in a State, 5 for second, and 3 for 3rd contact in each State. I hope my suggestion is taken as constructive criticism because I am very much in favour of the Contest.

"(2) Now, conditions—all I can say is 'what has happened to this sunspot cycle?' Do you think you could obtain the figures for the sunspot activity during the Contest period and publish these for information with the Contest results. Possibly with comparative figures. I might add that the best period for DX in this location, Darwin, is during the 'dry season' or the southern winter. Last 'winter' I had the pleasure of working over 200 JA/H, KR6TAB, KA6S. But during the 'summer' or our 'wet season' there appears to be very little from this location.

"I did, however, monitor Channel 0 in Melbourne and Brisbane on numerous occasions and three times New Zealand television. I hope I have not bored you with this information."—VK8ZMR.

The Federal Contest Committee, in presenting this year's results, have set out the table in an effort to show how activity varied from State to State, and how the bands compared with each other. Readers may draw their own conclusions, but from analysis of 1967/8 logs compared to 1966/7, there was a very definite move to 144 Mc. and higher for scoring, while the overall total scores were much lower. The almost non-appearance of ZL stations and the still elusive JA and Oceania contacts possibly attributed to the reduced activity and scores.

If those operators who have not entered the Contest gave one day to working in the Contest and submitted a log, the results could be very useful to the Committee and may provide a certain impetus to the Contest in general. How about it for next year?

To VK3ZER go our congratulations for a fine effort, and to his XYL for the part in preparing his log.

See you all again next year.

—Nell Penfold, VK6ZDK,
Federal Contest Manager.

PAST WINNERS

The first Ross A. Hull Memorial Trophy v.h.f. Contest was held in the summer of 1950-51. The winners since then have been recorded on shields mounted on the base of the trophy. The winners to date are as follows:

1950/51	R. V. Galle, VK5QR
1951/52	H. Lloyd, VK5BC
1952/53	A. K. Bradford, VK4KK
1953/54	R. J. Everingham, VK6BO
1954/55	R. Greenwood, VK4NG
1955/56	G. M. McCulloch, VK3GM
1956/57	I. F. Berwick, VK3ALZ
1957/58	I. F. Berwick, VK3ALZ
1958/59	I. F. Berwick, VK3ALZ
1959/60	D. R. Horgan, VK4ZAX
1960/61	W. Roper, VK3ARZ
1961/62	M. J. McMahon, VK5ZDR
1962/63	D. R. Horgan, VK4ZAX
1963/64	M. J. McMahon, VK5ZDR
1964/65	R. W. Wilkinson, VK3ZER
1965/66	J. R. Beames, VK3ZDM
1966/67	J. H. Lehmann, VK5HP
1967/68	R. W. Wilkinson, VK3ZER

Thus it can be seen that stations in VK3 have won 8 times, VK5 5 times, VK4 4 times, and VK8 one. Nobody in VK2 or VK7 has ever won the trophy which is surprising since the Eastern States are supposedly "hot beds" of v.h.f. activity.

—D. H. Rankin, VK3QV,
Federal Activities Officer.

LATE ENTRIES FOR VK-ZL-OCEANIA CONTEST 1967

LA9HC	OK2DB	OK1ALG
SM2DQS	OK2ABU	OK1AAW
OKIMS	OK1AHZ	OK3-17588/1
OK3CCC	SP8AJK	UA13KB0
OK2BIO	SP8ABH	UA1ZZ
OK2RZ	OK1AII	UA9LJ
OK1ADM	OK1AFO	UA6KAE
OK2BJJ	OK2BIP	UB5KBA
OK2QX	OK1AFN	W1GHI
	OK1CJ	

Wireless Institute of Australia Federal President's Report

MARCH 1967-APRIL 1968

Gentlemen, it is again my pleasure to present an Annual Report to the Federal Council on the occasion of the 32nd Federal Convention being held this year in Sydney.

Firstly I would like to record my thanks to the members you appointed to the Executive for the year 1967-68 for the teamwork and efficiency with which the duties of the Federal Executive has been carried out. In particular, I extend to Federal Secretary, John Battrick, VK3OR, my sincere appreciation for the tremendous effort he has personally exerted in handling local and overseas correspondence, news bulletins to the Federal Council and to "Amateur Radio" magazine, for making available to me copies of outward correspondence and other pertinent information in order that I be kept in touch with Executive affairs, and for his expertise in co-ordinating the work of all other members of the Executive. In addition to all this, he has found time—with other members of Executive—to maintain regular schedules on the air with Federal Councilors and on the South East Asia net where excellent liaison work has been carried on with Region III. affairs. With much of this work he has been ably assisted by Assistant Federal Secretary, Peter Williams, VK3JZ, who will be taking up the post of Federal Secretary for the next twelve months.

The experimental period I mentioned last year of sharing the services of the office staff of the Headquarters Division has proved most successful. The additional drain on Federal Council funds has been most reasonable and is far outweighed by the advantage of having a much greater volume of work done in a shorter period of time than was hitherto possible. I believe Federal Council will agree that the amount of information received is proof of the success of this move.

The production of the Hobart Convention minutes—a record of 84 pages—was again a combined effort of four Executive members and the completed document was in the hands of Federal Council with little delay. I would like to record my thanks to Geoff D'Emden, VK7ZAS, who, despite technical problems with one of the recorders which remained undetected until after the conclusion of the Convention, was able to re-record from an overall "master" tape which had most fortunately been set up as a standby machine simultaneously recording the entire proceedings at 1½ inch per second.

HANDBOOK

The final printing of the Handbook for Operators of Radio Stations in the Amateur Service was protracted for reasons beyond the Institute's control. However, as you are all now aware, it is available from booksellers and advance copies were forwarded to Federal Councilors by Federal Secretary John Battrick.

During the period of delay in the printing of the Handbook permission was granted to advise Amateurs on much of the context and this information was compiled by Federal Vice-President, Harold Hepburn, VK3AFQ, and printed in various issues of "Amateur Radio".

The publication of this Handbook saw the completion of an extremely large project and my compliments are extended to all those who spent so many hours working in liaison with the licensing authority for its ultimate printing and for having been successful in cleaning up the anomalies and ambiguities which existed in the earlier edition. The co-operation extended to the W.I.A. by the Postmaster-General's Department has been very much appreciated and I am certain that the extent of the new Handbook will benefit the Department as well as the Australian Amateur in making for cleaner application of the Regulations under which we operate.

INTRUDER WATCH

The Intruder Watch Committee composed of Air Commodore George Pither, VK3VX; Assistant Federal Secretary, Peter Williams, VK3JZ; Dr. David Wardlaw, VK3ADW; and myself (VK3ZS) held several meetings following on the Hobart Convention. Federal Secretary John Battrick circulated information on the progress of the project from time to time in Federal News Bulletins.

Information on the systems used by the A.R.R.L. and the R.S.G.B. were obtained and discussed by the Committee in detail. A format for the forms to be used was decided upon subject to confirmation on the particular one headed—"From the W.I.A. to the P.M.G.'s Department". This was to be discussed with Mr.

Charlie Carroll of the Radio Branch, following the Christmas holidays, but due to the serious illness of Mrs. Carroll this has not been possible. It was necessary for Mr. Carroll to take long service leave to look after his wife and as at the time of writing I have to advise that Mrs. Carroll passed away. The Executive sent cards and flowers as an expression of sympathy on behalf of the Federal Council.

The final stages of this project will be taken up as soon as Mr. Carroll is available. In the meantime I trust Divisions are looking for candidates prepared to offer a few hours of service each week as Intruder Watchers, and that one qualified Amateur is being appointed as Divisional Intruder Watch Officer.

I wrote an article in the October 1967 issue of "Amateur Radio" giving details of the system we proposed using and calling on Amateurs to offer assistance in protecting their own bands. This was supplemented by John Battrick on the Federal Comment page in the November issue, but to date there has been limited response.

The project is now in the hands of Dr. David Wardlaw, VK3ADW, and you will be receiving further information from him later on this year. The project needs to get off the ground in support of action already taken in Regions I. and II. so I trust you will do all possible to obtain the services of members of your Division.

CONTESTS

The Contests in general were again well supported over the past twelve months, the results of which have been printed in "Amateur Radio" magazine. On behalf of the Executive, I wish to record our appreciation of the fine team work carried out by the Federal Contest Committee under the management of Neil Penfold, VK6ZDK, who will be attending this Convention as the newly appointed Federal Councilor for the VK6 Division. It is also gratifying to know that the VK6 Division is again prepared to provide the personnel for the Federal Contest Committee for the next three years. Federal Activities Officer, David Rankin, VK3QV, is to be commended for his excellent liaison work in assisting the smooth operation of the Federal Contest Committee.

The Remembrance Day Contest—always a most popular event—was opened on 12th August, 1967, with an illuminating recorded address by the Hon. Allen Fairhall, M.H.R., Minister for Defence. To those who heard the recording it would be obvious that such an excellent address would not have been prepared in five minutes, yet—and typical of Allen Fairhall—it was prepared at short notice at a time when he was confronted with a hectic week of pre-budget work as Minister for Defence. I record here the appreciation of the Wireless Institute of Australia for a very fine address and the time devoted to doing it.

At this point I must also record my appreciation of the work done by the Hunter Branch of the W.I.A. in making the arrangements for the recording, particularly to Jim Cowan, VK2ZC, from the engineering staff of Broadcasting Station 2KO who made the actual recording and copies; to the announcer and other members of the staff who assisted; and to Keith Howard, VK2AKX, who made the initial arrangements and despatch of the tapes to the W.I.A. Divisions. Congratulations go to VK3 for winning the R.D. Contest for 1967.

FEDERAL AWARDS

It was with deep regret that we recorded the passing of the Federal Awards Manager, Alf Kissick, VK3KE, on 26th May, 1967. Alf was a well-respected and well-known DX operator who, despite declining health over a number of years, devoted all his spare time to the work of recording and mailing certificates to applicants for awards and generally dealing with all matters pertaining thereto.

Bill Hempel, VK3AHO, a close friend of Alf's, immediately took over the records and until February this year carried on the office of Awards Manager. Due to pressure of work in other directions he has found it necessary to retire and the office has been taken over by Geoff Wilson, VK3AMK, an Amateur with expert knowledge of awards and DX experience. I can assure Federal Council that this part of Institute affairs is in most capable hands.

From an inspection of the awards records I find there has been a satisfactory "lift" in the number of applications for awards generally, particularly the WA-VK-CA Award

(Worked All VK Call Areas Award) which served as a silent ambassador for VK abroad. I believe the certificate issued in respect of claims for this award is held in high regard by overseas Amateurs who have received it.

FEDERAL QSL BUREAU

Last year we said "goodbye" to Ray Jones, VK3RJ, who had notified Executive of his resignation after 34 years' service as Federal QSL Officer.

However, I am glad to say that Ray must have found solutions to his problems and agreed to carry on. Some of the work load has been taken off his shoulders by a change in the operation of the Bureau and we are indeed happy to have him back on the job. His usual report will be tabled later on in the proceedings of this Convention.

PUBLICATIONS COMMITTEE

Again the Publications Committee has worked hard and quietly in the background to maintain publication of "Amateur Radio" and the "Australian Radio Amateur Call Book".

A sizeable amount of space was granted to Executive during the past twelve months for the purposes of bringing a certain class of information to members. I believe this has been a good thing and has resulted in a better understanding by members of what is going on in the Amateur Service and the Institute generally.

In addition to this class of context, a steady flow of technical articles has appeared and the general high standard of the magazine has been maintained. Another up-to-date issue of the Call Book has been printed, utilising the same highly praised format of the 1966-67 edition.

A report and balance sheet will be tabled during the Convention along with other reports.

MEMBERSHIP

In mentioning membership I have belaboured the point in the last few years that the finance required to maintain the Institute's activities and to extend them into the field of assistance to under-developed nations where little or no Amateur Radio exists—and this is something I believe we must do to protect the future of our technological hobby—can only be available by expanding membership or raising fees. But since raising fees would only partly solve the problem and would not be something we could expect to go on raising, then expanded membership is the real solution at this stage.

The figures I have available of licensed Amateurs in VK, compared with last year, are as follows:

	Full	Limited	Total
1966-67	3842	1419	5261
1967-68	3984	1587	5571
Current	142	168	310
	Increase		

From these figures you will note a total increase of licensees for the year of 310, of which 168 successfully completed the A.O.L.C.P. and 142 the A.O.C.P. This marginal increase in the percentage of Limited to Full licensees was pointed out to Federal Council some years ago and suggestions were discussed for encouraging Limited licensees to sit for the Full license. Some Divisions, I believe, did take some steps to encourage Morse Code practice for Limited licensees, and I can only reiterate that some importance should be attached to this matter by all Divisions.

Calculated from the membership returns at hand, the following figures indicate the strength within the Divisions:

	VK2	VK3	VK4
Month ending ..	Dec. 67	Feb. 68	Oct. 67
Life	15	14	—
Full	890	834	344
Associate	443	259	123
Others	13	—	25
	1361	1107	492

Previous Totals	1287	1058	478
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	VK5	VK6	VK7
Month ending ..	Feb. 68	Jan. 68	Feb. 68
Life	6	6	7
Full	380	237	142
Associate	143	71	83
Others	23	—	—
	550	314	232

Previous Totals	525	318	229
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From these figures—compiled as at the dates indicated on the table above—the total membership of the W.I.A. stands at 4056, of which 2827 are full members. This full membership represents close to 51.5% of the total number of licensed Amateurs in the Australian Commonwealth and its Mandated Territories—an 0.5% decrease over the period 1967-68.

This is, of course, not a significant loss, and in the final assessment means that the Institute as a whole continues to attract around half of the licensed Amateurs as it has continued to do now for a number of years.

However, I am bound to express the opinion—as I have done in other years—that the organisation of this Institute has the potential to encourage at least 75% of licensees to become members. We all believe—and I believe it is true too—that the W.I.A. is solely responsible for the privileges enjoyed by Amateur operators in this country. But whilst we perhaps cannot expect to gain a 100% licensee membership, I strongly suggest that our public relations effort needs upgrading to bring about a better than 51.5% membership.

As I also said last year—without a growing membership the Institute will meet with difficulties in dealing with increased running costs. Entering into fields of operation such as those envisaged in the Asian area will eventually impose a severe drain on the Institute's financial resources if plans are ultimately carried out as presently proposed, a matter which will receive the attention of Federal Councillors and others this Easter.

There are, of course, other ways and means to raise finance, some of which I advocated many years ago. These were met with a rather nebulous interest and have fallen into obscurity. I therefore find a membership drive still the only logical course open to the Institute and again commend this for the continued activity by Divisions.

Federal finance, however, is in a satisfactory position to cover current involvement. Federal Treasurer, Kevin Connelly, VK2ARD, asked leave of absence last year in view of having to do an extensive tour overseas for the State Electricity Commission of Victoria, by whom he is employed. During his absence Tom Cuthbertson, VK3ZIQ, carried on as Federal Treasurer and I wish to record the Executive's appreciation for the valuable assistance rendered by Tom during this period. Federal finance is today quite a complicated procedure and requires constant care and attention to which Tom applied himself with zeal and ability despite having limited time to spare.

Kevin Connelly has now returned and has taken up duty on the Executive again, but due to pressure of work is unable to remain as Federal Treasurer and has filed his resignation to become effective upon the appointment of a successor. A person willing to take over the office has not yet been found but Federal Council will be notified when the office is filled.

A full statement of the assets and liabilities of the Executive, together with an audited balance sheet, will be tabled for Federal Council's approval during the Convention proceedings and will appear in the minutes as an annexure. My appreciation is extended to Kevin for a job well done whilst in office and it is regretted he is unable to carry on as Treasurer although he is prepared to remain as a member of the Federal Executive.

Reverting to the membership table, it shows that 46 members have been made Honorary Life Members of the Institute. Last year in Hobart the Federal Council agreed to adopt the current membership badge design produced in green and gold to distinguish the Honorary Life Membership badge proposed under Item 2.7 of the 1965 Convention from Full and Associate membership badges. These have now been struck and are available for distribution.

At the inauguration of this badge it was my desire—for historical purposes—to list in this report the names of those Amateurs who have had this distinction bestowed on them by their Division. With this in mind, I believe the Divisions were asked by the Federal Secretary for a list of the names and call signs of members due to receive the badge but to this date only those from the VK5 Division have been notified to me. I am therefore, unfortunately, unable to name the honoured members, but shall be presenting the badges to Federal Councillors during this Easter period. May I, therefore, record here on behalf of the Federal Council my congratulations to these Amateurs who by virtue of having received Honorary Life Membership have, inter alia, made significant contributions to the Wireless Institute of Australia for the good of the Amateur Service.

It is with sorrow that "Amateur Radio" magazine has had to record the passing of many well known Amateurs over the last year, and sympathy is extended to relatives and friends of our members who passed beyond the vale. Many have been "old timers" and active members of the W.I.A. The Institute is the poorer

at the passing of these Amateurs who gave their time in assisting its growth.

W.I.C.E.N.

The Wireless Institute Civil Emergency Network has continued to be active during the year.

In N.S.W., W.I.C.E.N. exercises were held in conjunction with the Civil Defence Authority, and in this regard Federal Executive played an important part in assisting with the establishment of acceptable lines of communication between the N.S.W. (VK2) W.I.C.E.N. Group, the N.S.W. Civil Defence Authority, and the Postmaster-General's Department in order to legitimise these exercises.

In Victoria the system continued to operate as previously established. Many hours of work during the winter months resulted in the two W.I.C.E.N. vehicles reaching the operational stage, and one of these saw "active service" in the field at Myrtleford during January, 1968, in a two-day operation in which 45 operators were engaged. The network was also called on "stand-by" during the recent Dandenong fires but on this occasion did not operate as the normal communication facilities were not imperilled and proved adequate to handle the traffic involved.

Victorian W.I.C.E.N. State Co-ordinator, John Batrick, VK3OR, was a member of the Directing Staff at a communications conference of the Rural Fire Brigades and the Country Fire Authority (C.F.A.) held during the winter period.

During October, heartening news was received from the Tasmanian Division following on the problems the Institute and other services met during the devastating Tasmanian fires. Subsequent to a visit by Tasmanian Chief Secretary, Mr. Brian Miller, to South Australia to study the E.F.S. system there, Federal Councillor, Ted Cruise, VK7EJ, called on the Secretary of the Department. As a result of this visit the Tasmanian Division representative was invited to attend a meeting, the result of which was that the VK7 Division has been fully accepted into the disaster plans of that State. I know that Federal Council will be pleased as I am to know that the fine work of the Tasmanian Amateurs who participated in the Tasmanian emergency, one of whom lost his life and many others their private property, has not gone unrewarded, and that W.I.C.E.N. can look forward to an active future in Tasmania when emergencies occur.

In general, the Executive does not receive a great deal of information concerning the W.I.C.E.N. activities of the W.I.A. Divisions and I comment here for what it is worth that Federal Council should consider the appointment of a Federal W.I.C.E.N. Co-ordinator so that up-to-date information is received from and despatched to each Division and a proper file maintained on W.I.C.E.N. activities.

YOUTH RADIO SCHEME

The Youth Radio Scheme has continued to function throughout the Divisions and I believe is gaining some momentum in the smaller Divisions. I do not propose to dwell on this subject since it will receive quite a wide attention during the debate on several agenda items concerning Y.R.S. during this Convention.

I would like to say, however, that there seems to have been some misunderstanding regarding the appointment of a Federal Y.R.S. Co-ordinator inasmuch as a section of Federal Council have been under the impression that Keith Howard, VK2AKX, has officially held this office over the past twelve months. It is true to say that the Executive did write and ask Keith to take over this position in the absence of Rex Black, but a letter in reply indicated quite clearly that, whilst appreciating the honor of being asked, the offer was declined.

JAMBOREE-ON-THE-AIR

The 10th Jamboree-on-the-Air, held over the week-end, 5th and 6th August, 1967, was again a great success and my appreciation, on behalf of the W.I.A., is again expressed to those Amateurs who participated in this event for the World Scout organisation and opened their shack for Scout groups to visit and operate on the air.

The Jamboree on this occasion coincided with the XII. World Jamboree in Idaho, U.S.A., and also with the 60th anniversary of the first experimental Scout camp which was held on Brownsea Island, England, in 1907.

HISTORICAL INFORMATION

I am happy to report that as a result of our representations last year, a good deal of historical information has been received by the Federal Historian, George Glover, VK3AG, who has again put a great amount of time into extracting relevant information. His report will be presented to Federal Council later in the proceedings.

OVERSEAS MAGAZINES

The handling of subscriptions to "QST," "73" and other overseas magazines has been most satisfactorily handled by Alf Chandler, VK3LC, on behalf of the Executive. The accrual from the small margin of profit gained from handling these on behalf of the editors and printers has adequately covered operating costs with some surplus available to augment Federal Funds.

DUTY AND SALES TAX

The problem of duty and sales tax applicable to Amateur equipment was "pushed" further this year but I regret to report without any immediate success.

A deal of correspondence between the Executive and the Hon. Allen Fairhall, M.H.R., VK2KB, Minister for Defence, was handled in reference to these two major problems. Allen Fairhall took both matters to the respective Departmental Ministers, but despite sympathetic hearing no real solution was found even at this level.

However, the Executive has been assured that further attempts will be made for some relief when the opportunity is presented. I would again like to record our appreciation of Allen Fairhall's effort on behalf of the Institute, particularly with the problems of sales tax and duty which have proved to be somewhat formidable.

TECHNICAL MERIT AWARD

In my report last year I recorded the outstanding accomplishment by Ray Naughton, VK3ATN, who created a moonbounce record with K2MWA/2 of 10,400 miles on 144 Mc.

On behalf of the Amateur Service in Australia I am proud and privileged to record here that Ray received the coveted A.R.R.L. Technical Merit Award for his effort, the first time this Award has been presented outside the United States of America. It was shared between VK3ATN and W. Bill Conkel, W6DNG. Since then Ray has repeated his earlier, but not record breaking contact, with K6MYC.

The Award was a handsome plaque inscribed "A.R.R.L. Technical Merit Award, presented to W. Bill Conkel, W6DNG—T. Ray Naughton, VK3ATN, for advancing the frontiers of Amateur Radio by proving communication via lunar reflection to be within the realm of conventional Amateur operation."

I was privileged to confer the Award on behalf of the A.R.R.L. at the Victorian Division's annual dinner last year, and it was officially presented to Ray by Mr. E. J. Wilkinson, Acting Assistant Director General Radio, who was present as the representative of the Postmaster-General's Department and guest of the Victorian Division.

It is a tribute to an Australian Amateur and I believe it will not be the only time the Award will be presented to an Amateur in this country.

Hitherto unknown until recently was confirmation of a 144 Mc. distance record between Hugh Lloyd, VK5CB, and T. J. Kendrick, ZL2HP, on 23rd December, 1965, over 1,887 miles.

On 576 Mc. a record distance was spanned between Graham Lill, VK5ZJL/5 and John Hackworth, VK5GZ/5, an increase of 40 miles on the previous record between VK5ZTM/VK5ZFQ/5 and VK5ZIS/VK5ZJH/5 when 105.5 miles was spanned.

It will be to the credit of Amateur Radio in the years ahead that the accomplishments of individual Amateurs are recorded, which from historical records presently being compiled were to a great extent missing. I therefore would like to impress Federal Council with the necessity for notifying Executive with details of Amateur accomplishments in any field of our activities so that historical records can really be kept up-to-date for posterity.

AMATEURS IN THE TECHNICAL FIELD

We have all said time and time again over the years that Amateurs played an important part in the technical side of Australia's broadcasting, television and communications in general.

I was interested to find some substantiation of Amateur employment in the field in the staff journal of the Australian Broadcasting Commission—"Radio Active".

In Sydney a list of 29 VK2s comprised part of the Sydney staff and a similar quite long list, I believe, for Melbourne, which I was unable to obtain.

The Hobart branch of the A.B.C. operated an interesting club for Technicians-in-training known as Club 43 South—a reference to Hobart's latitude of 43 degrees south. The committee is entirely made up of T-in-Ts of which 16 currently are licensed Amateurs and one a W.I.A. shortwave listener.

The work of Amateurs in the technical field is of great interest and I believe we should

have our Federal Historian, George Glover, VK3AG, keep in touch with the editor of "Radio Active" to maintain an updated file on Amateur employment within the government broadcasting service.

I.A.R.J.S.

I recently was surprised—and at the same time honored—to receive an invitation to join an association which is only nine months operative and of which I had never previously heard.

It is known as the International Amateur Radio Journalistic Society (I.A.R.J.S.), essentially based in the United States of America, but reaching out to all countries where Amateur Radio is operative. Through the pens of writers, journalists and columnists the aim of the association is to bring the stories of Amateur Radio in any country to the Amateurs of all other countries in an uncensored manner and free from outside factions and influence.

It operates under a completely democratic constitution and expresses the free view of Amateurs through the columns of its official publication "Dialog". From what I understand of the constitution of the Board of Directors, there are four Vice-Presidents who can be located in various Amateur organisations throughout the world. Currently, Al Shaw-smith, VK4SS, an "A.R." columnist, is the third Vice-President of the Society, and it is through him that my invitation to join has been received.

Being a member of I.A.R.J.S. will in no way deter me from writing for "A.R." when there is something to write about. But it will serve admirably to fulfil a gap I have observed many times during my 18 years with the Federal organisation of the W.I.A. that we often do not know what is going on in Amateur activities within our own Divisions let alone the rest of the world. The aim of the I.A.R.J.S. seems to me a medium where this condition can receive considerable improvement.

"THE ROLE OF THE AMATEUR . . ."

During December 1967, I was invited with other Executive and Institute members to attend an evening at a lecture arranged by Air Commodore George Pither, VK3VX, for the Institute of Radio and Electronic Engineering (I.R.E.E.) of which he is a Melbourne committee member.

The speaker was Dr. Allen Butemut, VK3AD, the immediate past Chief Scientist of the Department of Supply and currently Director of Research of the Plessey Group of Companies (Australia). His address was "The Role of the Amateur in the Development of Radio and Electronics".

This interesting address drew heavily on history—some of which I believe might never have previously been mentioned in "wireless records" and served the admirable purpose of reminding many of those present of the great contributions Amateur operators have made in the scientific field of radio communications. With tape recordings played during the address of living Amateurs from overseas who were involved in some of the early transmitting experiments and a demonstration by Air Commodore Pither of a SSB QSO between a VK9, a VK0 and himself located in the lecture theatre of the Royal Melbourne Institute of Technology (the venue of the lecture) a highly interesting evening was had by all.

For the purpose of W.I.A. Historical Records, I made a full track recording of the address, copies of which would be available to Divisions if they cared to arrange for a re-play of this address to their members. During supper, served at the conclusion of the evening, I was able to chat with a number of I.R.E.E. members who rated the address one of the most interesting they had heard. I believe this evening to be one of those excellent opportunities for rating Amateur Radio for what it truly is, and full credit goes to Air Commodore Pither for arranging it.

No doubt due to Institute members' interest in this address, I was privileged to receive an invitation from the I.R.E.E. for my wife and myself to attend the second Dunrossil Memorial Lecture at Wilson Hall, The University of Melbourne, on 12th March, 1968, where the speaker was the Rt. Honourable, Sir Robert Menzies, K.T., C.H., F.R.S., Q.C., whose subject was "The Post-Graduate Student". Although not a technical lecture, Sir Robert made many points which were applicable whether a student was doing art, medicine, law or communications.

From the number of Amateurs present, representing government departments, all branches of the services, industry and private enterprise in general, my belief was again confirmed of the worth of the Amateur in this country or any other country.

PROJECT AUSTRALIS

The Australian Amateur Radio Satellite Project Australis is still awaiting a launch in the

United States of America where it was safely delivered during the year. The cost of transporting the unit was met from Federal funds. Due to the satellite eventually being attached to an American rocket, the launch date is "classified" but as soon as definite information is received Executive will be advised and in turn will advise Federal Council.

In the meantime the Australis team have been energetically engaged in making arrangements for its tracking. To assist in this an Australis Oscar-A Users' Guide has been produced, copies of which were forwarded to Divisions by Federal Secretary, John Battrick. Australis Oscar-A telemetry Coding Forms and notes on how to use them were also circulated during the year.

Members Tonkin, Jenkins and Mace of the Australis team attended a recent meeting of the Executive, during which quite a long discussion took place on the present position of the Australis project, plans for a second satellite which will incorporate a 144 to 432 Mc. translator, and plans to arrange space in "Amateur Radio" magazine for articles on the project.

The latter appeared in the February and March 1968 issues and I trust many Amateurs will take an interest in tracking the Australis Satellite when it is eventually launched.

Further work progressed on the construction and testing of a 144 to 432 Mc. translator and a prototype was sent aloft on a balloon at 0605 hours on 28th March, 1968, from Mildura in Victoria. Interstate contacts of 59 signals were established and maintained for four hours, suggesting a bright future for the next Australis Satellite equipment.

Project Australis is a tribute to those Amateurs and others who have spent so much time and effort in making the project possible and I express on behalf of the Wireless Institute of Australia our appreciation of this effort and our pleasure in being associated with it. During the year two Executive members travelling abroad—Kevin Connelly, VK3ARD, and David Rankin, VK3QV, were able to visit Oscar Headquarters and co-operation between the W.I.A. and the Oscar organisation responsible for the launching of the Australis satellite was further cemented by this friendly personal contact.

FEDERAL CONSTITUTION

The further amendments to the draft Federal Constitution proposed at the 1967 Hobart Convention and subsequently ratified by all Divisions have been incorporated in the document which, together with all the necessary papers, have been handed to the firm of Messrs. Hedderwick, Fookes and Alston, and have personally been submitted to the Attorney General by Mr. S. McIndoe of this Company's staff.

At the time of writing this report I am doubtful that the completed Constitution will be available for presentation to Federal Council at this Convention, which fact I sincerely regret. Some delay has been occasioned by necessary discussions on a few minor points with the Crown Law Department, but I am assured that these will be resolved and Federal Council will be notified soon after this Convention when the document will be ready for circulation.

The finality of the time consuming task of writing this Constitution in a manner acceptable to all the State Divisions of the W.I.A. is a commendatory achievement and I express my appreciation to all those who were engaged with this project and to the forbearance of the members of the Federal Council with the many contentious problems which it was necessary to resolve.

The final adoption of a Federal Constitution will, I believe, be one of those great milestones for the advancement of this Institute.

TASMANIAN BUSH FIRE APPEAL

The appeal for donations to the Tasmanian Bush Fire Appeal was closed off with a total of \$178, which Executive forwarded on to the Tasmanian Division. I would like to quote the reply received from the Honorary Secretary of the VK7 Division, Mr. E. A. Beard, VK7EB:

"On behalf of the President, Council and members of the Tasmanian Division, please convey our most sincere thanks to Federal Executive for the generous donation for the Divisional Bush Fire Fund.

"I am incapable of finding adequate words to express how deeply moved I have been concerning the assistance that has been extended by the various Divisions and individuals to those who suffered personal loss during the February fires of 1967.

"I know I can speak for the Tasmanian Division when I say that it makes one feel proud to belong to an organisation which has members who helped financially and technically during the crisis.

"Thanking you all once more."

(Signed) E. A. Beard, Hon. Sec.

This brings me to the conclusion of the national part of this report and in doing so might I express my appreciation of the work carried out by all officers of the Institute and those outside the organisation who have assisted so capably throughout the year towards its smooth operation. It never is—and never will be—possible for the W.I.A. to function in a simple manner due primarily to the diverse nature of our activities requiring expertise in a wide range of accomplishments; it is therefore to the credit of all concerned that the quite complicated work of the Institute is almost entirely carried out in an honorary capacity.

INTERNATIONAL SPHERE

And now turning to the International sphere. On page nine of my minuted report to Federal Council at the 1966 Federal Convention I proposed three ways by which I considered the Wireless Institute of Australia could—and should—support the call for assistance from the International Amateur Radio Union for Member Societies to take an active part within their regions to vigorously promote Amateur Radio and maintain close liaison with their governments as major steps for the protection of Amateur frequency assignments against the world wide pressure for more frequency space by commercial and governmental transmitting services—especially in new and developing countries which are rapidly expanding their communication services.

The second step of the three propositions was "To convene within the next two years a conference of Region III. Amateur Societies". Items 4.2, 4.3 and 4.4 of the 1966 Convention were coincidental to the holding of such a conference and a motion arising from discussions on these items directed the Federal Executive to prepare a submission to Federal Council recommending a financial policy by which such a scheme—together with Amateur representation in general—could be implemented.

Federal Vice-President, Harold Hepburn, VK-3AFQ (now retired), carried out an exploratory programme on this problem and came up with a calculated requirement of \$10,000 per annum if the Institute was to do justice to carrying out the Region III proposals being discussed by Federal Council.

His report was circulated to Federal Council and further discussed at the Hobart Convention in 1967 together with a somewhat complex and inter-related number of agenda items on Region III affairs. Item 4.1.1 was minuted as a result of these discussions and Federal Council resolved that the Executive prepare a detailed submission suggesting a policy to be adopted in relation to the Amateur Service in South East Asia and the remainder of Region III.

With the Divisions on the one hand saying effectively that they could provide no further Federal finance, and on the other hand moving and agreeing to motions which directed the Executive to carry out quite extravagant plans—or at least formulate the plans for doing so—without such additional finance was indeed a formidable task.

However, Assistant Federal Secretary, Peter Williams, VK3JZ; Federal Secretary, John Battrick, VK3OR; and Federal Liaison Officer, Air Commodore George Pither, VK3VX, all submitted articles through "Amateur Radio" magazine which clearly set out the aims of the Institute for an effective plan in this Region.

The first major problem was how to bring the Region III Societies together at the conference table. This had been attempted before and failed due, at the time, to problems of finance, the vast distances and cost of travel in this Region, the small Amateur population in many countries in the Region where Amateur Radio is encouraged, and a seemingly general apathy among the Region III Amateur Societies to do anything at all.

However, over the past two or three years it has been evident that a greater awareness of the dangers to Amateur Radio has prevailed, not only in Region III, but world wide. The I.A.R.U. has actively demonstrated its latent ability to start things moving in the right direction. And the Federal Council with its Federal Executive has supported moves to take active interest.

And at the time, when contact was made with Region III Societies, there was an excellent response, indicating a genuine desire by many societies to hold an inaugural conference in this Region if it could be arranged. Fortunately for the W.I.A., Executive member David Rankin, VK3QV, was travelling abroad last year for the Company by whom he is employed, and was given letters of introduction for the purpose of visiting N.Z.A.R.T., J.A.R.L., R.S.G.B., I.A.R.U., A.R.R.L. and others. His report of an enthusiastic reception everywhere he visited, with several firm promises that certain organisations would be prepared to pay the air fare of representatives to a Region III.

Conference, was really responsible for an immediate plan to organise for such a conference to be held conjointly with the normal Federal Convention in Sydney this year.

Federal Secretary, John Batrick, and Assistant Federal Secretary, Peter Williams, followed up David Rankin's liaison work with correspondence, information bulletins to overseas societies and contacts on the air on regular schedules with the South East Asia net and direct schedules with R.S.G.B. and A.R.R.L.

At this point I wish to record, on behalf of members of the Executive and the Federal Council, my sincere appreciation for the time David Rankin gave to carrying out such successful liaison work at the expense of using his own time when engaged on an extensive business tour.

To me this is a remarkable achievement in a short space of time. Although it has not been possible to have representatives from many of the Region III Societies, I am hopeful that the results from a meeting of the major Societies will result in ways and means being found by which the Amateur Service will grow in the technically under-developed nations of this Region so that regular conferences can be held to which many of the smaller societies may then be able to attend. We have a wonderful opportunity to enact "big things" for the future of Amateur Radio in this area of the world and we should make the most of it. I will have great pleasure later on this evening in

welcoming the overseas representatives on this historic occasion.

We should make the most of it because we also have the current opportunity of gaining substantial support from the Australian Government. The late Prime Minister Holt had determined a policy of substantial aid to Asia. Prime Minister Gorton is pursuing this policy as evidenced by his recent statement when speaking in Hobart to a conference of the Associated Chamber of Commerce of Australia when he said, "It was vital to Australia's future to build up the economies of the countries closest to us, and to lift the living standards of the people of these countries."

I believe the policy of the W.I.A. to assist the under-developed countries in Region III, by introducing the Youth Radio Scheme and possibly supplying students with component parts to augment their training as a stepping stone to the introduction of Amateur Radio as a technological resource, is in line with present day government thinking.

The government's home policy also supports educational advancement. Prime Minister Gorton, when speaking at the same conference, said, "I know you will want us to devote more and more resources to improving educational facilities for youth, particularly in the field of technology."

If, therefore, we can gain government support for the purposes of strengthening the Y.R.S. at home, then we will have more to give to Asian countries and be better able to

do it. In the overall pattern I believe we have tremendous opportunities at this stage in Australia's history to prove to our government the findings of the Stanford Research Institute—that Amateur Radio IS an international resource for technological, economic and sociological development. If we can successfully do this using every expedient we can command, then I am certain we will have planted the seeds for the future unassailable establishment of Amateur Radio in this country, and indeed, in all countries in this area of the world.

In conclusion, might I express my appreciation to all those who have given so much of their time to the administration of the Wireless Institute of Australia, and to all those who have contributed to other than its administrative activities. Amongst these people I include all the past officers with whom I have worked over the last 18 years, most of whom are still with us and enjoying an up-graded Amateur Service in the growth of which they so capably assisted.

To those remaining on "active duty" I reluctantly say farewell but not goodbye. I hope to frequently have QSOs with you all and when the opportunity exists to have eyeball QSOs as well. To the Wireless Institute of Australia as a whole I extend my sincere wishes for its continued success and my appreciation of what it has given to me through my association with its Executive organisation.

Thank you, gentlemen.

G. M. Hull, Federal President W.I.A.

WIRELESS INSTITUTE OF AUSTRALIA—FEDERAL EXECUTIVE

BALANCE SHEET

as at 29th February, 1968

1967		1968
CURRENT ASSETS:		
	Commonwealth Savings Bank—	
	Federal Executive Account	\$7,652.40
\$8,600	Publications Account	986.88
637	Sundry Debtors	263.35
553	Stock on hand—at lower of cost or	
362	market value	441.84
49	Prepayments—Convention	48.00
		\$9,393.47
\$8,201	FIXED ASSETS:	
	Furniture, Fittings and Equipment—at cost less	
1,210	depreciation	1,132.56
		\$10,526.03
\$9,411	TOTAL ASSETS	
	Less—	
	CURRENT LIABILITIES:	
\$752	Reserve Fund	752.00
4,222	I.T.U. Fund	5,414.87
58	Australis Project	—
13	Prepayment—Publications	—
		\$6,166.87
\$5,045	ACCUMULATED FUNDS:	
	Balance, 1st March, 1967	\$4,365.65
\$3,539	Less Deficit for year	6.49
827	Plus Surplus for year	—
		\$4,359.16
\$4,366		

AUDITORS' REPORT

We have examined the books and vouchers of the Wireless Institute of Australia (Federal Executive) for the year ended 29th February, 1968. In our opinion the accompanying Balance Sheet is properly drawn up so as to give a true and fair view of the state of the affairs of the Federal Executive as at 29th February, 1968, and the attached Statement of Income and Expenditure is properly drawn up so as to give a true and fair view of the results for the year ended 29th February, 1968.

Melbourne, 5th April, 1968. Hebard & Gunning, Public Accountants.

CONVENTION FUND

1967		1968
	Amount Recoverable 1968 Convention brought forward	\$277
	Add Expenses:	
\$1,259	Fares	\$1,061
288	Accommodation	429
150	Official Dinner	161
228	Other Meals	35
60	Freight and Sundries	7
248	Typing, Duplication of Minutes	292
54	Postage, Stationery	4
24	Rent, Convention Rooms	20
		1,999
\$2,309		\$2,276
	Less Receipts:	
\$2	Bank Interest	—
2,030	Amounts Recovered from Divisions and Others	2,255
\$2,032		
\$277	Deficiency to be recovered from Divisions	\$21

STATEMENT OF INCOME AND EXPENDITURE for Year ended 29th February, 1968

1967		1968
INCOME:		
\$147	Interest Received	\$214.88
1,116	State Contributions—per capita	1,158.80
495	Surplus Publications, Badges	317.40
		\$1,689.28
\$1,758	EXPENDITURE:	
\$31	Audit Fees	\$31.50
136	Depreciation	133.00
35	Awards, Contest Committee	84.93
5	Floral Tributes	10.00
188	General Expenses	203.20
18	Insurance	16.55
2	P.M.G. Licence	2.00
54	QSL Bureau	39.05
13	Maintenance, Office Equipment	30.68
10	Subscriptions	506.76
261	Stationery, Postage and Telephone	303.00
100	Salaries	108.00
20	Travelling Expenses	18.00
—	Youth Radio Scheme	8.40
—	I.T.U. Expenses	115.43
—	Project Australis	44.08
36	Badges	—
12	Advertising	—
12	Federation Expenses	—
—	Oscar Project	—
		1,695.77
\$931		
	Deficit for Year 1967/68	\$6.49
\$827	Surplus for Year 1966/67	\$827

STATEMENT OF MOVEMENT OF FUNDS for Year ended 29th February, 1968

Total to 1967		Total to 1968
INTERNATIONAL TELECOMMUNICATIONS FUND		
\$68	Balance Old Fund	\$68
	Add Contributions 1968:	
\$872	New South Wales	\$300
800	Victoria	500
877	Queensland	877
708	South Australia	392
496	Western Australia	496
400	Tasmania	400
		\$3,414
\$4,222	Balance carried forward	\$3,414
	AUSTRALIS PROJECT	
	Balance brought forward	\$57
	Contributions:	
\$80	New South Wales	—
70	Victoria	—
72	Queensland	—
50	South Australia	20
70	Western Australia	—
20	Tasmania	—
35	Donations	—
		\$77
\$397	Expenditure	\$192
\$340		
\$57	Deficit transferred to Income and Expenditure A/c.	\$115

VHF

Sub-Editor: CYRIL MAUDE, VK3ZCK
2 Clarendon St., Avondale Heights, Vic., 3034

Activity on both 6 and 2 metres appears to be at an all time low in most States, but the apparent trend appears to be in constructing new equipment, mainly s.s.b. and r.t.t.y., but a new field of activity is v.h.f./u.h.f. translator suitable for satellite or link use and an experimental satellite unit has been tested via a high altitude balloon and judging by the quality of signals received it appears to be a very successful unit. If Amateurs in other States are working on similar or other interesting devices of equipment I would appreciate a short note describing the gear and the uses it is proposed to be used.

A change of subject now. News for "A.R." should reach me by the dates as follows: July "A.R." May 24; August "A.R." June 28; Sept. "A.R." July 26; October "A.R." Aug. 30; Nov. "A.R." Sept. 27; Dec. "A.R." Oct. 25; Jan. '69 "A.R." Nov. 29.

Keep the news coming in chaps. 73, Cyril VK3ZCK.

HUNTER BRANCH

2 mx: This band was very good over the Christmas period with good openings to Sydney. On most evenings a contact with Sydney could be obtained. Active stations include VK5 2ZSG, 2VJ, 2ZCT, 2ZWM. Conditions have fallen off since January, but a little DX can still be worked. Most of the locals can be heard on Monday night after the Hunter Branch broadcast when about a dozen stations come in for the call-back.

6 mx: This band has been poor, over the Christmas period there were no openings of note, although most States were worked. The band folded up in the middle of January, and since then no DX has been worked. The only activity lately has been on Saturdays and Sundays, when two or three can be heard. 73, Mac VK2ZMO.

VICTORIA

Activity above 52 Mc. in the past months have been low, with DX on all bands scarce. Even with this lull new call signs still are appearing on the bands.

6 mx: DX on this band is the worst I have ever heard, but still contacts can be had on Saturdays and Sundays and any time on the net. Even though fellows get on 6 and use it even once a week is enough but more signals below 53 would be appreciated.

2 mx: The number of new call signs on the band is increasing, plus a number of old calls with new and improved equipment. Modes such as sideband and r.t.t.y. are appearing in greater abundance. Most r.t.t.y. is on f.m. nets above 146 Mc. S.s.b. is used within the a.m. section below 145 Mc., only a few are v.f.o., but the number is slowly increasing.

70 cm.: There are more stations appearing every month, providing quite a large group for the nightly schedules at 8.15. A ten-second break is left between overs so that you can break in and you are set for at least four or five new calls for the log. Regulars on the band these days include VKs 3ZER, 3AY, 3ZRG, 3ZBZ, 3ZYT and 3AUX. So get on this band and help populate it.

On 28th March a balloon was launched from Mildura containing a package designed for Australis-Oscar II. The unit consisted of a transverter receiving 146 Mc. f.m. Channel B and re-transmitting on 432.15 Mc. with a three watt output power. The balloon rose to a height of 104,000 feet before being dropped by parachute to land 4½ hours later. Ken VK-3AKK and Ron VK3ZER maintained contact via the transverter with Les VK3ZBJ mobile in Mildura.

Listeners in VK2 and VK5 monitored the frequency trying to make contact, while in Melbourne VK5s were heard working each other. Signals remained very good throughout the experiment with both voice and slow scan facsimile being tried. This is obviously a historic event, being a large step forward on the part of the Australian Amateur in keeping pace with the rest of the modern Amateur world.

Congratulations should go to all those concerned and to those who helped to make the experiment such a great success. With the now reduced Morse speed, more Z calls are changing over to full calls, one of the first was Robert 3ZVV, now 3AOT; although active on the low bands with his new call, he still has maintained an interest in v.h.f. and is active on 6 and 2 mx a.m.

Have you any good ideas for the location for the 1968 V.h.f. Group Convention? If so, let Noel VK3ZPQ, the Secretary, know. Also, if you have any suggestions for activities, they would be appreciated. We do wish to maintain the high standard as set in previous years. 73 and best DX, Robert VK3ZPX.

Eastern Zone.—52-54 Mc.: M.u.f. peaked for the month over week-end 23rd, 24th March, but no 6 mx openings. Some local activity on the 53.032 Mc. a.m. net between VKs 3ZQC, 3ZCG, 3ZDP and field day station 3ZGS portable at Mt. Donna Buang.

144-148 Mc.: NO DX other than field day station contacts, and normal 2 mx f.m. net activity which is on the increase, Channel C also now being used. 73, George VK3ZCG.

SOUTH AUSTRALIA

Our former scribe Colin 5ZMJ has temporarily retired—due to wedding bells. From the next issue I hope there will be someone with fresh ideas; this month it's mine.

A variety of t.v., f.m., r.t.t.y., a.m. and other carriers from Asia between 47 and 51 Mc. are to be heard occasionally at good strength, but few JAs to be heard. Drought conditions in S.A. are increasing the level of power leak, consequently much 6 mx activity has decreased.

Regret that VK5 activity during National Field Day Contest in Feb. was poor. There are hopes for quite an exodus of stations to go out portable next year to rival the splendid efforts of the VK6s, about 11 of whom worked into VK5 on 6 mx from portable locations. The Elizabeth Club station 5LZ had a breakdown on 2 mx, so lost quite a swag of contacts. I spent the night on a lonely mountain top ready for the next morning's 2 mx DX. Worked 17 stations, running 15w. to 10 el. beam.

Mick 5ZDR, now at Tantanoola, S.E., worked 78 stations in his first week of operation. Contacts to Melbourne and Adelaide are consistent and hears the VK7 beacon from time to time; at time of writing no contacts made to VK7.

Rod 5ZSD and Charles 5KW currently putting finishing touches to 576 Mc. gear to capture the record for that band from the new record holders, John 5QZ and Graham 5ZJL. The former gentlemen also have gear for 1296 Mc., but were staggered to learn the present record for 1296 Mc. in New Zealand is 126.2 miles, recently set up from the previous distance of 14 miles.

The annual meeting of the VK5 V.h.f. Group resulted in Chairman, Eric 5ZEJ; Vice-Chairman, Edwin 5ZTS; Secretary, John 5QZ; Council members Barry 5ZMW and Rick 5ZFG. Brian 5TN addressed the gathering after the business on long range tropospheric propagation which was able to produce communication of reasonable consistency on frequencies as high as 1769 Mc. and over distances in excess of 1,000 miles, and produced typical weather maps which could be used as pointers to such propagation. Subsequent to the annual meeting, the V.h.f. Council met and drew up what is hoped will be an interesting syllabus, to be published in the VK5 Journal.

Peter 5ZKA is now resident in N.S.W. A good v.h.f. operator who will be missed from this State. John 5ZDZ is back from Canberra and living at Port Pirie and joins the Northern Net which is being formed on 146 Mc. f.m. Jim 5ZMJ at Port Pirie is already having contacts into Adelaide on 146 Mc., using vertically polarised beam. Ian 5ZIW has shifted from Price to Whyalla and also will be in the net. 2 mx is quiet, very quiet indeed. Occasional contacts across to Western VK3, largely by Tony 5ZDY, well placed in the Adelaide Hills.

A number of the more consistent 2 mx operators are now learning c.w. May could be a very busy examination month. Till next month and a new scribe, 73, Eric 5ZEJ.

NORTHERN TERRITORY

Once again 6 mx is open to the North after a very bad season to the South. The band has been opening regularly at 9 p.m. local and closing at about 11.30 p.m. local time. Possibly the best signals have been coming from Ueda JA2GVW, Al KR6TAB, Jim KR6UY, Yama JA0SX and Hideo JA1FEJ. Another station worth looking for is KH8CH portable KW6, who operates on about 50.4 Mc. Worthy of note is the number of JAs who are on the band using s.s.b. rigs, probably a dozen or so.

KR6TAB and myself on 23/3/68 had an hour QSO in which Al dropped his power input from 80w. to 5w. for part of the time and was still copyable at about 4 x 3. Al said he had had a nice QSO with VK8ZBB who was running about 3w. into a 6J6, a converted taxi tx.

In closing, I might add that I am still looking for a JA8 to complete my WAS-JA; won't somebody please help? 73 and good DX to all you other v.h.f. addicts, VK8ZMR. P.S.—we are minding our Ps and Qs now that we have an RI.

V.H.F./U.H.F. STATE RECORDS MARCH 1968

(Austalian Records in bold type)

NEW SOUTH WALES			
Mc.	Calls	Date	Miles
50/52	VK2ADE to VETAAQ	8/4/59	7320
144	VK2ZMR to ZL2AAH	8/1/65	1410
432	VK1VP/1 to VK2ZFT	14/6/65	178
576	No claim		
1296	VK2ZAC to VK2ZCF/2	4/3/64	46.8
VICTORIA			
50/52	VK3ALZ to XE1FU	1/6/59	8418
144	VK3ZNC to ZL2HP	13/12/65	1673
432	VK3ALZ to VK6ZDR	28/5/66	402
576	VK3AKE to VK3ANW	11/12/49	80.7
1296	VK3ALZ to VK3AUX/3	10/4/66	25.6
2300	VK3XA to VK3ANW	18/2/50	9.0
3300	VK3ZGT/VK3ZGK/3 to VK3ZDQ/3	14/12/63	63.5
QUEENSLAND			
50/52	VK4ZAZ to K6ERG	16/3/58	5305
144	VK4ZWB to VK7ZAO/VK7ZAQ	9/1/65	1117
SOUTH AUSTRALIA			
50/52	VK5KL to W7ACS/KH6	26/8/47	5361
144	VK5BC to ZL2HP	23/12/65	1957
432	VK5ZDR to VK3ALZ	28/5/66	402
576	VK5JL to VK5QZ	28/1/68	145.7
1215	VK5LA/5 to VK5ZCR/5 (now VK5EK)	4/1/62	1.0
WESTERN AUSTRALIA			
50/52	VK6BE to JA8BP	30/10/58	5490
144	VK6ZCN to VK5ZJH	8/1/65	1330
432	VK6ZDS to VK6LK/6	25/4/66	66.5
576	VK6ZS/6 to VK6LK/6	15/12/63	101.2
1296	No claim		
TASMANIA			
50/52	VK7LZ to JA9IL	3/12/59	5462
144	VK7ZAO/VK7ZAO to VK4ZWB	9/1/65	1117
432	VK7LZ to VK3ZDM	8/1/66	312
No other claims			
AUSTRALIAN E.M.E. RECORD			
Mc.	Calls	Date	Miles
144	VK3ATN to K2MWA/2	28/11/66	10417

N.B.—This contact is also the present world record contact for 144 Mc.

—D. H. Rankin, VK3QV, Federal Activities Officer

SOUTH EAST RADIO GROUP OF VK5

Annual CONVENTION

SAT., SUN., and MON.,
8th, 9th, and 10th JUNE, 1968

HF and VHF events including Fox Hunts, Scrambles, Transmitter Hunts, plus events for ladies and children.

Hotel and Motel accommodation available. Registration Fee \$3, payable by 18th May, to S.E.R.G. C/o. VK5ZKR or VK5HP.

Further details can be obtained from the above or Cyril VK3ZCK.

W.I.A. V.H.F.C.C.

Additional Members

Cert. No.	Call	Confirmations 52 Mc. 144 Mc.
40	VK3ZGZ	104
41	VK7ZAO	145
42	VK2UQ	109
43	VK4PU	112
44	VK3AMK	131
45	VK4ZPL	113
46	VK3ZNJ	129
47	VK3ZJN	217

W.I.A. 52 Mc. W.A.S.

Additional Members

Cert. No.	Call	Addt. Cntr.
78	VK3ZJN	2

DX

Sub-Editor: ALAN SHAWSMITH, VKASS

35 Whynot St., West End, Brisbane, Qld., 4101

All bands are open and working. Signals plenty, day and night. Only 3.5 Mc. seems to be dragging its feet DX-wise. Ten is open from 2000 to 1100z. Fifteen and twenty almost around the clock, and 7 Mc. is letting a rare one or two through at 0700, 0930, 1700 and 1900. As evidence of the improved conditions, signals in the main are stronger and stand out from the noise level. Many good ones are easily workable. Have a listen and prove it yourself.

NOTES AND NEWS

Mariana Is.: KG6SK 21312 1200. QSL P.O. Box 48, Capital Hill, Saipan.
Tristan da Cunha: ZD9BE 28550 1550, 21280 1730. QSL via GB2SM.
West Carolines: KC6CF 14170 1400z.
Nauru: VK9RJ on now 14180, 0700, will be using other bands.
Kure Is.: KH6EDY 14180 14220, 0900z.
Solomon Is.: VR4EK 14180 14220 1000z, only one on s.s.b. VR4CR 14030 1000z.
Antarctica: Ian ZL3AA reported on 14 c.w./s.s.b. some days at 2002 and 0800z.
Afghanistan: YAI DAN QSL KP4CL QTH Kabul 14200, 1400z.
Franz Joseph Land: UA1KED 14105 0100 1300. Sth. Shetland Is.: CE8AT 14058 and 14180, 2130z. QSO CESZN if you want a sked. CE3ZN act. as M.C. and is usually on or near his frequency.
Marshall Is.: KX6GJ 14240 1130z. QSL P.O. Box 8515, A.P.O. S.F. 96555. He is on Roi Mainer Is. and the only operator there.
Nova Zemla: UA1KPT 14011 0100z and from 1800z; might be granted DXCC status.
Timor: Rumour has it that VK8AV and VK8HA are still trying to obtain a licence for here. Activity was intended for April or even May. If it does come off, as many VKs as possible will be worked.

Azores: CT2AA 14112 14160 21305 3780. For 20 mx try around 1600z. QSL P.O. Box 215, 1936 Comm. Sqdn., A.P.O. N.Y. 09406.
Wallis Is.: FW8RC appears to have been QRT but now reported active again on 21065 and 1410 0800z.
Syria: YK1AM 14110 1200. QSL YK1AA, Box 35, Damascus.
Indonesia: PK1SH said to be active again 14040. Also the call 8P1SH is being used. Several others on s.s.b. from the various districts, such as PK7 and PK8, etc. PK1AA 28002 0000z. QSL to PK1SH at Box 2127.
Caiicos Is.: VP5AA 28600 1500. QSL WIWQC. San Andres: HK0AJ c.w./s.s.b. 14, 21, 28. HK0BI 14115 0730. HK0KW 21320 1800.
Gough Is.: ZD9BH 14100 c.w. 1730.
Cuba: CO8RA 14198 1300.
Lesotho: 7P8AB 14050 21045 1900.
Anguilla: VE3CUS/VP2 14190 1165. QSL to VE3ODX.
Greenland: OX3EL 14150 1135. QSL OX3EL, Upernavik, N.W. Greenland.
Rio de Oro: EA9EJ keeps the ball rolling with activity on 14315, 21280, 1800. Does use c.w. also as worked here on 14080 1830.
Rio Muni: EA0TU 21040 0900, 28700 1030. 21300 1420, 21200 1540, 14118 1905.
Guernsey: GC8HT seems a perennial DXer. He sticks to close routine of certain bands on set days. An s.a.e. will bring you advance info on his activities—1.8 to 28 Mc.

Iran: EP2DA 14190 kc. at 1330z, listening up 35 kc.
Italy: Exotic to say the least are the calls of the following: 1F6RU, 2212z on 14036, 18CLC 14017 at 0143z.
Malagasy: 5R8AS 14211 1300z.
Maldives: VS8MB 14080 kc. at 1130z.
Rwanda: 9X5AA on 14190 at 1520z, and 9X5AV 14170 at 2135z. QTH as Box 104, Kigali, Rwanda.
Svalbard: JW2BH is on from Bear Island.
United Nations, Geneva: 4U1TU, 14150 kc. at 2025, plus all other bands and modes.
Turkey: TA1VY 2210z on 1400, 5 kc. and heard on 7007, 1920z.
Wrangel Is.: UA0KIP 1442z on 14043 kc. Maybe this will again be counted as separate country.
Tierra Del Fuego: CE0PG 14205 kc. at 0220.
Sudan: Sid ST2SA 28610 s.s.b. 1104, 14078 c.w. 2220. Dr. Sid Ahmed Ibrahim, P.O. Box 244, Pt. Sudan.
Argentina Is.: VP8JT 14127 s.s.b. 2106. QSL via VE1AFJ. VP8JI also QRV. VP8IU/G3SFN now QRT.

Arctic Zone 40: UA1KED Weather Station, Alexander Is. Franz Josef. UP0L6, UP0L7, UP0L8, UP0L9, UA1KAE, UA1KAE/1, KAE/2, /3, /4, /6, /7 all Arctic. (Don Grantley).

Cocos Is.: Requesting QSLs to his home address with s.a.s.e. and I.R.C. is WA8OKN, who recently operated as T19AM from Cocos Is. Address is 1933 Coventry Ct., Thousand Oaks, Calif., 91106. Also holding a licence is VK9KC, C. M. Hayes, C/o. D.C.A. No sign of activity as yet.

Norfolk Is.: VK9RH, Ray Hoare, Box 97, Norfolk Is., still very active, 14187 0700 and 14246 0730.

Botswana: 80 A-Z is the call sign allocated to Botswana or Bechuanaland.
Chagos: VQ8CD 14008 1800z. Also uses 14024.

Ocean Is.: VR1L, Bob Lusk, Ocean Is., Central Pacific, frequently heard 14187, 14272, 14172, 14270 from 0600z onwards. QSL manager is K6UJW.

Cayman Is.: DXCC credits for ZF1DX by K6KDS are being held up by the A.R.R.L. at the time of writing this. Proof of licence, location, etc., has been requested. There has been pirate activity of this call.

Uganda: 5X5JK 21350 1700. P.O. Box 181, Kampala.

Saudi Arabia: HZ1AB 14211 2100. QSL A.P.O. 09616, New York.

St. Pierre: F8P4Y 14180 0330. C/o. Chief of Telecommunications.

Corsica: F9NV/FC 14054 2250.

Canary Is.: EA8CI 14206 2300. QSL K4DI.

Burundi: 9U5CR and several others are QRV 21 s.s.b. 1700-2100.

French Guyana: FY7WH 14168 2300.

Mexico: The 4A1, 4A2, 4A3 calls commenced on March 21 and will last till Dec. '68 to commemorate the Mexican Olympics. There's an award offering for those who can work 100 of these stations. (VK4UC).

Mongolia: JT1KAA 14024 kc. at 0150z. JT-1AH 14061 kc. at 0200z. QSL both via JT1KAA (W2NUT).

Items used above by courtesy of LIDXA, Fla. DX'er, "Air Waves", ZL2AFZ, N.Z. DX Editor, VK4UC, Don Grantley.

ACTIVITIES

Barry VK5BS has been QRL building up a 160 mx rig but managed time for these on 14 c.w.: VO1FB, 6Y5GS, HC1CG, VR3DY, YV-5CKJ, JT2AB, FG7XX, K1BTDN/KL1 (Barter Is.), G5WP, VU2AYZ. (In an earlier issue of these notes I gave Barry the designation of a Woomeera technician. This is substantially not correct. Sorry I "goofed" OM.—Al.)

Ken VK3TL has found another love, namely flying light planes, but couldn't resist knocking off a few rarities on 14 c.w./s.s.b.: K8NHV/XV5, HK0BKW, 8R1S, TJ1AG, 9X5AV, AP25G, MP4MBC, 9U5BB, 8Y4VT. Best QSLs received: YN2JS, LZ2KKZ, CE8AA, EL8B, TJ1AG, CR-7CI, CE0PC, PK8YAK, EA8CG, TG5HC. (It's the Flying Hams' Club Award for you Ken OM. Please write for particulars—also any others interested.—Al.)

"KK" VK6IZ sends in quite an impressive list of activity on all bands, 80 through 10, s.s.b./c.w. On ten the best time in VK6 it seems is from 1000 to 12000 and these were worked: G3VVF, UC2AFC, YO2IS, OK3QF, UL7GO, SM3EVG, DM2AKL, ON4FL, G3IVG, DL4PV, G3TZO. 21 Mc.: DK1IZ, UH8BO, YV3BPJ, CO2BB, HL9KG, HC4WA, YS2OB, UA0LL, UA9BZ, KA25W, LA4DJ, UA4KZZ, XW8BX. 14 Mc.: VP8BP, EA8FG, HB9AZK, PJ2CZ, F8DR, YU2HA, LU4IMG, GM5AIF, KP4AST, ZS6TE, 6W8OT, SP9BNY, UV0ED, KV4CI, YV5BNE, UA0KCS, VR4CR, DJ8NB. 3.5 Mc.: many Ws worked between 1100, 1200.

Dud VK4MY reports the DX fishing rather good at the Gold Coast, but says also that a few choice ones got away. On 14 s.s.b.: VR3DY (Fanning Is.), KOUXZ/KS6 14230 1035, OEGWA 14112 0645, HK0BKZ (San Andreas Is.) 14150 0700, UBSKTF 14200 0700, ZS1DC 14270 0500, GC8HT 14180 0750, VE8BB 14180 0615, 966AW 14190 0820, W6TNS/TA 14110 0515, LZ2KKZ 14170 0605, OK1FV 14140 0800, VK0JW 14150 0700, PX1PA (Andorra) 14110 0730, E7BN 14110 0750 (QTH 84 Goat Town Rd., Dublin 14). On c.w. JT2AB 14040 0945, LA8U 14070 0700, ZB2F 14060 0800, VR3DY 14005 0840, UQ2MU 14080 0630, JT1KAA 14040 0900, EA8FE 14070 0645, VP7NF 14040 0700, VP7DX 14080 0500, PZ1CP 21050 0600, 9J2VB 14005 0500, 6Z4SS 14030 0550, FB8XX 14140 1035, VU2FC 14030 1100, KX6GJ 14240 1130, SN2AAF 14040 0640. Dud reports that information received indicates that VR4EK might well be a pirate.

Peter VK4PJ indicates that all bands are open, but says 10 is a little quiet. On s.s.b. the following were picked up: Ten—DL2TH, DL9KU, DM2AFO. 15 mx: EP2DW, UA3AM. 20 mx: F2PI, DJ1PB, FS1N, IS10VZ, F9PT, F2MO, EA3OF, F2SF, G3SZX, OH20T, VE4EK, TJ1AB, VE0NT, GW3AX, OZ4ZR, 4A2TH, FC2CD, 4A1BC, IT1TTE, DL1TG.

Peter VK3APN, whose big sig on 80 and 40 is very familiar, sends in this list as proof of DX still available on these bands. 7 Mc. c.w.: CE1FF 0750, EP2BQ 1800, ET3FMA 1800, FM-7WQ 0900, HP1JC (worked on d.s.b.) 0800, LUBDQ 0915, LU8PB 0800, PJ2MI 1000, PJ3CC 0745, FG1AA 0845, TI2PZ 0800, VQ8C 2000, VQ8B 1410, W9BFP 1230, XV5PC 1800, ZD5X 1410, ZS1A, 2000, ZS6CN 1440, 4S8BW 1940, 5R8BA 1820, 5W1AZ 1210, 9J2BC 1950, On 3.5 Mc.: KC4USG 1215, KG8AA 1000, KH6EBQ 1330, KL7PI 0915, KZ5GN 1115, VQ8CBB 1355, VQ8CBR 1315, ZS5UQ 2020.

David VK3QV reports 10 mx open as evidenced by the following list: ET3REL (QSL via W5LEF), G3MCG, G3OZU, HR1HC, JA1PEB, JA2INQ, JA2JRE, JA8CAR, JA8CDE/JA1, KL7EFR, OD5EP, OH2ZD, OH5SM, VU2JM, VE2AJ, VE2BV, VE4GN/4, VE3KR, VE5US, VE6LU, VE6ANR, VE7EH, VE7VQ, 7BDL. All W/K call areas several times over.

Chas VK4UC, picking off the best ones, logged these—c.w. 20 mx: AP2AR (East Pak.) 1400z, JT2AB 1100z, 6Y5GS 1200z, HM9BI 1000z, ZF1DX 0745z, GM3ITN 0800z, VP7DX 1000z, YS1XEE 1230z, 5Z4KL 1345z. S.s.b. 20 mx: MP4DAT 1230z (QSL G3USK), ZF1RD 1300z (QSL K8LSG), GC5FMV 0800, ZD7KH 0800z, VP2VO (ex VP2KD) 1200z, 9Y4JR 1200z, CE9AT (Sth. Shetlands) 1236z, YA1DAN 1145z, 7X0AH 0730z, VE8ML (Zone 2) 0830z, VE3CUS/VP2K (Anguilla) 1135z, 6W8DY 0800z, VK9RJ (Nauru) 1300z, K8NHV/XV5 1100z, KH6EDY (Kure Is.) 0830z, VR4EK 1050z, KM6BI 1060z, ZL5AA 0900z.

It is gratifying to receive so many reports this month. VK activity is markedly improving. Peter VK3APN draws attention to the good DX available on 7 Mc. and asks that more publicity be given to it. (Will try OM.—Al.) Dave VK3QV says try a CQ if 10 mx seems dead, the result might surprise you. (I agree.—Al.) Peter VK4PJ wants QTHs of TJ1AB, 9K2BV and FC2CD. Anyone help please?

SOME QTHs

VP8JD—G2RF.	CT2AS—G2MI.
8P6AO—VE3DLC.	3C0MY—VE1 Bureau.
8P8AY—W4OPM.	AP2CR—W7EU.
8P8BU—W2UKP.	CN8HQ—KH8DZR.
9Y4DS—K8LKR.	CP0JD—K0WGY.
9Y4VT—W3DJZ.	SV0WJ—K4BNI.
FB8XQ—FR1ZD.	TJ1QQ—W4DQS.
VP2GRC—VP2GW.	VP5AA—W1WQC.
VP2ME—W3KAU.	YA3TNC—W3TNC.
7P8AR—W4BRE.	JV6GM—W6GMV.
7Z3AB—W4YDD.	PJ3CC—W4YD.
TA2FM—W7WLL.	9X5CE—ON5AM.
TA2FM—DJ2PJ.	TU2BQ—DJ6GLA.
SV0VU—W2CTN.	SV0WV—W3MOJ.

K8HNW/XV5—W6FAY, Box 11173, San Delgo.
AP5HQ—Comd. Sig. Training Centre, Kohat, Cantt. W. Pakistan.
YN1MO—M. Murciano, Box 925, Managua.
ZS9H—P.O. Box 17, Gaberones, Botswana.
6W8DX—P.O. Box 347, Dakar, Senegal.
VP2GAR—P.O. Box 201, St. George, Grenada.
TR8AH—Box 312, Libreville, Gabon.
BV2A—Box 101, Taipei, Taiwan.
HJ23TYQ—Box 1721, Aramco, Dhahran, Saudi Arabia.
TR8AG—Box 157, Libreville, Rep. of Gabon.
UA1CK/JT1 and JT1KAA—Box 639, Ulan Bator, Mongolia.
CR6AD—Box 13, Caconda, Angola.
3V8BZ—DL7FT, Box 99, Munich, Germany.
5W1AA—Box 488, Apia, W. Samoa (ditto for 5W1AS).

8R1C—Box 739, Georgetown, Guyana.
9M6JP and 9M6MG—R.A.F., Labuan, Sabah, B.F.P.O. 660.
HS4AK—P.O. Box 2008, Bangkok, Thailand.
5U7AK—Rev. Dave Keppel, Protestant Mission, Teru, Niger Republic.
TF2WKM—P.O. Box 27, F.P.O., N.Y., N.Y. 09571.
YK1AK—P.O. Box 35, Damascus, Syria.

ARMED FORCES DAY—U.S.A.

Scheduled for 18th May, 1968. The Communications Section of the Army, Navy and Air Force will conduct tests—QSOs with Amateurs throughout the world. There will be a code receiving test at 25 w.p.m. for which a certificate will be issued to those successful. There will be a similar r.t.t.y. test, plus military to Amateur cross-band tests and QSOs.

Some of the Armed Forces frequencies will be 4001.5, 4020, 6992.5, 7325, 14405. Time for the receiving test is given as 1830z and can be copied on the following frequencies: 3347 and 6982.5. Listen for the above and make this annual Armed Forces/A.R. affair a success by your participation. Keep the day of 18th May in mind. A certificate is also awarded for successful reception of the r.t.t.y. tests.

My thanks to the column's supporters mentioned above. Thanks chaps, keep the DX information going. Good hunting. 73, Al VKASS.

SWL

Sub-Editor: D. GRANTLEY, WIA-L2022
P.O. Box 222, Penrith, N.S.W., 2750

In recent editions of a popular American Electronics magazine which, for obvious reasons will remain anonymous, there has been quite an amount of publicity about the listening to and QSLing of public utilities. These articles I should imagine, would provoke any budding listener to have a look see at these services, and maybe try to extract a card from them. One article tells you what you can hear, another tells you where you may obtain lists of the frequencies allocated to these services which include Interpol and American Service stations, yet the lists are in reality, classified information as far as the U.S. Government is concerned.

It is not my business to comment on the articles concerned, this is purely the concern of those who published the articles, however any material on this subject which is available to the Australian public over the counter is of interest to us here. Transmissions of this nature take place within Australia and no doubt much of the foreign domestic utilities can be heard here. Anybody who holds an ordinary broadcast receiver licence can listen to them, and naturally enough many do. But it is a far different story if that person communicates that data, or tries to use it for devious purposes. You will have the powers that be down on you like a ton of bricks, and this, to say the least, is uncomfortable and would take a lot of explaining.

Far more serious I should imagine, would be any attempt to forward a QSL to any of the local services, the fact that a QSL had been forwarded through the mails could possibly have unexpected and unpleasant reactions. If the American S.w.l.'s want to have fun and games in these matters, I suggest we leave it to them and keep out of any possible trouble ourselves.

DIVISIONAL NEWS

I am often asked why we rarely have news from the State S.w.l. Groups in this page. Let me hasten to point out that it is the responsibility of Group Secretaries or Publicity Officers to forward these notes on to me, and if they don't arrive, then we just can't do anything about them. I can only assume that Groups do not exist in VK4, 6, 7 and 9. Notes from VK2 and VK3 are printed if they are received and anything which I hear on the grapevine is included.

I don't know what goes on in VK3, but the VK2 S.w.l. Group Secretary promised me notes regularly every month and to date (six months later) I have received none, nor have I heard anything from them in the broadcast. As I have said repeatedly, this column is open for news from any S.w.l. or S.w.l. Group. The notes must be in here by 25th of the month, all letters are acknowledged, and any queries answered or referred to somebody who can. Whilst on the subject of this page, we shall have to suspend Harry Major's series for the time, but will wind it up when possible.

MAILBAG

Letters to hand from Chas Thorpe, Alan Raftery, Ernie Luff, Al VK4SS, Eric Trebilcock, L. Sharpley of VK4, Mac Hilliard, with George Allen and Mac on the phone, and an occasional meeting with Bob McIntosh. Plus of course the usual batch of tapes from overseas.

Firstly to Eric Trebilcock, who has most of his time taken up with his duties as VK3 Inward QSL Manager. However, he was not idle and reports the following loggings as being some of the more interesting ones. All are c.w. except for the 160 metre entries: 10 mx—VK8NO, ZL1HW, ZL1AXY. 20 mx—5N2AAF, VP7DX, VP9BK, 8P6BU, 5H3KJ, VK8UG. 40 mx—ZD5X, 4STDA, MP4BEU, VETHQ, G2PL, VE2YU. 80 mx—VE1TG, VE1ZZ, VK8NO, W6PKY, ZL1AF, VK7SM. 160 mx—VKs SGX, SWI, 3YQ, 3ACH, 3AEB and 3AYI. Inward QSLs were: DM4XL, EA1IV, G3GEW, JH1BZO, OE1DEW, OZ4KG, SP5PSL, U5WJ, VE1TG, VK1GD, VK6KP, VQ8CBB, VQ9TC, W6ITY, and 9M8II. Eric's score: 301 heard, 297 confirmed.

Alan Raftery has been out of action due to studies for some time, but received QSLs from DL1MM, DL8DX and HP1CJ. All the best with those studies Alan.

Lew Sharpley comes to the page via Al VK4SS, and reports the following on 20 mx s.s.b. and a.i.n. DL7DI, YV1ST, OH2OI, CE3PR, 9M2DR, 9M2NF, XE1GF, VEGBI, VE6SS,

YV5AAO, VE4KE and many others. Lew is looking for the circuit of a UVSG Model J08 (Sig. Gen.). Anybody able to help, his address is 45 Gordon Pde., Mt. Gravatt, Qld., 4112.

Mac Hilliard's Collins has been proving itself on the 10 mx band of late with excellent loggings of the Europeans. Whilst I have no call signs here, I know that he has hooked some OX calls.

Personally I have rarely seen 20 mx in better form, and the following have been logged on c.w.: VU2DIA (this chap is an easy logging for anybody whose c.w. is not too good for he has a very rough note and operates slowly), PY2EME, CP3GY, PA0LR, PZ1AH, UL7KAA, TG8RL, ZS6AG (1855z), UT5BX, ZS4I, VP9BK, ZC4BI, OZ3PO. On s.s.b. the going is rather hard here, as my current AR7 has no filtering system at all, but despite some spluttering s.s.b. rigs from the southern States. I managed: CT1RT, EA4JL, KJ6BZ, VR1L, HC4BS, CE0AE, 6W8DY, EI8J, 9H1M, OX3JV, GWSBOC, 5WIAT, KOUXZ/KS6, T12CEF (Box 4482, San Jose), VK9RJ, KC6YA, ZD8CC and many others. On the few occasions when I have glanced at 15 metres there have been mainly JAs, but last night (Mar. 23) the Europeans were booming in on c.w. at around 0800z, but a severe electrical storm made me throw the isolating switches to the shack. Tonight (24th) at the time of writing, 1000z, 21 Mc. is well and truly alive with signals from F, G, W, JA and locals pounding in. We are still having an electrical storm, but it hasn't dampened conditions.

As a matter of interest, at the time of writing, there is quite a bit of activity connected with a station signing GB3STD on 20 mx. This I take is the station I was advised of as being GB3SD, and is connected with the Radio Amateur Invalid and Bedfellows Club in the Sussex area of England. If any S.w.l. or Amateur has a card for this station I will gladly pass it on, as I am in contact every couple of weeks by air mail.

Ernie Luff is still bringing home the QSLs, and the following were added during the past month: VK2AGO, VK5NH, VEASD, HV3SJ, YA5RG, G2BSW, DL3EA, KL7MF, VE8AO, VE8GN, VE8EQ, 3CSACU, 3CSBNI, UBSUN, SM4CHG, SP9ZU, VE4XN, DL8DXI, GW3NJJ, VE8HF, OX4AA, VEFDDZ, 5Z4ERR, IORB, VE3EVU, 4S7PB, and VK0CS. His score this month stands at 239 heard and 174 confirmed.

A letter to hand from Ray Schenk, of Springvale, Vic., who has recently acquired an AR7, and is looking for a manual for it. This has been obtained and I trust that we hear more from Ray.

DX NEWS

This comes direct from Bernard Hughes, of the I.S.W.L., and was airmailed from England a few days ago. CR3KD has been heard 2100z to 2359z on 21025 to 21050 c.w. QSL via W2CTN. HB0LL working into ZL at 0840z on 1427z; QSL via WA4WA0. G3KEM/HZ will be active to the end of July; QSL to F. Booth, C/o Air-work Services, Box 2142, Jeddah, Sth. Saudi Arabia. KC6CO active from West Carolina, whilst KC6JO is on East Carolina. PK1SF heard 1800z on 20 mx, PK9YAK 2130 at 1350z. UA0KIP 14003 c.w. 1500 to 1800z from Wrangel Is., would any S.w.l. or Amateur who hears or works this station please forward me the details of frequency and time heard here.

Please note VP8IE is about to go QRT, but at time of writing has been on 14245 at 0827z. Proposed DX-pedition to V5SRCS will not now be on top band, and 2nd operator will be 9M2XX. It is scheduled for May and June. Banana Is., 9L2SL, was a special field day station recently and has a special QSL card for the operation. VR3DY should be QRT at the end of March and all enquiries after that period to KH6GLU. The 4A1, 2 and 3 prefixes have been authorised by Mexico from Mar. 31

to Dec. 31, to date no reason has been given. Thanks Bernard for this information.

And that winds it up for this month. Let me have any news, particularly QSLs received, and out of the way loggings, plus anything of general interest. 73, Don L2022.

Publications Committee Reports

April meeting was held on the 8th, when correspondence was received from VK1VK, VK2AXS, VK3AMK, VK4ZIM, Secretary VK4 Division, and the Townsville Amateur Radio Club. Technical articles were received from VKs 1AU, 2AST, 2ZEZ, 3OM and 3ZWA.

STOP PRESS

PRICE OF "A.R."

For the last four years the Divisions have been paying 15 cents per copy. Over the last year costs have increased considerably, and a heavy loss incurred. The average cost per copy OVER THE LAST YEAR was 16½ cents a copy and for the last six months only when fewer pages were printed, 18 cents a copy. Anticipated cost increases during 1968 will bring the cost to 18½ cents basing on 28-page issues.

The Federal Convention was asked to increase the price to Divisions by five cents. This request was refused, but an extra two cents per copy was agreed to. As this increase does not cover costs, we have no choice but to reduce the size of the magazine, therefore the June issue will be the last to contain Divisional, S.w.l. or Club notes. V.h.f. notes will be restricted to brief reports of conditions and band openings. DX notes will be limited to half a page.

Federal notes will remain, but will be subject to strict editing according to space availability and advertising income.

Federal Council decided that a sub-committee should be appointed to enquire into all aspects of "A.R." Should the sub-committee ultimately find some way of reducing our costs, or find a way of increasing income, the above restrictions will be reviewed.

VICTORIAN NATIONAL PARKS AWARDS

The following Certificates have been awarded.

Worked From All Vic. National Parks Certificate No. 1—Harold Heppburn, VK3AFQ. No. 2—Peter Downie, VK3APD.

Worked All Vic. National Parks Certificate No. 1—Les Jackson, VK3XM. No. 2—Alf Chandler, VK3LC. No. 3—Keith Roget, VK3VQ. No. 4—Ivor Stafford, VK3XB. No. 5—Mavis Stafford, VK3KS. No. 6—Ed Manifold, VK3EM.

Special mention must be made on the outstanding work done by Harold and Peter in travelling to all the parks and giving so many contacts to those seeking this award. It is believed there has been further activity since they made their trip, but no details have come to hand. We would ask anybody planning operation from any of the parks to ensure advance publicity, either through "A.R." or on the broadcast from VK3WI.

Remember, this award is available to all licensed Amateurs from anywhere. It is NOT restricted to VK3s. Rules can be found on page 17 of "A.R." for December, 1967.

CHOOSE THE BEST—IT COSTS NO MORE



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USE OF COMPONENTS

Editor "A.R.," Dear Sir,

I would like to have a few points cleared up, and if you could help, I would really appreciate it. I've sent a similar letter to this one to the P.M.G.'s Department in case they could help also.

Re "Amateur Radio," Nov. 1967, Federal Communication No. 4, page 3, Components. You state that "an Amateur can now use whatever combination of components he wishes." This is as long as he keeps within the power limits. I would imagine that a person with a transmitter capable of "over the limit" power would have to take care not to load up over the legal limit. My question is this: Why must an owner of a commercial transmitter such as the FLDX 2000 (Yaesu Musen) operate from the 440 volt tapping of the high tension transformer IF care is taken not to exceed the legal limit. See copy of the letter on page 21 of December 1967 "Amateur Radio". Limiting the drive to the linear would be one way of keeping within the power limit.

I wonder if the Drake T4X transmitter would have to be modified on the c.w. position since it is capable of 200 watts d.c. input on c.w.? Or would careful loading by the operator to limit the power input to less than 150 watts be enough? I wish to operate within the legal power limits as well as have my equipment meet the requirements of the P.M.G.

—Gene Nurkka, VK9GN.

[F.E. COMMENT: If FL2000 is operated on the 440v. tap, then the equipment operates within the power limit without having to be PROVED as within the limit, however if operated on h.v. tap it would place the onus on the Amateur to prove he was operating within the power limit, and his equipment would be subject to measurement by P.M.G. officers.]

TEN WORDS PER MINUTE

Editor "A.R.," Dear Sir,

As an OT brass pounder of some thirty years plus, may I comment on the amended P.M.G. regulation, which allows code to be reduced to ten words per minute for the obtaining of an experimental licence.

In most quarters this has been hailed as a good move, particularly among the ever growing number of "Z" boys, who now see only a "low hurdle" between them and full operation.

Will this reduction in our status codewise enhance our image overall? Eventually it may not. However, as so many Amateurs are so badly needed at this point of time, the decision in the broad sense seems justified, but in my personal view, there are one or two big reservations.

What will be the practical result of this change? More "Z" chaps will take their full ticket and more newcomers will scrape through the exam. at 10 w.p.m. All these in the main will be phone operators. I cannot see this amendment producing any significant change in the number of code operators.

If you believe that trying to maintain code proficiency among Amateurs is a "dead cause," then this letter is simply "flogging an expired horse," and there's no point in reading further. However, at the risk of sounding pedantic let me say again that those who should know, insist that code will be needed for a long time yet.

The perennial problem of creating quality AND quantity is not peculiar to A.R. It is the former that sets the level of our "image". I don't think anyone would argue with the reports coming from the States on the state of the art in the C.B., Novice and in some respects the General class ticket ranks. In operating techniques, quality of transmissions electronically, and just general overall social behaviour, the aforementioned would be inferior to the "advanced" ticket holders.

Of lesser import is the fact that OTs and others, particularly those who have been connected with communications and are good AI operators, won't relish having their Amateur ticket relegated to third class.

No, assuming that Code is still considered a practical necessity, and a skill to be encouraged, I cannot see this relaxation to 10 w.p.m. helping it, in any material or practical way.

Only when two changes are made, will there be a significant improvement in the Quantity and Quality of Code Operation.

Firstly.—The newly acquired ticket-holder must be required to serve, say a 12-month

period on some allotted section of the bands (possibly ten), and show a minimum number of logged QSOs on AI Mode. Only the P.M.G. can create this situation—and such a break with past policies and traditions is long overdue. With full respect, it might be felt that the Department in this regard suffers from lack of interest, or imagination.

Secondly.—The W.I.A. needs a more intimate, professional and psychological approach to its Code tuition. True, the finance is not available to provide these full facilities, but, many would-be code operators are incorrectly conditioned at the beginning. This is the vital period, if one is to learn to receive code fluently. It is here that the beginners fall before they have commenced.

I must disagree in part with Federal Executive's comment, "That 10 w.p.m. is considered effective c.w. communication". For practical, general work, this is hardly so, and can be easily demonstrated. Work at this pace for an hour, say on 20 metres with the band open, one soon begins to feel like the driver doing 30 m.p.h. on a 70 m.p.h. freeway. The pace has considerably quickened these days.

True, 10 w.p.m. is an effective speed for working in very QRM, QRN and other adverse circumstances, but no novice could cope with these conditions at any speed.

Remember, much as we need more Amateurs, it is quality that sets our image.

—A. Shawsmith, VK4SS, I.A.R.J.S.

YRS

MAITLAND RADIO CLUB

A great honour has been bestowed upon the members of the Maitland Radio Club. In March it was announced that the Maitland Radio Club had been awarded the "Institution of Radio and Electronics Engineers" pennant for 1967. This award is made annually to the most efficient radio club in the State and dramatizes the pride that the members have for their achievements during the first twelve months of operation, during which they gained 1 credit and 17 honours grades in the elementary examination held in October and December.

Congratulations have been received from as far away as South Australia, the most notable being from the Minister for Defence, Mr. Allen Fairhall (VK2KB). Activities planned for the next twelve months are the Y.R.S. Junior exams., followed by another Elementary exam. and the A.O.C.P. exam. which several members wish to contest.

Further proof of the club's rapid progress is in the leasing of a block of land from the Maitland City Council for \$1 per year. The land in Maize Street, East Maitland, is in an excellent position and emphasises the faith that the City Leaders have in the prospects of the radio club. A building is available and will be moved to the site and prepared as a workshop as soon as possible. Plans are in hand for the erection of larger clubrooms. Although the completion of this project is very much in the future, members feel that the work and months of negotiations will result in a radio club that the City of Maitland will be proud to call its own.

On 25th Feb., 16 members attended the Gosford Field Day and extend their thanks to the organisers for presenting yet another successful rally. The first few months of the year have been busy ones for the club. The constitution has been formulated and accepted, and a QSL officer has been appointed to cater for the s.w.l. section of the club. This is in addition to the events enumerated above. The club membership now stands at 35 with the latest members being Rodney Sama, East Maitland; Rudy Meisma, Maitland; Stephen Wallace, Tarro; Ken James, Telarah; Bart May, East Maitland; and Paul Sorenson, Lorn.

Trevor Watson, who has been appointed as QSL officer, supports the club's appeal for short wave or dual wave receivers that could be used by members to listen to the broadcasts from VK2WI and VK2AWX, as well as other short wave bands. This would enable more members to take an active interest in the short wave listeners' section of the club.

Lectures will continue to be held in the Maitland Technical College on Friday evenings at 7 p.m. Further information about the club and its activities can be obtained from the Secretary by phoning 33-7288, or by writing to P.O. Box 54, East Maitland, N.S.W., 2323.

SOUTH AUSTRALIA Y.R.S. CONVENTION

On Monday, 29th Jan., a State Convention of the W.I.A. Y.R.S. was held in Elizabeth. This was the first such meeting of its kind in South Australia and the Elizabeth Amateur Radio

Club acted as hosts for the occasion. The State Co-ordinator of Youth Radio, Rev. Bob Guthberlet, chaired the gathering and representatives from the W.I.A. were present including the Vice-President, Mr. Geoff Taylor.

Sixteen delegates representing seven Youth Radio Clubs and the W.I.A. attended the Convention, travelling from as far away as Port Pirie, Port Augusta and Peterborough. Other clubs represented were Kadina H.S., Nails-worth Boys Technical High School, Christie's Beach and Elizabeth.

Reports on Youth Radio Scheme activities and club programmes were presented by each club and points of common interest discussed. An interchange of ideas took place and such items as the various courses, the setting and marking of exams. for the various grades of certificates and other similar matters were discussed. Mr. Allen Dunn, VK5FD, was appointed State Secretary of the Y.R.S.

A further similar meeting has been arranged to be held in June following the National Convention to be held in Melbourne.

"ELEMENTARY RADIO COURSE"

This is a "book", printed on Gestetner, foolscap pages, which covers all the topics in the syllabus for the Elementary Certificate. Written in sections so as to facilitate use as correspondence course or as a fortnightly "handout" for an attendance class, the course includes practical projects with full details, theory notes, questions on those notes and the answers to these questions. The 48 fully packed close-spaced typed pages are in five sections. The last section's questions are in the form of a typical exam. paper for the certificate and there are no answers given for this.

The "E.R.C." is used by the Group Leaders of the Correspondence Section Y.R.S.C./V. to instruct members. Many club leaders around Australia are using it to instruct the members of their club. Some clubs hand out one copy to each member—at 50c a copy this is well worth it. (In Canberra there are four clubs which hand out a copy to each student—to date figures are available from only one of these as to the success of this system; the C.Y.R.C. reports excellent.) Correspondence instructors find that the course is excellent and the students' exam. papers reflect this.

Private study students who wish to use it as a text book will find it quite useful and together with a subscription to "Coryra" will be able to progress to a reasonable standard. Of course having an instructor will help, but if you could not afford the \$5 membership of the Correspondence Section, then at least send for a single copy of the course, (60c) and also send a subscription to "Coryra" (\$1).

There are several forms in which one can purchase "E.R.C.":—

- ERC1—Bulk, loose copies, sections separate, 50c.
- ERC2—Bulk, stapled into books, in the page number order, which means the answer pages follow each section. 50c.
- ERC3—Single, book form. 60c (stapled).
- ERC4—Single, loose, sections and answer pages separate. 60c.
- ERC5—As for 3, but in manilla folder, stapled well. 65c.
- ERC6—As for 4, answer pages in sealed envelope. (Answer pages have other topics on the reverse side—thus do not leave in envelope for too long. 50c.)
- ERC7—Bulk 5, 60c.

All the above prices include postage within Australia and Territories.

(Subscriptions to "Coryra" are really value for money if you are interested in radio/electronics articles, projects, etc. These may be sent along with an "E.R.C." order. "Coryra" orders will be passed on to the "Coryra" Secretary via our internal mail—saves you an extra stamp. To order one year's "Coryra" we only need \$1 plus name and address. The "Coryra" subscription manager is Mr. J. A. Byrne, 112 Monaro Cres., Red Hill, A.C.T., 2803.)

QRP CLUB NEWS

DX member stations number approx. 260. U.S.A. can show a count of roughly around 3,000. This means the club is growing tremendously and many are showing out big in DX achievements. Moral: The antenna is more important than the power input. It is possible that Oceania QRP might attempt to throw a QRP contest on its own for world participation. Anyone with ideas on this might drop Barry VK5BS a line. Any worthwhile suggestion is always welcome.



FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL

MEMBERSHIP RETURNS

	VK2 Feb.	VK3 Feb.	VK4 Feb.
Month ending	15	14	—
Life	899	834	348
Full	447	259	130
Associate	14	—	31
Others	—	—	—
TOTAL	1375	1107	509
Previous Total	(1378)	(1101)	(503)

	VK5 Feb.	VK6 Feb.	VK7 Feb.
Month ending	4	6	7
Life	380	236	142
Full	143	72	83
Associate	23	—	—
Others	—	—	—
TOTAL	550	314	232
Previous Total	(535)	(314)	(233)

Grand Total, All Grades: 4087 (4039).
Grand Total, Full Members: 2885 (2865).
Equals 51.5% of Licensees (51.5%).

LICENSED AMATEURS

(Figures for December, 1967)

	Full	Limited	Total
VK1	75	19	94
VK2	1323	406	1729
VK3	1127	542	1669
VK4	470	187	657
VK5	492	221	713
VK6	288	131	419
VK7	133	79	212
VK8	19	7	26
VK9	64	13	77
VK0	8	—	8
Totals	3999	1805	5804
Previous Totals	(3984)	(1587)	(5546)

I.T.U. CONFERENCE

The Maritime World Administrative Conference, which was convened by the I.T.U., ended on 3rd November. Amongst the main decisions of the Conference was the following:—

"The gradual introduction up to 1st January, 1978, of single sideband radio telephone technique in the high frequency bands between 4000 and 23000 Kc. allocated to the Maritime Mobile Service. The Conference also recommended that a world administration radio conference should be convened in 1973 to establish a new frequency allotment plan for sharing out the new single sideband channels to the coast stations."

This is the first recommendation that has been made for the holding of a World Administrative Conference but the recommendation is not automatically accepted by the I.T.U., nor does it preclude I.T.U. from deciding to hold such a World Conference before 1973, or deciding to hold Regional Conferences rather than a World Conference before or during 1973! However, the suggestion of 1973 should be noted by the Amateur Service, and W.I.A., and preparations should be made to meet that possibility while still being mindful of the prior possibilities of Regional or World I.T.U. Conferences.

FEDERAL QSL BUREAU

The QSL manager for VK0IA (Macquarie Island) turns out to be Greg Johnston, VK7ZKJ, who did such a good job in a similar capacity for Macquarie stations VK0MI and VK0CR. Greg's new QTH is 23 Cottesloe St., Lindisfarne, Tas., 7015. My para. in March "A.R." seeking the identity of the QSL manager for VK0IA brought forth a heartwarming response in the shape of offers to act as QSL manager, from Bert Behenna, VK5BB, and from VK6IZ. Thanks for the offers chaps.

Later news from the Eldo Tracking Station at Gove, N.T., now indicates that VK8UG is unlikely to be heard on the h.f. bands on any mode for some time, because Tubby Vale, VK8NO (VK5NO), who kept VK8UG very active, returned to Adelaide at the end of March. VK8GU preceded Tubby south a few

days earlier. Only Amateur presently on the site is VK8ZBA. Sue Ward will attend to all QSLs for VK8UG. Tubby hopes to get back to Gawler but will enjoy two months' leave before settling down. It is quite possible Eastern stations may receive a visit from Tubby during this period.

Any information on disposal of QSLs for VK8RJ, W. J. Wirth, Nauru, would be appreciated. Have written him, but mail services to Nauru are slow and irregular. Anyone contacting him could perhaps obtain the information.

Amateurs throughout the world are invited to participate in the contest for the Centenary of the French Physical Engineer Doctor Gustave Ferrie, the father of useful transmission of radio—before 1900—and became general of the French military radio system in 1919. Gustave Ferrie is the first "Membre d'Honneur" of the R.E.F.

Date: C.w. and Phone, 25th May, 1201 GMT, to 28th 1800 GMT.

Contacts: All QSOs are valuable on all Amateur bands (3.5 to 435 Mc.). A contact with the same station can be repeated on the same band with one other mode of transmission. Fifteen minutes minimum must elapse between these two QSOs. In the meantime, the station can QSO other stations.

Calling: CQ Test Ferrie.

Exchange: RS or RST and number of the QSO (first QSO, 001).

Points: (a) for each QSO, 1 point; (b) for each band worked, 10 points; (c) for each mode of transmission on each band, 10 points.

Score: (a) plus (b) plus (c).

Logs must contain: Date, time GMT, bands, exchanges and each QSO which gives extra points must be underlined.

Each participant will receive a Commemorative Card. The first of each country will receive an award. Logs must be sent, before 1st July, to: R.E.F., B.P. 42-01, Paris R.F., France.

The Venice Section of the A.R.I. inform you that on the occasion of the St. Mark Day, Protector of the City, each contact effected on this day-time with stations of the Venice Province will count double value for the Serenissima Award. The Serenissima Award entails contacting five stations in the Venice Province of the A.R.I. after 1st Jan., 1963. Applications with QSLs and 10 I.R.C. to the Awards Manager, IIVAD, P.O. Box 181, Venice, Italy.

Members of the YL International Sidebanders are reminded of the QSO Party, 17th May to 20th May inclusive. A novel presentation is being arranged for their First Lady to be presented at the second Convention in New Orleans, L.A., from 31st May to 2nd June. DX members who would like to participate in this novel matter should contact Alf VK3LCL at 1536 High St., Glen Iris, Vic., 3146, or to Jessie WA6OET.

—Ray Jones, VK3RJ, Manager.

FEDERAL AWARDS

The following are the awards issued by the W.I.A. through the Federal Awards Manager:

- Australian D.X.C.C.
- V.H.F.C.C. (6 mx and 2 mx).
- W.A.S. (V.h.f.)
- WA-VK-CA Award (Overseas stations only).

There appears to be some confusion regarding overseas awards, especially the A.R.R.L. D.X.C.C. and W.A.S. These can only be issued directly from the A.R.R.L. and QSLs MUST be sent direct to the A.R.R.L. headquarters when application is made for the award. The

W.I.A. cannot handle applications for these awards, or certify check lists, etc.

The W.A.C. (Worked All Continents award) is issued by the I.A.R.U. and applications can only be made through the W.I.A. as only Amateurs belonging to a Radio Society affiliated with the I.A.R.U. are eligible for this award. To obtain this award the applicant must be able to prove two-way contact with a station in each of the recognised continental areas: North America, South America, Europe, Asia, Africa and Oceania. Certificates are issued for Phone and C.w. and stickers are given where two-way s.s.b. is proved. Applications should be forwarded to the Federal Awards Manager with a check list accompanying the QSLs. The check list must show normal award application details of time, date, station worked, band, RST, sent/rcvd., etc. Cards will be checked and then returned to the applicant. Please enclose sufficient postage to cover cost of returning the cards plus forwarding of the application to the I.A.R.U. headquarters in the U.S.A.

"CQ" Magazine Awards: The main award issued by "CQ" is the W.A.Z. (Worked All Zones). To obtain this award the applicant must have QSLs to prove two-way contact with a station in each of the 40 zones of the world as defined by "CQ". Zone maps and application forms are available from the DX Editor of "CQ" by sending a s.a.e. and one I.R.C. to: DX Editor, P.O. Box 205, Winter Haven, Florida, 33881, U.S.A.

Cards need not be sent overseas and will be checked by the Federal Awards Manager W.I.A. providing the following rules are observed. (1) Applicant files a completed application form with QSLs. (2) Applicant includes sufficient postage to cover cost of return of QSLs and forwarding of application to the U.S.A. (3) Applicant includes eight I.R.C.'s to cover issue of certificates. (This is the charge made by "CQ" Magazine.)

At present the awards listed above are the only ones being handled by the Federal Awards Manager, however negotiations are under way with various Societies issuing awards and when any other applications can be checked locally Amateurs will be advised through this column. It is realised that the present situation of having to send cards overseas is not desirable and every effort is being made to arrange for local checking where possible.

—Geoff Wilson, VK3AMK.

NEW SOUTH WALES

MARCH MONTHLY MEETING

An excellent attendance of some 80 members was present at the Wireless Institute Centre on Friday, 22nd, for the Monthly and Annual General Meetings. The first meeting was opened by President-Chairman Keith Finney, VK-2KJ. The minutes of the Feb. meeting were read and after correction of a minor error were received in order. Applications for membership from 22 persons were presented to the meeting. Visitors included VK4ZDD, the VK4 Y.R.S. Supervisor, VK2ZFO and VK2BMK.

The Chairman called for nominations for the Advisory Committee. The existing committee, plus one other member were nominated so that the requisite names will now be forwarded to the P.M.G. for their selection of the three-man committee.

ANNUAL GENERAL MEETING

Immediately following the adjournment of the monthly meeting the Annual General Meeting was opened. The minutes of the A.G.M. of last year were read and accepted on motion. Following on, the Chairman, Keith Finney, advised that due to re-organisation of secretarial services, the Auditor's report was not yet ready. However, a preliminary balance sheet had been prepared and was read to the meeting by Councillor Dave Jeans, VK2BSJ. At the conclusion of this reading of the balance sheet, Dave answered some queries on various entries, and both Dave and Keith explained some of the items in detail, especially the disposal of the Radio Equipment Store.

The Y.R.S. Annual Report was then read out by Dave VK2BSJ, and on conclusion a short commentary on the Division's policy on Y.R.S. was given by Keith, and again some discussion ensued on the Y.R.S.

SILENT KEYS

It is with deep regret that we record the passing of the following Amateurs:

- VK2BG—Bruce Glassop.
- VK2GQ—Ted Barlow.
- VK2ZLR—Dick Rutherford.
- VK3HY—H. L. Andrews.

OBITUARY

TED BARLOW, VK2GQ

Ted Barlow was very well known for his QSOs on 7 Mc., both to the VK2 and VK3 Amateurs. As a young man, Ted saw service in the First War as a pilot where he was O.C. of Fred 2PF. He was wounded in that event, but he went on to join the Commonwealth Electoral Service where he was both very well known and respected.

Several Amateurs still have QSL cards of the 1924 era showing that Ted's Amateur days really started from the beginning. Ted is credited with several firsts in receiving and transmission and ranks among the pioneers of Amateur Radio.

Resident in Tamworth for some time, Ted again went to war in World War II., spending some time at Victoria Barracks, Sydney. After the war, Ted resumed his position in the Commonwealth Service where he again added many friends to an already long list.

Ted retired seven years ago and although he could use the new s.b. system, he preferred to stay on a.m. on 7 Mc. where his cheery signal on 7080 could be heard in daily contact with his close friend, VK2EW, who worked him mobile daily on the way to work.

Ted, who lived at Leichhardt with XYL Marjorie, journeyed to the Gold Coast for a holiday, however the holiday was to be cut short when Ted was admitted to the Southport Hospital suffering from a heart attack. Amateurs in Queensland closely followed his progress, but on Saturday afternoon, 23rd March, Ted passed away.

Bill VK4WS, who lives at Southport, assisted Ted's widow and son with arrangements and Bill and XYL Hazel took Ted's XYL into their hearts and home. No funeral notice appeared in Brisbane papers, however Stan VK4SA arranged for a small group of VK4s to attend the funeral, comprising of Bill VK4WS, Harold VK4HB and Stan VK4SA.

The Service was conducted by Rev. Doug Laver, of St Barnabus, C. of E., at Sunnybrook, who turned out to be VK4ZDL, and who impressed those present when he said, "I think the call sign VK2GQ is as familiar in VK4 as is VK4GG and I take as my text a verse from 2 Cor; Ch. 4. 'Seek ye not those things . . . Ted Barlow was a Radio Amateur and he worked with electrons—things which are not seen but which, nevertheless, do quite a lot of good work. Ted did a lot of good work which was not always seen and which he did without expectation of reward except the satisfaction of a job well done.'"

Ted's shack was always kept so neat and tidy and was a perfect example to us all of how to be an Amateur and how to keep a station.

On behalf of his many Amateur friends, both in N.S.W. and Queensland, and the President of the VK4 Division, VK4XJ, deepest sympathy is extended to his wife and family.

FRANK STOBBS, VK2 ASSOCIATE

Edward Francis Stobbs, known to all as Frank, could well have been described as the associate member we all knew. In his seventeen years of association with the Hunter Branch of the Institute, he seldom missed a meeting and he never failed to volunteer for any job that needed doing. In fact, his whole life was one of help to his fellows.

Frank served with distinction in the Second Fourth Australian Field Ambulance during most of the Pacific conflict and disregarded his own health to help those wounded and in need of assistance. After the war, he worked in industry and commerce in Newcastle until ill health forced his retirement as a T.P.L. ex-serviceman. But despite handicaps, Frank was there as usual, collecting the Field Day fees, working in the club store, instructing the young fry in ambulance duties, and leaving his mark everywhere in his neat and thorough attention to all that he did.

Frank Stobbs died suddenly on 28th March from a heart attack. He is survived by his courageous wife Gwen and his two children Janene and Frank. During his 82 years, Frank Stobbs did much to help the Amateur Service. We will not forget him.

After closing discussion on the above, the Annual Report of W.I.C.E.N. was read by Group Chairman, Peter VK2AXJ. The report in bulk covered exercises, and during discussion on W.I.C.E.N. and its function, a brief report revealed plans to link the Newcastle Net into the Sydney, Blue Mountains, Orange, and Macquarie networks. Peter also advised that a full descriptive article on the Communications Centre at Atcheson St. was to be prepared for "A.R." and the Bulletin, and was in the hands of Brian VK2ZQX. The article would answer most questions on the Centre.

President Keith then presented his report of the Council's activity for the year. Many questions were answered and in so doing Keith really added to the published report in the Bulletin. Considerable discussion centred on two topics—the balance sheet and the Radio Equipment Store. On the first subject, Keith endeavoured to arrive at simple explanations for the sheet but was hampered, as the full Auditor's Report was not yet ready. On the second subject, Keith advised that the Radio Equipment Store was no longer run by the Division, but by an outside organisation which had tendered for the lease of the Store.

Included in the report was discussion on Dural and Atcheson St. their value, future and possible destiny and an assurance that neither would be sold, or any major decisions made without the approval of members.

In respect of the election of the incoming Council, Keith expressed disappointment at receiving only five nominations, which included four of the existing Council and Ross 2ZRQ. In view of the position, the five nominees were declared elected. They are Keith 2KJ, Peter 2AXJ, Chic 2ALB, George 2AGO, Ross 2ZRQ. Keith went on to call for volunteers for Council and four members, Paul 2ZFG, Bob 2ZLX, Kevin 2ANY and Chris 2ZDD, obliged.

At a Council meeting held the following Friday, Keith 2KJ was elected President, Peter 2AXJ was elected as Senior Vice-President, Ross 2ZRQ was elected as Junior Vice-President, and George 2AGO as Treasurer. Chic 2ALB was elected as Buildings Officer. The remaining two Councillors were Don 2GN (Communications Officer) and Chris 2ZDD. It was also decided to appoint the remaining three—Paul 2ZFG, Bob 2ZLX and Kevin 2ANY—to a committee, the purpose of which was not released.

Returning to the meeting with the time at 11.20, Keith adjourned the Annual General Meeting until next month's general meeting to allow the Auditor's Report to be obtained.

The monthly meeting was now re-opened, and almost the entire time was occupied by the Federal Councillor receiving instruction, where necessary, on policy regarding the agenda items of the Federal Convention. At the late time of 11.50 the meeting was closed.

U.S. SERVICEMEN R. & R. LEAVE

As most members know, U.S. Servicemen come to Sydney for five days R. & R. leave. These boys have amongst their ranks a few Amateurs, and it would be in true Amateur tradition to extend the hospitality of your home or your time to show these boys around the town.

It would be indeed a great idea to be able to hand the mike over on a W contact and have the W veteran QSO with a home-town Amateur. If you would like to assist then contact the Secretary or the R. & R. Centre in town—they know about it and will gladly take you up on any offers.

MORSE TAPE SERVICE

Readers are reminded that this Division operates a Morse Tape Service which is designed to assist in passing the test in Morse Code. Included in the range is an excellent explanatory tape describing a proven way of appreciating the idea of the Code and how to start to learn to use it.

To obtain a copy of the tapes you send up 30 cents per tape to Ern Hodgkins, VK2EH, Mangrove Rd., Narara, N.S.W., 2251. Send a postal order or similar (not 5c stamps) to cover postage of the tape, and lastly return the tapes when you are finished with them in the box they came in. The service is available to all members in all States. Don't forget to advise the speed and number of tracks of your machine and remember that the exam. speed is now 10 w.p.m. only.

RADIO EQUIPMENT STORE NEW MANAGEMENT

As from 1st March last the Radio Equipment Store was reconstituted as an entirely new business. The Store was let to an outside organisation on acceptance of their successful tender.

During the Annual General Meeting, in discussing the lease of the lower section of Atcheson St. premises as the Store, the Presi-

dent stated that the revenue from the lease would very considerably assist the Divisional funds and asked that members give the Store their custom. Plans include the release of a catalogue to members and others and extensive advertising in the Bulletin and advertising in "A.R." Members stand to gain both in a good Store service and an increase in Divisional income provided the necessary support is given.
73, Stan 2ZRD.

HUNTER BRANCH

As a result of the decisions reached at the Annual General Meeting, things have really been jumping in the Branch this month. The new committees formed to organise broadcasts and activities have met and some of their plans have gone into action. The result of this is that the new broadcast roster has been drawn up and with it, one of the real bogies of the system has been eliminated. This is the problem of relaying the programme from 80 to 2 mx. Under the new award, two broadcast scripts are prepared, one for h.f. and one for v.h.f. The committee then distributes news to each and the broadcast goes on irrespective of the quality of the link. This practice was really put to the test on 25th March, when conditions made reception on 80 almost impossible but the two metre boys carried on as usual.

Of course no revolutionary system can hope to succeed without hard working "behind the scenes" men and the real key man in this case is the broadcast collator, Neville Threlfo, Nev. works hard to make sure that the whole show goes like clockwork and his crew of news readers are given the utmost assistance by him and the committee. The Branch prides itself on having the most consistently newsworthy broadcast in Australia—if you'll pardon the Irish expression—and it certainly looks like staying that way. If you have any news, by the way, why not send it along. The address is W.I.A. News Service, Box 86, Newcastle, 2300. And if you are a regular supplier of information for Australia's best Amateur broadcast then you will be kept supplied with stamped addressed envelopes for the transmission of printed notes to the Branch. Interested? Just drop a line to that address for your envelope supply.

Many called him the Hunter Branch's best known associate and they could well have been right since he seldom missed a meeting and he was always willing to lend a hand whenever help was needed, despite the fact that for the past several years he had been in poor health. The first most of us knew of Frank Stobbs' death was when we read of it in the local paper—the end came very suddenly. The Branch extends to Mrs. Stobbs, Janene and Frank their sincere condolences.

Publicity wise the dice were all in our favour following the first of the new series of transmitter hunts held on Saturday, 23rd March. A picture of the 2ZCT/2ZVM crew appeared in the "Herald" and on the main news page too! Tony and Bill looked as if they meant business and apparently they did—but they couldn't find the Len 2ZFD and John 2ZJG were the cunning foxes and they did quite a bit to confuse the boys, with the result that nobody made the finish. The new activity commenced from the Lions Park on the Charlestown Road just near the Dudley turn and there was a fair roll up of members and associates. All in all, they had a good time and it is planned to have many more of this type of event.

During the month, Dennis 2ZJZ left for work with the S.M.A. and when he did so he transferred ownership of quite a deal of exotic surplus gear to the Newcastle boys. Frank 2ZFX was seen staggering away with an AR7 by the way. As if he didn't have enough already. But I couldn't in all conscience tell you the price he's offered me for the MR20B1. Seriously though, it is a good receiver as Brian 2ZKF will testify. Up in the coaly city, Chris 2ZP has himself a new mobile. Or should I say transportable. This baby elephant stands just a bit higher than both of us—one at a time of course—and is covered all over with wonderful looking knobs and controls. Chris is thinking of using some of it for s.b. Oh the power! And while all this good radio work is going on, there is Sherwood (2AJF to you) who is taking the big step soon. Not only is he ending his state of single bliss—and those who know him will agree with every word of that statement—he plans to hie himself off to a foreign land and far—well Canada anyway; so there you have it.

Henry 2ZGK didn't quite make the foreign land, but he did make so bold as to journey to Melbourne during a month of his vacation and he is still singing the praises of the chaps who gave him such a good time in VK3. After he had told Eric 3ZVR of his having left the g.d.o. behind where the grass is nice and green, aforementioned Eric invited him in and Henry had the full facilities of the workshop

As a result, he made it on both 2 and 6 mx and had one whale of a time while in the Southern City.

And not only does the v.h.f. band get all the credit for good time having. Bill 2XT has been joined by Bill 2ZL, who is also getting amongst them with the ducktalker. I still can't believe it's true! It will be interesting to see who comes up with a prize for the International Amateur Radio Club, C.F.R. Contest being staged during April. The contest seems to have attracted a good deal of interest among Amateurs and S.w.l.s alike, so there may be some good scores. As for me, I had to resort to making a key from a pair of pliers recently, much to the surprise of my nearest colleague who made some comments on the key clicks. Oh, but the ingenuity of it all! I surely must take double points for that one.

If you are wondering what to do with yourself on the night of Friday, 3rd May, and if you would like to see the Morse key pliers, then please come along to the Branch meeting. It will be held in room 6 of the Clegg Building, Newcastle Technical College, Tighes Hill, and we commence the goings on at 8. Why not come along and surprise yourself and the rest of us too. Shall we see you? 73, 2AXX.

VICTORIA

The April meeting of the Division was devoted almost entirely to a talk by Mr. J. Wilkinson, of the P.M.G. Department. His subject was antennae, and to show how well he knows his subject, he continued until a few minutes before 11 o'clock. Even at this late hour, he still had much of the subject to cover and has agreed to return at a future date and take the matter further.

Mr. Wilkinson opened by saying he wished to handle his subject as a seminar, and although those present were a little slow in taking to the suggestion, their reluctance gradually faded and they entered into the discussion very freely. Many and varied were the questions asked and answered. At the conclusion of the evening, David Rankin moved the vote of thanks, and the enthusiasm with which he was supported, left no doubts about the success of the evening.

Apart from the reading of the minutes, admittance of new members and a very brief discussion on the Federal Convention, we only had time to welcome our visitors. We were delighted to welcome the Controller Radio Branch, Mr. C. Carroll to our meeting and hope to see him again at frequent intervals.

The evening really started with a bang, although quite unintentionally. The projector globe exploded, causing some slight disorganisation, but as the owner of said projector had the foresight to have a spare in his pocket, it was a simple matter of nominating a "volunteer" to make the replacement, before we got under way.

The May meeting is the Annual General Meeting, which will be followed by a White Elephant Night. Bring along some of your surplus gear and lots of money. That odd part you have been looking for just may show up.

In addition to previous lists, the following donations to I.T.U. Fund were received up to 1/4/68: Collections at general meetings, \$11.75, at v.h.f. meetings \$9.20; VK3ZCG, \$3.00; VK3 3AUN, 3DG, 3IB, 3OL, 3XU, 3ZGF, each \$2.00; VK0IA, \$2.00; L3295, \$1.25; Collection Y.R.S. meeting, \$1.09; VKs 3ALG/T, 3ZJN, Anon., each \$1.00; VK3ZE, 85c; VK3ATB and Anon, each 20c. We are getting very close to our target and make a special plea. If you have not already sent your donation, do it now.

A reminder. Subscriptions are now due. At the time of writing, about 70% renewals have been completed. Remember, in May the circulation list for "A.R." is revised. If you are not financial, your name will be deleted from the list and you will miss copies. No good coming later and complaining if you cannot get the missed issues, as very few additional copies will be printed. Why not write out a cheque now, add a bit extra for the I.T.U. Fund, and mail it on the way to work tomorrow?

VICTORIAN DIVISION STATE CONVENTION (As visited by Naomi)

Having had such an enjoyable time at the State Convention in 1967, I was easily persuaded by the OM to agree to make the trip to Paynesville again this year. After a most pleasant run down to Bairnsdale, where motel accommodation had been arranged for those attending the Convention, we spent the afternoon strolling around the town, and found much there to interest us. In spite of the long drought, the Mitchell River was beautiful to see, and we found that the hours passed all too quickly, for it was soon time to pretty up in readiness for the Dinner at the Paynesville Hotel. It was a great pleasure indeed to

meet so many of those whom we had met on the previous occasion and also to become acquainted with many whom we were meeting for the first time.

It seemed a pity that the attendance this year was so small, only about thirty-four or so having made trip. However, I can assure you that those who were there thoroughly enjoyed themselves. The Dinner itself was very tasty and satisfying, and everybody seemed to do full justice to it.

One thing that struck me as being very pleasing was the number of young folk who had come to the gathering, young men who had brought along their XYs to be shown off to the assemblage.

For the Sunday, we were taken for a picnic to Ocean Grange, the scene of a similar function last year. Boarding the motor boat "Seabird" at about 9.30 a.m., we were taken for a very delightful cruise of several miles round the lake, finally alighting at the picnic spot. The young folk (and some not so young) went across the dunes to the ocean where they made the most of the opportunity of a dip in the blue waters. The rest of the party lolled about on the grass for an hour or two till the return of the adventurers and then we all regaled ourselves with the beautiful picnic luncheon that had been prepared for us by the caterers. I am sure that everybody will agree when I say that this meal was most enjoyable, of course the outdoor setting adding zest to the appetite.

Meanwhile, it was most noticeable how the OMs gathered in small groups and chatted together, and although we XYs were at times too far off to hear exactly what was being said, we could make guesses as to the topics and formed the opinion that mostly the subject discussed was "Glas", for we caught references to some "Rees Sisters", or some "Tram Sisters", while methods of making "Ann Tender" (apparently by "Osculation") seemed to be very interesting. On the other hand, some others seemed to be more interested in household economy, for I for one heard something about "Free Quinces", apparently growing either "high" or "low" on the trees.

Our return trip to Paynesville was again very enjoyable, and the consensus of opinion was that the whole day had been a most memorable one. Your scribe was very glad that she had taken her OM's advice and had gone with him to the 1968 Victorian State Convention, and hopes to be asked again next year.

EASTERN ZONE

By the time these notes are printed the Zone should have held their annual Convention near Mirboo North and trust all who attended enjoyed themselves and arrived back home safely and now ready to try and make this another interesting term of Zone activities. As being your outgoing President, I wish to thank you all for your help and co-operation and my best wishes to the new President, office-bearers and Zone members. Best of DX. 73, George VK3ZCG.

WESTERN ZONE

Most of the activity heard within the Zone has been on 144 megs. Contacts with Mt. Gambier and Adelaide have been regular from the West Wimmera area. Viewers in Rainbow are losing some of their entertainment. George 3ZEA has left for Melbourne. What about having a shot at those 10 w.p.m. George, so that you can talk to us again? Gavin 3AEJ is leaving for six months duty on Willis Island. He will have a VK4 call and will be on 80, 20 and 6 metres. Area of the island is 150 acres and population of three. Gavin is going to straighten out the weather forecasts. We are looking forward to Peter Solley putting Rainbow back on the air shortly. Perce 3PA is another to leave the Zone. All the best in your retirement, Perce.

Roy 3ZYG seems to be able to smell DX. Worked a VK4 recently during short opening on 8 mx. Roy and Bill 3ZAX working hard at c.w. Graham 5ZOF helps to keep the dust out of the rig of Tony 5ZAI. Some of the projects of this joint team include tape recorder, walkie-talkies and new 70-foot tower. They had an unwelcome visitor during the summer—a snake in the swimming pool. Jim 3ZMS has nice sideband signal on 2 mx. His new beam on 6 mx brings up local signals, so he is looking forward to DX openings. Gary 3ZOS has been doing some re-building, but still manages some 432 Mc. contacts with 5ZDR at Tantanoola, and 3ZER Geelong. Brian 3ZFS manages a few contacts when he should be doing home-work—or is it relaxation Brian? Roy 3AOS spending most of his spare time on 10 mx with good results.

Ron 3AIS from Wycheeproof has been trying to get an AR7 going on 20. Hope you can find the missing link when you get that handbook. Ron. Nhill Radio and Electronics Club (President Lyle 3ASA) now have their own rooms. We hope some of their members will soon

swell our ranks. Herb 3NN, Bert 3EF, Bill 3AKW, Chas 3IB and Merv 3AFO are most regular on the hook-up. Come in some time and let us know what you have been doing. 73, Bob 3ARM.

QUEENSLAND

IPSWICH AND DISTRICT RADIO CLUB

The past month seems to have flown by and once again it is notes time. During the month we have had our President, Ron 4RG, absent for a couple of weeks while he attended the Civil Defence School at Mt. Macedon. The meeting was chaired by George 4ZLG and our Public Relations Officer took advantage of Ron's absence to ask for his annual grant of stamp petty cash. I am sure if Ron had known he would have flown home from VK3 to be at the meeting.

The A.O.C.P. classes are progressing very nicely under the direction of Ralph 4JZ, and I am pleased to say they have attracted a considerable number of new members who wish to enrol in our new classes. The way club membership is increasing the club house will need extending in the not too distant future. The club station VK4IO has been operating on 2 metres quite regularly of late and a number of contacts have been made in Brisbane, Sandgate and the Gold Coast, and as a result of this increased 2 metre activity, a number of club certificates have been issued to stations who have contacted the club station and the necessary number of club members. The club certificate is very popular among v.h.f. Amateurs in our area and it is rather disappointing that we have not sent out very many certificates for the lower frequency bands.

The 2 metre station for club use was kindly loaned by Max 4ZMV and it is hoped that the club will soon have its own 2 metre station. While on the station gear, our three-band s.s.b. transceiver has developed a problem and has been returned to its maker, Jack 4SF, for running repairs; it will not be too long before 4IO is back on the "broadcast band" to use a common v.h.f.ers phrase.

Social activities of the club had a variation recently with a theatre party, attending a show in Brisbane one night recently, the main conversation at interval was concerning the recent breakthrough of JAs on 6 metres, also a very successful Hoy evening was held and club funds profited considerably from this evening. Our thanks must go to our caller, Eric Tomlinson, who seems to have had previous experience in this role.

After a considerable amount of discussion, it appears a new booklet will be soon issued to all club members. The book will contain the club's constitution, also a certificate of membership, and all are awaiting to see the finished product.

Dave 4HW has been having a lot of fun on 2 metres, seems he has a new beam rotator, namely Wayne 4ZN, who was up on the roof turning the beam to check it out in a recent QSO with 4IO. The club has a similar type rotator, only his name is Tom.

The VK4 State Convention will be held later this year, I believe, and we are hoping to find more members than Bundaberg this time so we can win the bottle of "White Lady".

A recent addition to 2 metres is George 4ZLG. He has a nice signal up here and has worked a number of stations. He may be increasing the beam height soon I believe, to get amongst the Toowoomba and Gold Coast boys. The club's pro, Bill 4L001, now has his new 10 el. Yagi up on 2 metres and a new converter to go with it; seems he still does not hear enough and is at present checking out pre-amps. 73, Warren VK4GT.

CENTRAL QUEENSLAND BRANCH

To the undoubted astonishment of members of this Branch, the Publicity Officer has managed to compile another monthly report on activities of the Branch—reactions of members to these efforts will be awaited with keen interest by the writer!

The usual monthly meeting of the Branch was held in the clubroom on 15th March with a good attendance of members. Notable absentees were our President, Hal 4DO, who was on holidays in southern Queensland, and Past President, Frank 4FN, whose duties at broadcast tx (200 miles west of Rockhampton) precluded his attending.

One item of considerable interest to members was receipt of a generous offer from the Central Queensland Regional Development Bureau to provide attractively printed QSL cards free of cost to members. This concrete evidence of outside interest in Amateur Radio was received with appreciation, and members expressed their thanks for the recognition afforded to Amateur Radio operators in the area. Distribution of cards will be made in the near future.

Operation "clean-up" was launched by the working-bee against the prolific guinea-grass growth around the clubroom area. The heavy spraying with the "4ZFR special" poisoning fluid, after hard work with mattocks, etc., should ensure a few months respite—no fun, this type of thing?

H.f. activity around the area has been lessened somewhat by the absence of Hal 4DO—the prolific DX specialist—but Geoff 4FK has held the fort nobly.

Country members John 4NZ and Harry 4LE are often heard in the 40 mx early morning group hook-up. Old-timer Joe 4CL is still in hospital and would appreciate a visit from any of the local Amateurs if possible. There would appear to be a possible convert to 52 Mc. in the offing, as Eric 4EC was recently heard on that band in the throes of testing a transceiver device!

Regular monitoring of the V.h.f. Group activities during the month shows that the 6 mx gang are really keen—regular openings to far eastern climes have provided daily JA DX, and consistent operators Frank 4ZFR, Bob 4NG, Doug 4ZDK, Gordon 4ZGA and Lydnasay 4ZIM have been filling up the log books with a plethora of JA call signs. Congratulations also to 4ZFR for his contact with KR6UY recently—nice work; other KR6 calls have been heard but no contacts made. The old maestro, Bob 4NG, has been carefully listening for the extra-rare DX, but reports no luck to date. The powerful signal of Lance 4ZAZ has been missing of late due to his absence in southern areas on business trips.

Don 4ZFB—our man in Biloela—has been working into JA consistently and tells me he now has made the 6 mx antenna system fully rotatable—looks like the DX contacts are due for a sharp upward tally! There is some talk also about a hi-power rig in the near future!

There appears to be an up-surge in building projects in the v.h.f. gang, of late. One hears that 4ZGA is working hard on a new 70w. rig; Charlie 4ZBG also planning a new tx; Frank 4ZFR is in the semi-throes of planning a super control panel to operate his complex of tx's, tx's, tape recorders, etc. Geoff 4FK at long last has put the 25w. device into operation on 6 mx—he's been threatening this for a long while, but now it's a fact. Doug 4ZDK dividing his spare time between Amateur Radio and extensions to his QTH. Lyle 4ZLD has been working on several projects—never seems to rest, this chap!

An item to mention, also, is the interest in Morse practice by the V.h.f. Group; through the good offices of 4FK, we are provided with regular Morse practice sessions and several Z calls hope to attack the May exam. Have not heard mention of any visiting Amateurs through the city of late, except 4LU of Townsville, who called up on 53032 and met some of the gang. We hope to see him on return from his southern holiday.

Late News: Short opening to VK3 and VK5 on Sunday, 31st March, produced some 5 x 9 signs

and the locals renewed acquaintance with 5ZDX, 5ZMW, 5ZUL, 5ZK, 3ZYG, and 5ZQB. Nice to meet them again, and we are looking forward to the southern DX season to carry on the QSOs.

In closing, may we again remind any visiting VK gents, please call CQ on 53032 or use the 600 ohm system—as mentioned in the April notes. We like to meet fellow Amateurs and make them welcome. 73, Lydnasay 4ZIM.

BUNDABERG AMATEUR RADIO CLUB

The Annual General Meeting was held on 7th Feb. and was very successful with a large attendance of members. The retiring President, Lea VK4FX, outlined the activities of the club during 1967. It was a most successful year and Lea thanked all those who helped during the year.

The election of officers was as follows: Patron, Mr. D. G. Rattray; President, Jocelynn VK4JJ; Secretary, Don VK4NK; Treasurer, Geoff VK4GI; A.O.C.P. Class Instructor, Roy VK4ZWR; Morse Instructor, Geoff VK4GI; Dave VK4DJ. All other official positions were filled by various club members.

The Bundaberg and Ipswich Radio Clubs held a combined field day at Borumba Dam on the week-end of 24th-25th Feb. Members were loud in their praises of both the facilities and the scenery and the many courtesies extended to us by the officer-in-charge, Mr. Cliff Holloway, and his staff.

There was a total attendance of 26, being made up of Amateurs, A.O.C.P. class members and XYLS. Fox hunting, swimming and Scuba diving were among the activities enjoyed. The Ipswich group gave a very interesting display of colour films and slides of the various club activities.

On Sunday morning, Geoff VK4GI set up his transistorised s.s.b. rig and participated in the VK4 hook-up and made many other contacts on 40 and 20 mx. Bob VK4UD set up a 6 mx station on the Water Tower Hill at Imbel and worked quite a few stations. 6 mx mobile activity was very high throughout the week-end. Several people including Bill Jehn from Ipswich and yours truly were kept away due to sickness and other misfortunes. General comment was that "we must do it again some time".

The 6 mx band is wide open to JA land from Bundy at the moment and yours truly worked 35 JAs and JHs in a couple of hours, mostly 5/9 signals.

The A.O.C.P. and Y.R.S. classes are once again in full swing. The Y.R.S. class has a membership of over 30 and the accommodation situation is a bit embarrassing to say the least. Club President, Jocelynn VK4JJ, presented 7 certificates to successful candidates at last year's exams.

The March meeting was very well attended. At this meeting we accepted the Division's invitation to stage the Queensland Convention again. At the moment the club and the Central Queensland Branch are in the process of organ-

ising a camping week-end at Tannum Sands, which the club members are looking forward to with anticipation. 73, Rusty VK4JM.

TOWNSVILLE AND DISTRICT

At the last monthly meeting of the local club, the opportunity was taken to visit Channel 7 at the top of Mount Stuart. Twenty-four made the trip and thoroughly enjoyed all that they saw. Even the female office staff! One must say that the view from the windows of the t.v. studio that overlooks our fair city has to be seen to be appreciated.

The outing was such a success that arrangements were made that for the April meeting a visit was arranged to D.C.A. So once again the newcomers will enjoy their meeting nights. It is also proposed that people from all walks of life be invited to give talks of interest to everyone. Even have a couple of University Professors in view.

Bert 4LB is now on the air with a new Galaxy after being modified so that the regulations will not be broken in its output. Seems to be making a welter of working new countries for DXCC. Merv 4DV has weekly QSOs with the Townsville boys on 3.5 Mc. Short skip seems to be the order of the day as every Sunday I can hear 4LZ in Proserpine.

The Z boys are still getting through to Japan on 54 Mc. Some are trying for the Morse at the next exam. The photo of the Ipswich Radio Club in a recent "A.R." has the boys locally on their toes to get their own under way after approval for the land comes through.

As the Tourist Season is about to commence, you mobile boys visiting the best part of Australia remember to call in and meet the locals either at their shacks or at the corner house, when you will be assured of a right royal welcome—the drought being broken. 73, Bob VK4RW.

SOUTH AUSTRALIA

The monthly general meeting of the VK5 Division was held to a capacity gathering of members and visitors, so much so, that extra seating had to be provided to take care of the overflow. The new President, Tom 5TL, opened the meeting on time and with a few well chosen words introduced himself as the new President, at the same time explaining that he and the members of his Council would do all in their power to advance the Division, but very little could be done without the help of the members and their general co-operation. He recommended that members read the opening article in the Journal for March, written by Arn 5XV, and mark, learn and inwardly digest.

The Secretary, Al 5EK, then informed members that it was expected that supplies of the R.S.G.B. Handbook would soon be available.

The Federal Councillor, Geoff 5TY, had little or nothing to announce on Federal matters, and after a little discussion on matters purely domestic, the meeting was given over to the QSL Officer, George 5RX, for the distribution of QSL cards.

The meeting was then called to order and the highlight of the evening was announced, to wit, a jumble sale—buy and sell to you—and the auctioneer introduced with a flare of trumpets, which all fell flat because the said auctioneer was out of the room. Anyway, re-introduction followed, and to tremendous applause, that debonair, muscular, modest and unassuming example of Amateur Radio stepped up to the rostrum prepared to squeeze the last cent from his unwilling audience. Nothing much more can be said, except that everybody seemed to enjoy themselves no end, especially the auctioneer, and the night closed at the witching hour, of 10.45 p.m., with all present more than satisfied with the entertainment provided. What's that? Who was the auctioneer? My modesty does not permit. I blush so easily, shall we keep it a secret? Just try and guess!!!

Was talking to Pete 5FM prior to the meeting and he was saying that VK5 signals are becoming scarcer than hens teeth, and deplored the inactivity on the bands these days. I definitely agree with him, there was a time when I could get all my news by listening on the bands, but these days I have to rely on the reports from a couple of trusty agents discreetly planted in the right places.

Les 5NJ recently thought he would work 5MY because he had never heard this station before and felt that he needed encouragement. He nearly had a couple of fits in push pull parallel to find out that 5MY was none other than that doyen of the c.w. gang, our Treasurer Harry, on the air to get some experience with telephony in preparation for working 5WI. Harry was cut to the quick.

Alan 5ZX was an old-timer noticed at the meeting, and I was pleased to have a chat with him, although a certain coldness descended

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on the conversation when he proudly told me that he was now on s.s.b. He did not realise just how he was turning the knife in the wound! His harmonic, Chris., had a shot at the Limited recently and is in the process of keeping his fingers crossed. Hope you make it Chris.

John 5KX was proudly boasting as to how he had three contacts mobile the other morning on the way to work. Apparently he is another of the once very active members who has been having a lean time.

Max 5OS was sighted recently down at the Brighton Yacht Squadron, and from all appearances had squibbed putting the yacht into the water because of the prevailing roughness. Tut-tut and a couple of toots, there is no such thing as too rough to a sailor of your reported calibre Max!

Rex 5UF heard mobile in Fullarton on 7 Mc. recently and with a signal and a half at that. It is remarkable at times just to what strength these mobile signals build up to and I find it hard to realise that they are mobile and not at their home QTH.

Talking of mobiles, Les 5NJ will be bound for the Snowy Mountains in September and will definitely be mobile all the way.

Jack 5JX, he of disposal fame, heard recently blowing his bags concerning the amount of r.f. floating around his shack, although when pressed he admitted he would have liked to see more of it up in his GSRV antenna where it would do more good. Judging by the strength of his signal to me, he has little to complain about.

I heard from a usually reliable source recently that my favourite banker, Keith 5KH, was on the verge of retiring from the banking business and joining the ranks of the idle rich. What it is to be in the upper strata!

Harry 5MY back from his recent trip across the water and looking fit and well. One of my agents, planted in Council, tipped me off that Harry might soon be running 5WI. Harry with a microphone! I refuse to believe it!

Andy 4AT was putting a good signal down to VK5 recently and was heard in contact with a round table of the locals. VK4s don't usually put in such a good signal on 7 Mc. to me at my QTH, but this one was exceptional.

Allen 5FD, the newly appointed Y.R.S. State Secretary from Elizabeth, was another unexpected signal heard on 7 Mc. recently. When heard was in QSO with Frank 5MZ, he was talking about giving a new antenna a try-out.

The VK5 Council for 1968-69 is now T. Lairdler, 5TL, as President; A. Allan, 5UL, and G. Taylor, 5TY, as Vice-Presidents; A. Rechner, 5EK, as Secretary; H. Roberts, 5MY, as Treasurer; T. Slater, 5ZIS, as Minute Secretary; and R. Dow, 5KF, as Publications Officer. Only a couple of changes from that of last year, but all in all a solid looking Council.

Tom 5TL is no stranger to Amateur Radio, having been licensed in 1937, and active on all available bands since then. By the nature of his vocation, the postal services, he has been heard from such towns as Ceduna, Largs Bay, Alice Springs, Salisbury and twice from Renmark. It is only since his transfer to Glenelg in the past few years that he has been able to take an administrative part in the VK5 Council. Even whilst away in the country areas he was always willing to assist the Division in any way possible, and his Morse code transmissions for the benefit of the learner will be remembered. He is assured of the co-operation and loyalty of all VK5 members.

I notice that a regular schedule for Youth Radio Clubs has now been set up and all clubs are invited to take part on 3625 Kc. on the first Friday of every month at 2000 hours (S.A. time). This is all to the good, and will certainly help to bring the clubs closer together.

Understand that Lance 5XL recently spent a couple of weeks in hospital, but everything must be okay now because he was heard on the air again advocating that the powers-that-be should arrange for a noise-free area and a good receiver for 5WI. The receiver was a good angle, but the noise-free area in the "big smoke" is a horse of another colour. If anybody ever finds such a location, I suggest that they keep it to themselves, if they don't want to be bowled over in the rush.

Phil 5NN is finding himself a man who is running out of available nights. He could not make the W.I.C.E.N. meeting because of other arrangements, and he quite often bobs in and out of the general meetings because of other commitments.

The latest craze in VK5 seems to be the mounting of little white balls on the tips of car radio antennae, one or two even have neon lights to draw further attention. In view of the "dim" picture taken by the local gendarmes on this practice, think twice before you light up the mobile antenna.

Vern 5VB, "The Admiral" to you, admits to over the years acquiring all sorts of items (ex disposals) which seems to have aroused the enthusiasm of Neil 5WN. Vern was heard to

express regret at the loss of certain capacitors in the unfortunate fire at his QTH recently.

Heard John 5JQ offering to get out the flags, stand on top of his shack and have a contact with Vern 5VB. Probably not a bad idea now that the code speed is down to ten words per minute, although going back to my early Scouting days, perhaps it would not be such a good idea after all.

Now that Tom 5TL has taken over the Presidency of the Division, the job of Publications Officer falls vacant, and my reliable source of information right in the middle of Council tips me off that Ross 5KF will be taking over the job. At last one will be able to walk into the meeting without having a book, a magazine, or a W.I.A. transfer rudely thrust under one's nose with a persuasive line of sales talk that would sell fridges to the Eskimo population. Or will one?

Ron 5KS, the programme organiser, is another one tipped to give the game away for the coming year. If this is true, we will be the losers, because the level of entertainment and instruction over the past two years has been at an all-time high.

I notice in the DX Notes of the 5WI broadcast that a SM Amateur claims to have stayed at the QTH of the late Doc 5MD during the year of 1963. It was not stated whether the visit was private or in the course of duty! For the information of the uninformed—and there would not be many—Doc was the Keeper of the Adelaide Gaol and operated his rig from that QTH, with one or two quite embarrassing mix-ups in the QSL business!

Included in my mail for this month was a paragraph listed as appearing in the magazine "Life" under the heading of "Liquid Crystals". I quote, "The blackened transistor coated with liquid crystals, which exhibit colour at a specific temperature, indicate, by lack of colour, it is faulty. Other parts show they are functioning normally." Well, did you ever?

Last February meeting night, two or three members who are keen S.w.l.'s approached me and had a bit of a grizzle on just how much the Division does not do for them, with particular emphasis on the S.w.l. listings being left out of the last Call Sign Book. During the next week I also had a couple of letters along the same lines, and in view of the fact that news was at a premium that month, I decided to keep the VK5 notes up to their usual short length by writing a paragraph along these lines. The reaction to the paragraph from my old buddy-buddy, no other than Ye Ed, was quite unexpected, and within the week I received a stiff letter on cardboard, which opened up with, and I quote, "Just to make my life complete, you have to join the party". Then followed the usual batch of compliments that I have come to expect from him, none of which I will repeat, due to my well known sense of modesty, plus the fact that I know he was only joking—I think!

Anyway, whilst I don't expect my paragraph to see the light of day in the magazine, at least I now know just what the background is to the non-printing of the S.w.l. listings in the Call Book—a simple matter of finance, to wit, the inclusion of the S.w.l.'s would have added 10 cents to the cover price of the Call Book, which at 75 cents per copy, has reached its ceiling price already, plus the fact that the Call Book has an official title which is self-explanatory, and does not make any provision for the S.w.l.

The above-mentioned letter also carried quite a lot of information on the S.w.l. position, all of which was unknown to me, and if any S.w.l. is still interested enough to grab my ear at any meeting in the future, I will be only too willing and able to make the necessary explanations to our mutual satisfaction.

Heard Harold 7MZ in contact with Frank 5MZ on 7 Mc. the other day, and was wondering how many would remember Harold as 5FZ originally. In case you are one of those who have forgotten and are too tired to look up the present Call Book, his name is Harold Hancock—any relation Darcy 5RJ?

Colin 5CY, who was portable at Quorn, was putting in a remarkably good signal to me on 7 Mc. about 5.30 p.m. recently. All the more so when I heard him say that his antenna would not have been more than 15 feet at the high end. Understand he was on his way out-back 150 miles to a birthday party.

Perce 5PH was another station to be heard here after many years absence from my receiver. Perce used to be at Willaston some 12 years or so ago, but shifted down to the city to give his two boys and a girl better opportunities in their studies. One is now a doctor at Fort Pirie, the other a doctor at Daws Road Hospital, to say nothing of the daughter well on her way in science studies, so it is no wonder that Perce is well satisfied with his decision to move to the city—and just a teeny weeny bit proud of them Perce?

Gilbert 5GX back from his vacation at Victor Harbour and tells me that there are now quite

a number of the gang at this location these days. One time when one thought of Victor Harbour, one thought only of Pat SKM, but apparently this is a thing of the past.

Remember the story of the Prince Charming who searched the land to find the dainty foot which would fit the glass slipper that he found at midnight? Well, whilst I am not exactly a Prince Charming, not quite anyway, I am in the process of searching the land to find the owner of the voice that I heard on 7 Mc. the other early evening singing "Happy birthday to you," etc., etc. and when I find the owner I am going to slap a contract for untold hundreds of dollars in his hand, because with a voice like that he would put Mario Lanza to shame. What timbre, what tone, what a resonance—and what a cheek!

I cannot miss the opportunity of letting you know just how complimentary the editor of this magazine can be to me. He concluded the aforementioned stiff letter on cardboard to me with the cryptical, and I quote, "My regards to your long-suffering XYL." I quizzed her on this remark, and she said, and again I quote, "he is only complimenting you, after being married to you for 40 years or more, all suffering has ceased." Attagirl—that's telling him—or is it?

73 de 5PS—PanSy to you.

WESTERN AUSTRALIA

Now is the time for all good men to come to the aid of—by golly force of habit almost made me complete that good old standby of all typewriter mechanics, calling all and sundry to rally to the cause of their particular party.

What I really started out to say was that owing to lack of nominations for Council, it will be necessary to cast a searching eye in every direction looking for some likely sucker. I mean of course, some likely fellow, ready willing and able to spend a very small amount of time and effort on behalf of his fellow Amateurs. What about it men? Particularly some of you younger bods—don't let the oldies bluff you!

While you are about it, what about a change of scribe for these notes? I won't be at all offended if someone steps forward pen in hand ready to set the record straight. Volunteers please form an orderly queue outside the Secretary's QTH.

Our old confederate, Lou 6LU, recently had to spend some time in the confines of his local hospital. However, being a happy soul, he took it very philosophically—he took it very well. In fact when he spoke to me via 800 ohm line he reckoned it was the best hospital outside of Blair General. I didn't know you were a Kildare fan Lou, I thought you'd be too busy pounding brass or working 15 metres. Ah, ah, there's the answer chaps, see how easy it is to get sucked in to watch these programmes? You just duck inside to check on Tennessee Valley Indians and, bingo, you're a goner! Anyway, hope all is well with you now OM!

Heard John 6TU on 80 the other evening—yes, I do still listen on the bands—still ironing a few bugs out of his sidebander. By golly, John, it didn't take long for your old call 6ZAG to be re-allocated. Its new holder (also John by name), Bro. Marks, is currently at work organising a youth radio club at Aquinas College. I hope we will soon be able to resume the weekly "school broadcast" of a couple of years back. John is being urged on by that refugee from Melbourne's DROUGHT, Jack 6RT, who has some fearful stories to tell about conditions in VK3.

It never rains but what there's a deluge for some folk. Strange how the Digit of Destiny or the Finger of Fate pursues some innocent party as if bent on total destruction. Ever noticed it?

Take our stalwart Broadcast Officer, Bob 6BE, for example. Why just the other evening he set out on a short journey, with nothing but goodwill in his heart, to retrieve a junior member of the family from night school. However, even the shortest of runs can be hazardous in these modern times, and Bob soon became painfully aware that ALL WAS NOT WELL. In fact it seemed to him that one of his tyres was making like it had a permanent flat side. Closer inspection revealed that this was definitely the case—it was definitely flat on the side nearest the road! Somewhat taken aback by the lateness of the hour and lack of illumination, Bob set about the problem of finding and fitting the spare wheel. Finally he located it—in the spare wheel compartment—and proceeded in the approved manner to make the vehicle roadworthy. This was soon accomplished—after all, it doesn't take long for an expert to do five minutes work, and Bob carefully placed all the equipment tidily in the boot, slammed the lid and stood back wiping his hands in satisfaction as one usually does at the end of a job well done.

It was at this precious moment in time that the disconcerting fact struck him, THE IGNITION KEYS were also tidily packed in the locked boot! Don't go away, I haven't finished recounting the night's adventure just yet.

Somewhat put out by the current state of affairs, Bob hot-footed it to the nearest phone box to report in to the XYL requesting her to dispatch a duplicate key—but quick. This was duly accomplished by courtesy of a friendly neighbour and our hero sped off on his errand of mercy or something. As old father time entered rather largely into calculations at this

stage, his accelerator foot was want to be rather heavily depressed in the general direction of maximum—within the legal limit, of course, and the horses strained at their task.

Suddenly, into his horrified gaze there loomed the head of a cow. The impact was clattering, firstly for the front of Bob's car, and secondly for the neck of the cow! An oncoming motorist had to take hasty evasive action as its body hurtled towards him. I will spare you the gory details dear readers (both of you) and also the shocking language which no doubt filled the still night air. Ah me, I know just how you felt OM, having recently undergone some of the same sort of thing. I was the only Amateur in a four-car sandwich. The puns that fellow comes out with!

A somewhat lighter side of the whole episode came when it was time to sign the Magna Carta. It was those two questions at the bottom of the Claim Form which allowed Bob to give vent to his true feelings. The first one said in effect, "In your opinion, who was responsible for the accident? Secondly, why?" No doubt with visions of his vanishing no claim bonus, Bob tartly replied, (1) The cow. (2) It failed to look in both directions before crossing. Enough! Enough! they cried.

Bill 6WY recently had a short shift as chief cook and bottle washer, the reason being the hospitalisation of his XYL Joyce, who is a very diligent behind-the-scenes worker in the preparation of our VK6 Bulletin. We wish you a complete and speedy recovery!

Not enough has been said about the alleged pirate stations who have been active DX-wise on the 27 meg. band. Remember that any unauthorised transmission on ANY band may reflect on you as an Amateur so if you hear anything untoward, listen carefully to verify the facts and then do something about it. Report it. Don't leave it to the next bloke. Do it now. Get the picture?

The v.h.f. portion of the spectrum has seen some very interesting goings on in recent weeks. More openings to J.A. reception of Russian television, and reports of reception of aircraft control traffic from the fighting zone to our north. With a Field Day hovering into view, interest in these bands could reach an all time high.

Just a word in confidence to you 'lather siders. I have just received a whisper that Bernie 6KJ and son Kim may be journeying toward the rising sun some time in May.

I would dearly like to be bright enough to leave you with some profound statement on which to ponder, but, well, you know how it is. 73, and good DX, Ross VK6DA.

FOR SALE: Table-top 10-80 mx Tx and power supply, \$60. VK3APC transistorised 80 metre receiver, \$60. 5 Mc. crystal filter, \$10. A.W.A. 10w. amplifier and pre-amp., \$10. VK3AHG, 20 Grandview Rd., Box Hill South, Vic., 3128. Phone 288-2024 (Melbourne).

FOR SALE: 1 only 522 Tx-Rx plus a.c. p.s.u. and controller, \$40. 1 only BCG59 FM Tx Rx, 28 Mc., \$10 each. 1 only 522 Tx-Rx, good condition, \$22. 1 only AR7 Dial and Gearbox, \$7. 2 only Pye Mk. 1 Telephones, unmodified, \$24 each. 1 Compass Rx, converted 240v. a.c., plus speaker, \$16. 1 only AT5 Tx, unmodified, \$8. 1 only AT5 Ant. Coupler, \$6. 1 only American I.F.F., 24 volt, \$10. 1 only English I.F.F., 12 volt, \$8. 1 only ARC1 V.h.f. Aircraft Tx-Rx, 20-channel, plus controller, \$40. 2 only Aircraft Marker Receivers, 75 Mc., \$8 each. W. Babb, VK3AQB, 20 Ovens St., Yarraville, Vic., 3013. Phone 68-6657.

FOR SALE: 7-foot enclosed Rack with A.W.A. AR17 650/250 volt power supply (near new) (rack mounted version of Type S). Brand new No. 19 Mk. II. complete. Philips PCR Communication Rx (12 v.d.c./240 v.a.c.). Rotary Converter, 24 v.d.c./240 v.a.c. 50 c.p.s. 400 volt Vibrator Supply with spare vibs. Factory o/hauled 12v. Command Tx and Modulator. Parts SCR522. 6 to 9 Mc. VFO. Manual Antenna Rotator (ex R.A.A.F.). Meters galore, transformers by ton, host of other bits and pieces. No reasonable offer refused for any item. Must sell. VK3QZ, Telephone 58-7628.

FOR SALE: 50-foot Telescopic Tower. Fair condition. \$50 or best offer. L3173, M. G. White, 62 Peter St., Box Hill North, Vic., 3129. Phone 88-1659.

FOR SALE: 60 ft. Tower and Rotator, \$120. 100 ft. Telescopic Tower, brand new, \$75. Mrs. E. Cameron phone 311-3897 (Melb.) after 4 p.m.

FOR SALE: 122 Set, \$45. Hammerlund Super Pro Revr., 2.5 Mc. to 30 Mc., \$130. R.A.A.F. AT14 Tx, modified for 3.5 Mc. to 30 Mc., \$140. VK3APC Club Project Receiver (transistorised) with all converters and xtals, 160 mx to 2 mx, \$190. VK3XV, Phone 57-1472.

SELL: Heathkit Model GR-91 Rx, freq. 1.5 to 30 Mc., good condition, plus step-down transformer 240v.-115v., built-in v.f.o., \$80. Bruce Paton, 15 Dean Ave., Mt. Waverley, Vic., 3149. Ph. 232-8141 after 6 p.m.

SELL: Leak TL-12 Amplifier with Leak Point One plus Pre-amp., \$100. Wharfedale Xover Network, 8/15 ohms, 2 or 3-way, 800 c/s, and 5,000 c/s. xover freq., \$8. Wharfedale W12FS Speaker, \$40. All 2 years old in brand new condition. Apply to Rick VK3RC, 11 Highfield Rd., East Doncaster, Vic. Phone 842-2630.

SELL: SX-111 Amateur Band Receiver, 0.5 to 5 kc. selectivity, crystal calibrator, etc., \$160; add \$20 for air freight shipping. SB-10 SSB Adaptor, \$65; add \$10 for air freight. Johnson Courier Linear, 500w. input, built-in power supply, 35 watts drive, \$130; add \$30 for air freight. Johnson 6N2 Transmitter without final valve, \$20; add \$10 for air freight. Dow-key Co-ax Relay, \$12 will air mail. Heath Mohican Transistor Receiver, \$110; add \$15 for air freight. All (except 6N2) in use until recently, working well. See picture of station in "CO" Nov. 1967, page 88. Gene Nurkka, VK9GN, Box 73, Ukurumba, EHD, Territory of New Guinea.

SELL: Vibroflex Blue Racer Deluxe, chrome base, jewelled bearings, red fittings. Luxury key for discriminating c.w. man, absolutely as new. Cost \$44 to land, sell \$35. VK3IB, P.O. Box 35, Dimboola, Vic., 3414.

SELL: 40 ft. 4 x 4 in. tapered Oregon Mast, \$20. 20 ft. ladder gin pole with 7 pulley tackle for lifting mast, \$9. S.s.b. Xtal Filter with carrier xtals (\$285 Kc.), \$12.50. Eddystone Dial, aluminium box and components for Synthetic Rock V.f.o., \$12.50. Power Supply: 900v. 300 mA., 300v. 150 mA., —150v. bias, \$35. Cabinet and components for linear with single 8236, 50. Aluminium Tube for 2 el. Yagi (20m), \$15. Air-flow Socket for 4X250, \$6. The Rev. J. R. Oxley, VK3XU, 5 Poulson St., Carrum, Vic. Phone 772-2880.

WANTED: All Coil Boxes and circuit for an AR7, also the circuit for an AMR100 Receiver. L. Hughes, L3240. Phone 29-3706 (Melbourne).

WANTED: Eddystone S640 Receiver or similar, working or otherwise but with intact front end. VK3EZ, T. Mitchell, Phone 288-2217 (Melbourne).

WANTED: Free standing Tower with a height of at least 70 ft. Will remove at own expense. P. Nesbit, VK3APN, 32 The Grange, East Malvern, Vic., 3145. Phone 211-6637.

SILICON DIODES

Special prices to W.I.A. members only:
2000P1V/0.75A 16c 2000P1V/0.75A \$1.25

SILICON CONTROLLED RECTIFIERS

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SSB EQUIPMENT

Yaesu Type "F" Generator Boards, complete with valves, basis for SSB transmitter. Not a kit, but a completely wired and tested crystal filter SSB assembly. Includes mic. amp., B.M., carrier osc., and I.F. amp. Few only, \$39 each.

TH6DX Hy-Gain Triband Beams. Two only, \$199 each.

Yaesu FT-100 Transistorised Transceiver, demo. One only, \$499.

Yaesu FT-50/FV-50B Transceiver, 90w. peak input. \$375.

Bail Electronic Services

60 SHANNON STREET, BOX HILL NORTH, VIC., 3129

Phone 89-2213

HAMADS

Minimum 50c for thirty words.
Extra words, 2c each.

Advertisements under this heading will be accepted only from Amateurs and S.w.l.'s. The Publishers reserve the right to reject any advertising which, in their opinion, is of a commercial nature. Copy must be received at P.O. Box 38, East Melbourne, Vic., 3002, by 5th of the month and remittance must accompany the advertisement.

FOR SALE: Deltahet Communications Receiver in excellent condition. Multiband S.s.b. Transmitter, working but needs alignment. Electronic T/R Switch. Heterodyne V.f.o. Grid Dipper. What offers? VK2AV, Tel. 57-3125.

FOR SALE: Frequency Meter BC221AK, original U.S. Signal Corps carrying case, regulated power supply, excellent condition, original calibration book, \$80. Hewlett Packard Lowpass Filters, Model 360B 1200 Mc., 360C 2200 Mc., 360D 4100 Mc., the lot \$60 (list price \$195). Highly sensitive Multi-meter, Transranger B.P.L., British Physical Laboratories, 1 meg. per volt, volts d.c.: 500, 300, 100, 30, 10, 3, 300 mV., 100 mV., 1 uA.; resistance: 1K to 100 meg. In three ranges, 20 uR. movement, \$32. [Appearance similar to Avo Meter.] VK5FH, P.O. Box 48, Craferes, S.A., 5152.

FOR SALE: Modified PTCA-116, working on 6 mx a.m. net, with QV02/6 in p.a., built-in metering, speaker and mike, \$40 excl. freight. VK7ZFM, F. Richelme, Main Rd., Stanley, Tas., 7331.

FOR SALE: Swan 350 Transceiver with matching 240v. Swan power supply, \$360. Hustlet BTW Vertical 10-80 metres, \$50. 6 mx Tx, 6/40 final, mod. 2 x 807s with power supply, \$40. Modulator 807s class B zero bias with UM2 trans., \$20. Command 05er, \$8. Command Tx, 4/5.3 Mc., \$10. Ecko 9-valve Car Radio, less dial, 12v. dual wave, \$15. 115 copies "QST" to Dec. '67, \$18. 60 copies "CO" mag. till Dec. '67, \$8. Ian McCosker, P.O. Box 299, Moree, N.S.W., 2400. Phone 1060.



Yaesu SSB EQUIPMENT

NEW MODELS ARRIVING THIS MONTH:-

FRDX-400 Receiver, successor to the famous FR-100B, has the additional features of 160 m. band, I.F. "T" notch filter, 100/25 kc. calibrator, selectable slow/fast A.G.C., new styling of cabinet and panel. Provision for internal installation of F.E.T. V.H.F. converters, F.M. with squelch, fixed channels, C.W. and F.M. mechanical filters, WWV, citizens band, transceiving with FLDX-400, etc.

FLDX-400 Transmitter, matching design, electrically similar to the FL-200B. Mechanical filter, VOX, ALC, conservative 300 watts peak.

FLDX-2000 Linear Amplifier, AB2 grounded grid, built-in power supply and SWR indicator. Forced air cooling. A real signal booster for any Amateur exciter or transceiver available in VK.

FTDX-400 Transceiver, 80/10 m., 400-500w., built-in AC power supply, VOX ALC, off-set tuning, calibrator—the lot!

FTDX-100 New model of the well known, low current drain, transistorised transceiver AC/DC power supply built-in. Many additional features. Ideal for portable/mobile.

FTV-650 6 metre SSB Transverter, takes 28 Mc. excitation and converts to 52 Mc. band. Power 50 watts.

Other equipment available: Transceiver FT-50, Transmitter FL-50, Receiver FR-50, Low Pass Filter FF-30DX, SSB Generator assembly, SWR Meter K-109, Yaesu Valves and Spares, Co-ax. Connectors, Hy-Gain (U.S.A.) Beams.

90-DAY WARRANTY. ALL SETS TESTED BEFORE DESPATCH.

Obtainable from
Australian Agents:

BAIL ELECTRONIC SERVICES

60 Shannon St., Box Hill North, Vic., 3129. Phone 89-2213

Rep. for N.E. N.S.W.:

MOSMAN RADIO SERVICES

P.O. Box 198, Tamworth, N.S.W., 2340

BRIGHT STAR CRYSTALS

FOR ACCURACY, STABILITY, ACTIVITY AND OUTPUT

Our Crystals cover all types and frequencies in common use and include overtone, plated and vacuum mounted. Holders include the following: DC11, FT243, HC-6U, CRA, B7G, Octal, HC-18U.

THE FOLLOWING FISHING-BOAT FREQUENCIES ARE AVAILABLE IN FT243 HOLDERS:

6280, 4095, 4535, 2760, 2524 Kc.

5,500 Kc. T.V. Sweep Generator Crystals, \$7.25;
100 Kc. and 1000 Kc. Frequency Standard, \$17;
plus Sales Tax.

Immediate delivery on all above types.

AUDIO AND ULTRASONIC CRYSTALS—Prices on application.

4,500 Kc. Filter Crystals, vacuum mounted, \$13 each plus Sales Tax.

ALSO AMATEUR TYPE CRYSTALS—3.5 Mc. AND 7 Mc. BAND.

Commercial—0.02% \$7.25, 0.01% \$7.55, plus Sales Tax.

Amateur—from \$6 each, plus Sales Tax.

Regrinds—Amateur \$3, Commercial \$3.75.

CRYSTALS FOR TAXI AND BUSH FIRE SETS ALSO AVAILABLE.

We would be happy to advise and quote you.

New Zealand Representatives: Messrs. Carrel & Carell, Box 2102, Auckland.
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With the co-operation of our overseas associates our crystal manufacturing methods are the latest.



W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE

VK6MS	317/338	VK4HR	293/309
VK3AHO	314/326	VK4FJ	279/296
VK6RU	307/330	VK3TL	262/266
VK6MK	304/321	VK2APK	256/259
VK2JZ	300/315	VK4TY	256/257
VK5AB	300/314	VK2AAK	245/249

C.W.

VK2QL	300/320	VK4HR	268/290
VK3CX	281/312	VK3NC	266/286
VK4FJ	281/313	VK3ARX	266/274
VK4QM	281/313	VK6RU	264/285
VK3AHQ	289/301	VK3XB	259/272
VK2AGH	281/294	VK2APK	257/264

New Member:

VK8HA 100/101

OPEN

VK2AGH	310/328	VK4FJ	295/318
VK6RU	309/322	VK4TY	285/307
VK2VN	306/321	VK2EO	283/314
VK4HR	305/327	VK3ARX	287/285
VK4QM	305/329	VK3TL	281/285
VK6MK	305/322	VK2ACX	276/300

Note: The D.X.C.C. List has been amended. Credit for the operations listed in last month's notes has been withdrawn.

HOIKI OL-64 MULTITESTER

Ranges: D.C. Volts 0-0.3, 1, 10, 50, 250, 500, 1,000 and 5,000 volts (20K o.p.v.). A.C. Volts 0 to 10, 50, 250 and 1,000 volts (8K o.p.v.). D.C. Current 0 to 0.03, 1, 50 and 500 mA. Inductance: 0 to 5,000 Henries. Capacitance: 250 pF. to 0.02 uF. Resistance: 0 to 5K, 500K, 5 Meg. and 50 Meg. Ohms. Decibels: minus 20 to plus 22, plus 20 to plus 36 db. (Reference 0 db. equals 0.775 volts equals 1 mW. across 600 ohms). Price \$20.00

KEW-66 MULTITESTER

Ranges—D.C. and A.C. Volts (20,000 ohm/volt): 0-1, 2.5, 5, 10, 25, 50, 100, 250, 500, 1,000 volts. D.C. Current: 0-500 microamp., 0-2.5, 25, 500 mA. Resistance: 0-5K, 50K, 500K, 5 megohms. Decibel: minus 20 to plus 22 db. (0 db. equals 1 mW. in 600 ohm). Uses printed circuit and incorporates mirror scale for high accuracy readings and a built-in overload protection device. Price \$19.75

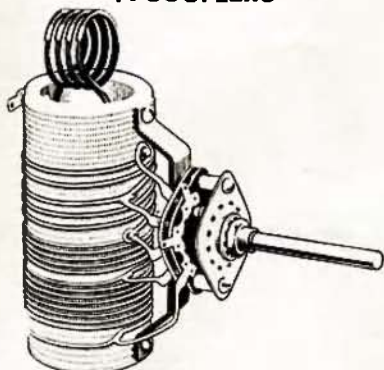
KEW-33 MULTITESTER

Ranges—D.C. (20,000 ohm/volt) and A.C. (10,000 ohm/volt) Volts: 0-10, 50, 250, 500, 1,000 volts. D.C. Current: 0-500 microamp., 10 mA., 250 mA. Resistance: 0-20K, 200K, 2 megohms. Decibels: minus 20 to plus 22 db. Designed with advanced circuitry, the Kew-33 uses unshielded printed circuit board, is ruggedly built in high-impact case, and incorporates mirror scale, automatic overload protection and "turn-round" plugs. Price \$15.50

KEW "S" METERS

Type P-25 receiver "S" Meters, 2 1/4 inch square, clear scale calibrated to S9 (black) and to plus 40 db. over S9 (red). Price \$4.75

PI-COUPLERS



WILLIS MEDIUM POWER TYPE

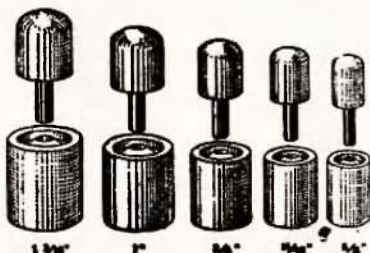
For use up to 600 watts p.e.p. Match plate loads of 2,000 to 3,500 ohms (Z) and higher into co-axial cable. Operating O increases on higher frequencies to increase harmonic suppression, enabling practical values of tuning capacity to be used on 10 and 15 metres and allowing for wiring inductance (L). Incorporates extra switch section for shunting additional capacity (C) if required, or switching other circuits. Switch rated or 10 amps. at 2,000 volts with contact resistant (R) of 0.8 milliohms. Price \$8.85.

Geloso Pi-Coupler Type 4/111 for use with parallel 807s, 6146s, etc. 75 watts. \$3.94

Geloso Pi-Coupler Type 4/112 for use with single-ended 807, 6146, etc. 75 watts. \$3.94.

Geloso Pi-Coupler Type 4/113 for use with parallel 807s, 6146s, etc. 100 watts. \$4.37.

PUNCHES



WILLIS HAMMER DIE PUNCHES

WILLIS hammer type die punches are made to precise sizes for use in industry wherever a clean, round hole is wanted. Designed to punch down to 14 gauge steel. Centre remnant removed with a flick of the hand. Can be used in die press. Special sizes made to order at slight additional cost.

3/8 in.	\$2.40	1-1/2 in.	\$6.00
7/16 in.	\$2.40	1-5/8 in.	\$6.40
1/2 in.	\$2.60	1-3/4 in.	\$7.20
5/8 in.	\$2.60	1-7/8 in.	\$8.00
11/16 in.	\$2.80	2 in.	\$8.40
3/4 in.	\$3.00	2-1/16 in.	\$8.60
13/16 in.	\$3.20	2-1/8 in.	\$9.00
7/8 in.	\$3.80	2-3/16 in.	\$9.40
1 in.	\$3.80	2-1/4 in.	\$9.60
1-1/16 in.	\$4.00	2-5/16 in.	\$9.60
1-1/8 in.	\$4.00	2-3/8 in.	\$10.40
1-3/16 in.	\$5.00	2-1/2 in.	\$11.00
1-1/4 in.	\$5.20	2-3/4 in.	\$12.40
1-5/16 in.	\$5.20	3 in.	\$13.40
1-3/8 in.	\$5.80	3-1/4 in.	\$15.80
1-7/16 in.	\$5.80	3-1/2 in.	\$18.20

Q-MAX CHASSIS PUNCH

SCREW TYPE			
3/8 in.	\$1.88	1-7/32 in.	\$3.80
7/16 in.	\$2.00	1-1/4 in.	\$3.80
1/2 in.	\$2.00	1-5/16 in.	\$4.08
9/16 in.	\$2.00	1-3/8 in.	\$4.08
5/8 in.	\$2.00	1-1/2 in.	\$4.08
11/16 in.	\$2.56	1-5/8 in.	\$4.44
3/4 in.	\$2.56	1-3/4 in.	\$4.44
13/16 in.	\$3.08	2 in.	\$5.90
7/8 in.	\$3.08	2-1/32 in.	\$6.64
15/16 in.	\$3.68	2-1/2 in.	\$7.92
1 in.	\$3.68	1 in. sq. hole	\$5.56
1-1/16 in.	\$3.68	11/16 in. s. hole	\$5.32
1-1/8 in.	\$3.68	21/32 x 15/16	
1-3/16 in.	\$3.68	rectang. hole	\$7.62



INSTRUMENT BOXES

These virtually water-tight die-cast boxes are made of zinc alloy material in four sizes. Each box is supplied with a close-fitting flange lid, securely held with countersunk 4 BA screws. Natural finish. These substantial boxes are invaluable for many purposes. Sizes available:—

Type 6908/P (650) 4 1/2 x 3 1/2 x 2 in. \$2.79

Type 6827/P (845) 7 3/4 x 4 1/2 x 2 in. \$4.50

Type 7134/P (896) 4 1/4 x 2 1/4 x 1 in. \$1.93

Type 903 7 3/4 x 4-11/16 x 3 in. \$4.86

A & R TOROID BALUNS

General Specifications: Power Rating—Types A, B, C, 200 watts or 400 watts p.e.p., provided the s.w.r. is less than 2:1. Construction—Toroidal ferrite cores, fully encapsulated with epoxy resin and silica under vacuum. Suitable for use in cold to sub-tropical areas. All except 355C and 356C are provided with antenna insulator support brackets. Balun dimensions approx. 2 in. diam. x 1 in. plus socket and lugs. Weight approx. 3/4 to 4 oz.

Installation: When used at the antenna centre, use at least one insulator each side of the brackets and connect antenna leads to Balun terminals with 23/0076 in. or similar flexible wire. (These leads form part of the antenna length.) Types A only: When the Balun and Co-axial Cable are not supported at the centre of the antenna, it will be necessary to tie the co-axial plug to the Balun brackets with nylon cord or wire to prevent the co-axial cable from pulling the plug from the socket.

Type 350A—Impedance ratio 1:1. 75 ohms unbalanced to 75 ohms balanced. 3 to 30 Mc. For use at centre of a dipole antenna with co-axial cable feed line or at base end with 75 ohm twin line. Co-axial connector is Belling & Lee L604/S and lug terminals. Price \$4.25.

Type 351A—Impedance ratio 1:4. 75 ohms unbalanced to 300 ohms balanced. 3 to 30 Mc. For use at centre of a folded dipole antenna with co-axial feed line or at base end with 300 ohm twin line connector and terminals as 350A. Price \$4.25.

Type 352A/BC—Details as 350A except freq. range 500 Kc. to 5 Mc., or to 30 Mc. for receiving purposes only with increased attenuation. Price \$4.25.

Type 353B—This is a type 350 with a co-axial socket SO239 (Amphenol screw type). Price \$4.92.

Type 354B—Type 351 with SO239 co-axial socket. Price \$4.92.

Type 355C—Impedance ratio 2.1:1. 52 ohms unbalanced to 25 ohms unbalanced. 3 to 30 Mc. For use at the base of a mobile whip antenna, coupled to fixed or adjustable transmitter output impedance. Lug terminals. Price \$4.92.

Type 356C—Impedance ratio 3.1:1. 78 ohms unbalanced to 25 ohms unbalanced. 3 to 30 Mc. Lug terminals. Use as 355C. Price \$3.87.

MOSQUITO SIGNAL INJECTOR

Type MS-130

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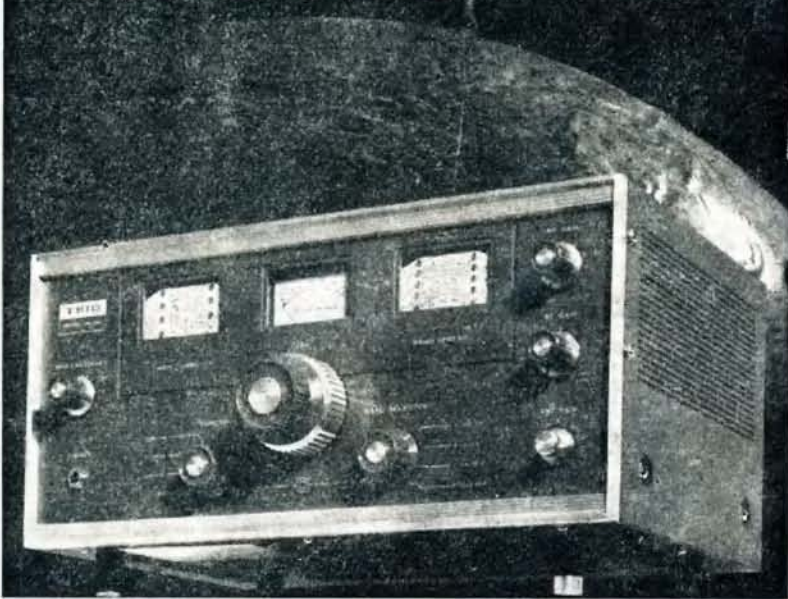
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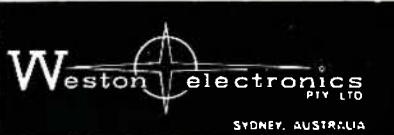
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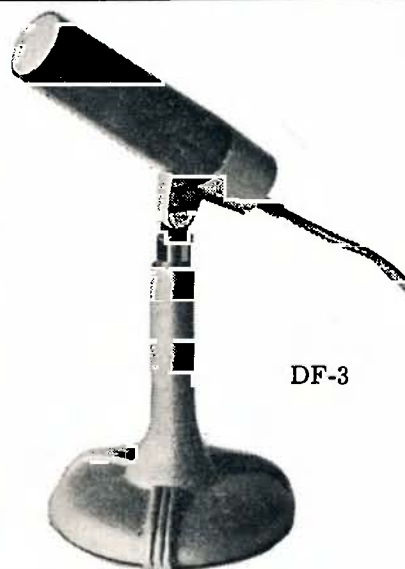
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However, all is not rosy in the garden of grounded grid amplifiers! There is more to it as has been pointed out by Eimac. As tube manufacturers, they are only interested in the proper use and application of their products.

Nobody less than their research engineer, Bill Orr, of Quad antenna fame, etc., has published their findings in "QST" in 1960, 1962 and 1964. He has clearly pointed out that:—

1. Screen grid tubes, with their grids all tied to ground, should not be used. Normal control grid bias and second grid positive voltages should be applied. In particular, modern high-amplification factor tubes can easily be overdriven and damaged.
2. A tuned cathode circuit is essential to maintain proper wave form and low distortion. It acts as a fly-wheel as required in a class C plate modulated output circuit.

Therefore only TRIODES are recommended in grounded grid amplifiers, used in circuits with tuned input provisions.

Naturally these amplifiers are more complicated and can cost more than simpler set-ups with cheaper tubes, except for one type.

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THE FEDERAL CONVENTION

The Federal Convention held in Sydney over Easter was held in conjunction with an inaugural Congress of Region III. Societies. A statement from this Congress appeared on page 13 of last month's issue of "A.R."

One very significant point about the 1968 Convention and Congress was that the Australian Post Office was represented by the Controller Radio Branch, P.M.G., Mr. C. Carroll, who participated in the opening session of the I.A.R.U. Region III. Congress, sat in on some of the working discussions, and attended the Convention Dinner. To the best of my knowledge, it is the first time that the Postmaster-General has been officially represented at a W.I.A. Convention by a senior official from Central Office. We wish to thank the Postmaster-General for this gesture, which was viewed both by W.I.A. members and overseas delegates as an indication of the standing of the Amateur Service in the eyes of our Administration.

As is usual, many motions were discussed at length, briefly these fall into seven categories:—

Constitution Items

No formal motion was presented, but a letter from the solicitors handling these matters was read. This referred to some minor problems which have arisen with the presentation of our documents to the Attorney-General. However, it was pointed out that it is expected these problems will be overcome soon, and incorporation of the Federal Company will eventuate before the end of this year.

Policy Items

Among this group was the motion regarding an increase in the price of "A.R." This was referred to by the Editor on page 22 of last month's issue. Federal Executive has appointed a sub-committee to examine the matter as requested by Federal Council. Y.R.S. matters occupied some time—discussion revolved around the title of the scheme, and the status of Y.R.C.S. vis-a-vis W.I.A. A Federal Y.R.S. co-ordinator has been appointed by F.E. Federal policy on novice licensing was discussed, a motion that the Institute no longer advocate the issue of novice licences by the Australian Administration was narrowly carried. Several motions regarding W.I.A.'s issuance of high-speed Morse proficiency awards were carried, and F.E. has requested Federal Activities Officer to investigate the matter and report.

Administration and Finance

The major series of motions in this section dealt with the administration of the I.T.U. Fund. A motion to invest the fund in government bonds was

defeated, as was a motion to constitute the I.T.U. Fund as a formal Trust Fund. However, it was resolved that I.T.U. monies, together with \$300 representing past interest, be transferred to a separate bank account. This will allow interest to accrue and compound separately from general F.E. monies. Executive has taken the necessary steps to preserve the I.T.U. Fund in line with W.I.A. policy.

The Treasurer's report, presented in Sydney, indicated that VK3, 4, 5, 6 and 7 have reached their I.T.U. Fund targets, and the Fund this month should stand at approximately \$6,000, being both donations and interest accrued.

I.A.R.U. Matters

Federal Council approved the actions of Executive in convening an inaugural Region III. Congress, and agreed to provide a Secretariat, and an annual sum of \$600 to the I.A.R.U. Region III. Division. This sum will be recovered from VK Divisions at a rate of 20 cents per member per annum. J.A.R.L., N.Z.A.R.T. and P.A.R.A. will also contribute annual sums to I.A.R.U. Region III. Division and inclusive of W.I.A.'s contribution, the annual income of the regional organisation should approach \$2,200. It may be pointed out that the image of W.I.A. has risen considerably in the eyes of our own government and

FEDERAL COMMENT

of other Amateur Societies throughout the world, due to its initiative in convening the inaugural Congress, and its assistance in the outcome which should advance Amateur Radio in this Region of Asia and Oceania. Federal Executive will assume the role of "Region III. Secretariat" and undertake the administration of the regional organisation under the control of the Directorate.

P.M.G. Representation

Very few matters arose in this section, however Federal Secretary was given some information about matters affecting certain Divisions which F.E. is to take up with the Department.

Contests

There were three different motions and suggested changes to the R.D. Contest scoring methods. A long debate resulted in a realisation that any scoring formula would introduce anomalies. It was decided to revert to the 1966 rules for this year's R.D. Contest with the 1967 rules for v.h.f. participation.

An amendment of rules of the John Moyle Memorial Field Day Contest was agreed to, this will allow a period of 26 hours from 0600 GMT with stations competing to operate for any 24-hour period within that 26 hours.

General Business

Several items arose as general business. These require ratification before action because they had not been circulated prior to the Convention.

Appointments

Federal Executive at its first meeting for 1968-69, in May, made the following appointments:—

- Federal President W.I.A. and Director I.A.R.U. Region III. Division: J. Battrick, VK3OR.
- Federal Vice-President and member I.A.R.U. Region III. Secretariat: M. Owen, VK3KI.
- Federal Secretary and Secretary-General I.A.R.U. Region III. Division: P. Williams, VK3IZ.
- Federal Activities Officer and member I.A.R.U. Region III. Secretariat: D. Rankin, VK3QV.
- Federal I.T.U. Liaison Officer: G. Pither, VK3VX.
- Federal Treasurer: K. Connelly, VK-3ARD.
- Federal Business Manager: A. Seedsmen, VK3IE.
- Federal Intruder Watch Officer and member I.A.R.U. Region III. Secretariat: D. Wardlaw, VK3ADW.
- Federal Y.R.S. Co-ordinator: J. Webster, VK2ZPW.
- Federal Historian and Policy Officer: G. Glover, VK3AG.
- Federal QSL Manager: R. Jones, VK-3RJ.
- Federal Awards Manager: G. Wilson, VK3AMK.
- Federal Contest Manager: N. Penfold, VK6ZDK.
- Federal S.w.I. Awards Manager: Eric Trebilcock, BERS195.

From a perusal of this list, it is apparent that some F.E. members now wear "two hats". The desire for W.I.A. to administer the I.A.R.U. Region III. Division came from other countries and this was accepted by W.I.A. at Sydney. The same people administer the two organisations that is sure, but they are nevertheless two separate organisations with distinct status and finance.

Independent, separate and distinct from the I.A.R.U. Region III. Division. W.I.A. has its own funds, and the I.T.U. Fund, and its I.T.U. Liaison Officer, as before. However, W.I.A. is now a member of a new regional "club" designed to advance Amateur Radio in Asia and Oceania and work for regional solidarity should any further attack on our frequencies occur.

A CRYSTAL LOCKED AM-CW TRANSMITTER FOR 6 METRES

RODNEY CHAMPNESS, VK3UG/VKOCR

THIS particular transmitter I built whilst down on Macquarie Island.

I did think at one stage of building an s.s.b. transceiver but not having quite enough of the necessary parts, we settled for an a.m./c.w. transmitter. In this particular circuitry form it works quite well. The audio is very conventional, a few compromises were however necessary as I didn't have all the right value components available.

My first couple of attempts at the r.f. side of the works did not pan out as anticipated. The first attempts were using various triode-pentode valves, the triode as an overtone oscillator and the pentode as a doubler-driver. I was not able to get quite as much drive as I would have liked to the final. I ended up, as is evident in the diagram, with a triode overtone oscillator followed by a triode doubler into a pentode straight through driver to the tetrode p.a. valve.

The transmitter was built on a 7" x 11" chassis; it could be smaller as there is a fair bit of spare space. Commencing with the modulator, it can be seen that the first two stages follow normal microphone amplifier circuitry. The second half of the 12AX7 feeds an ex-522 driver transformer to give push-pull audio to the grids of the 6BQ5 modulators. The 522 transformer is not designed to handle d.c. current in its primary, hence the blocking capacitor feed system.

The 6BQ5s are run with fixed bias in the neighbourhood of -12 volts on transmit and -20 when not transmitting. The 6BQ5s are running somewhere between class AB1 and B1. The 32 uF. capacitor fitted from the 6BQ5 screens to earth is to keep the screens at a reasonably constant voltage whilst modulating. This capacitor could be increased to 50 uF. if desired.

The audio response of the modulator is shaped to cut the highs and the lows of the speech spectrum. The 100 pF. capacitor to earth restricts highs and acts as an r.f. bypass and the 470 pF. coupler restricts lows and reduces any residual hum. To prevent acoustic feedback the h.t. line to the modulator and all bar the oscillator of the r.f. section is grounded immediately on going to receive. The audio quality on listening tests is quite good.

The modulation transformer is not of the correct impedance ratio unfortunately, it was the only one that I had available. Its impedance values were primary 8,000 ohms plate to plate and secondary 4,200 ohms. A more suitable ratio would be 8,000 ohms plate to plate with a secondary impedance of about 2,800 ohms. The sensitivity of the modulator is quite sufficient for average crystal type microphones.

The r.f. side of the transmitter follows fairly standard lines. The crystal overtone oscillator uses the Squier type oscillator which does not seem as popu-

lar as the Robert Dollar, but which I have found extremely reliable, easy to get going with quite high output. The crystal is in the 8 meg. range and its frequency is tripled and then applied to the doubler stage. The doubler is a standard type of circuit which feeds into the 6AM5 driver. The drive to the 6AM5 is about a third of a milliamp.

This stage is treated a little more cautiously as it would be extremely easy to get feedback as input and output are on the same frequency. First precaution is to place a tin plate shield across the valve, so isolating input and output including the associated tuning coils. The plate and grid coils are also placed at right angles to one another.

All the 53 meg. coils are air wound with 18 gauge tinned copper wire with the exception of the p.a. coil which is wound with 16 gauge wire. All coils are below chassis level with the exception of the p.a. coil and coupling link, so meaning that the low level 53 meg. coils are partially shielded from the output coil.

The p.a. stage is the normal type, no necessity for neutralisation was found necessary, but it could be quite easily added if thought desirable. The p.a. is quite stable. All by-passes should have short leads to minimise inductance in the leads. There is no sign of regeneration in this transmitter as removing the crystal kills all output.

The transmitter as stated is stable, being crystal controlled at all times with a proviso however. Care is needed in tuning the doubler plate coil as the final will feed back some energy to the driver grid, causing self oscillation. To eliminate this problem, I would completely shield the 12AT7 circuits and also the grid circuit of the 6AM5 by making a small shielded box under the chassis for these circuits. Valve shields may also be desirable. This will reduce the coupling from the p.a. to the 6AM5 grid.

To adjust the coil L1 and the tuning capacitor across L2 two holes in this shielded box would need to be drilled. I was not able to do this in my particular layout. To overcome this feedback in my own transmitter, I slightly mistuned the doubler coil whilst the crystal was out.

Incorporated in this transmitter is protective fixed bias on all stages bar the oscillator in the r.f. section. The doubler, driver and final receive negative fixed bias from the 6BQ5 bias line to protect or partially protect these

stages should drive disappear. The -12 volts is quite adequate for the doubler, some additional cathode bias will be needed for full protection of the driver and probably a doubler bias supply from the filament line giving -25 to -30 volts would be adequate for the final.

It will be observed that all stages have radio frequency filtering in some form to keep the r.f. from the h.t. supply line. The oscillator has a 15K ohm, the doubler a 2.2K ohm, the driver a 8.2K ohm and 2.2K ohm, and the final an r.f. choke, a 27K ohm resistor and a 270 pF. capacitor. Keeping r.f. out of the supply lines is most desirable for stable operation. A 0.01 uF. is placed across the 6DQ6A heater and others could be placed across the heaters of the 6AM5 and 12AT7 as additional precautions. The tune-up of the transmitter I will leave until later.

The transmitter is useable on a.m. and c.w. On c.w. the cathode of the final is keyed and h.t. is removed from the modulator and the modulation transformer is shorted out. The keying is probably on the hard side due to no shaping of the keying envelope; this could be corrected by using one of the keying networks described in the R.S.G.B. Handbook, or the A.R.R.L. Handbook or Radio Handbook by Editors and Engineers. It is quite probable that there is leak through of 53 meg. energy when the key is in the up position. The driver may also require keying. This transmitter was not designed for extensive c.w. working.

For a serious 6 metre c.w. operator, I would suggest that the driver and final both be grid block keyed, in this way virtually no 53 megacycle energy will leak through and appear in the output, plus it is much easier to shape the keyed wave form with this type of keying system. Due to limited facilities in regard to parts, I was not able to incorporate this system. A negative grid blocking bias of about -70 to -100 volts would be necessary.

Building this transmitter using good v.h.f. practice all the r.f. stages will be laid out in a straight line along the chassis. I would suggest that the oscillator stage be put in one corner of the chassis for ease of shielding for reasons given earlier.

TESTING AND ALIGNING

Assuming the transmitter has been built along similar lines to what I have done, the time has come to test and align the r.f. section.

L1 should be checked for response at about 26.5 megs. with a g.d.o. with the crystal out and the socket bridged with a capacitor of a few pF. If the coil is too large, turns will need to be taken off or the turns spaced to lower the inductance, remembering to keep about a 3 to 1 ratio of winding in relation to



the tapping on the coil. If the coil is too small a small capacitor of a few pF. across the coil will suffice.

Insert the crystal, apply power to the oscillator only, and with the g.d.o. on absorption, tune the slug of the coil until you get maximum output at approximately three times the crystal fundamental frequency. Check several times that the oscillator starts reliably every time. If not, detune the coil to the side where output drops off more slowly and the oscillator should now be quite reliable in starting.

Now grid dip L2 for a response at 35 megs. or your intended operating frequency, compressing or expanding the coil to get the required dip with the tuning trimmer set at about half capacity. This stage will easily triple, so make sure the stage will not tune to 80 megs. with the trimmer right out. Now apply power to the oscillator and doubler, using the g.d.o. on absorption to make sure the right harmonic is selected. The drive to this stage is about 0.3 mA. with the fixed bias in use.

Starting on the driver stage we once again check with the g.d.o. the resonant frequency of the coil, this time L3, and that it is resonant on 53 megs. using the same techniques as used on the doubler stage. Now apply power to all stages with the exception of the p.a. and adjust the 3-30 pF. trimmer for maximum drive which should be in the vicinity of 3 mA. with the fixed bias in use.

Now to the final. This will be dipped in the normal way with L5 inserted in the centre of the coil. The final I found harder to adjust to get good coupling to the aerial, etc. The values of the capacitors in the earthy side of the link coil will need to be varied to get proper

loading and also the position of the link in L4 will need some experimentation.

The value of the p.a. tuning capacitor could be doubled in value as the value quoted was the only one I had. The p.a. could be parallel tuned or a pi-coupler used, any of these being satisfactory on six metres. The operating currents of the final are shown later in this article.

The only precautions necessary with the modulator concern r.f. rectification on the grids of the valves. If the 12AX7 grid leads are shielded and the stoppers used on all modulator valve grids no real problem should exist. The microphone circuits should be kept well away from the r.f. section, particularly the final. One unsuspected cause of r.f. instability in a modulator can sometimes be attributed to the microphone lead being of a resonant length.

Some meter readings and drains to expect. High tension should be about 310v. on a.m. and about 340v. on c.w. at the p.a. plate. P.a. current drain (a.m.), 115 mA.; c.w., 130 mA. Modulator current drain, 40 mA. idling, about 100 mA. full modulation. Modulator screen voltage, no modulation 300v. Oscillator drain 4 mA., doubler 12 mA., driver 24 mA. Drive currents, driver 0.3 mA., final 3 mA. Should this be in excess of 3 mA. to the final the value of the driver valve screen resistor could be increased and vice-versa.

Total current drain, full modulation, is about 270 mA. at 320 volts supply. This is being drawn from a supply nominally rated at 150 mA. 310 volts. No undue heating of the power supply is noted because of the intermittent nature of the load and the fact that the filament line is lightly loaded. The c.w. load is only 170 mA.

COIL DATA

- L1—5/16" diameter slug tuned former with 21 turns close wound enamelled copper wire about 26 B. & S. gauge with a tap at 7 turns from the grid end of the winding.
- L2—1/2" diameter airwound, 5/8" long, with 7 turns 18 B. & S. tinned copper wire.
- L3—1/2" diameter airwound, 5/8" long, with 6 turns 18 B. & S. tinned copper wire.
- L4—1" diameter airwound, 1" long, with 10 turns 16 B. & S. tinned wire tapped at centre with space for L5 to be inserted.
- L5—3/4" diameter, 2 turns closewound, spaghetti covered, inserted into centre of L4, 18 B. & S. tinned copper wire.
- L6—3 turns wound over a 100 ohm resistor, 20 B. & S. wire.

One small addition that does make the transmitter a little easier to tune up is the addition of a small neon lamp of the NE2 variety to the p.a. coil. The neon is connected via a short length of wire and is mounted in a small rubber grommet in the front panel. Both wires of the neon are soldered together and it is only the capacity between the electrodes and the front panel which constitute the circuit for the neon. Tune the transmitter for maximum brilliance of the neon.

That completes the description of the transmitter. With an input of about 35 watts, an output of about 15 to 20 watts estimated is obtained, but I have no accurate method of measuring it. Input on c.w. is about 45 watts.

That completes the description of the transmitter which was built to communicate with Australia on 6 metres from Macquarie Island.

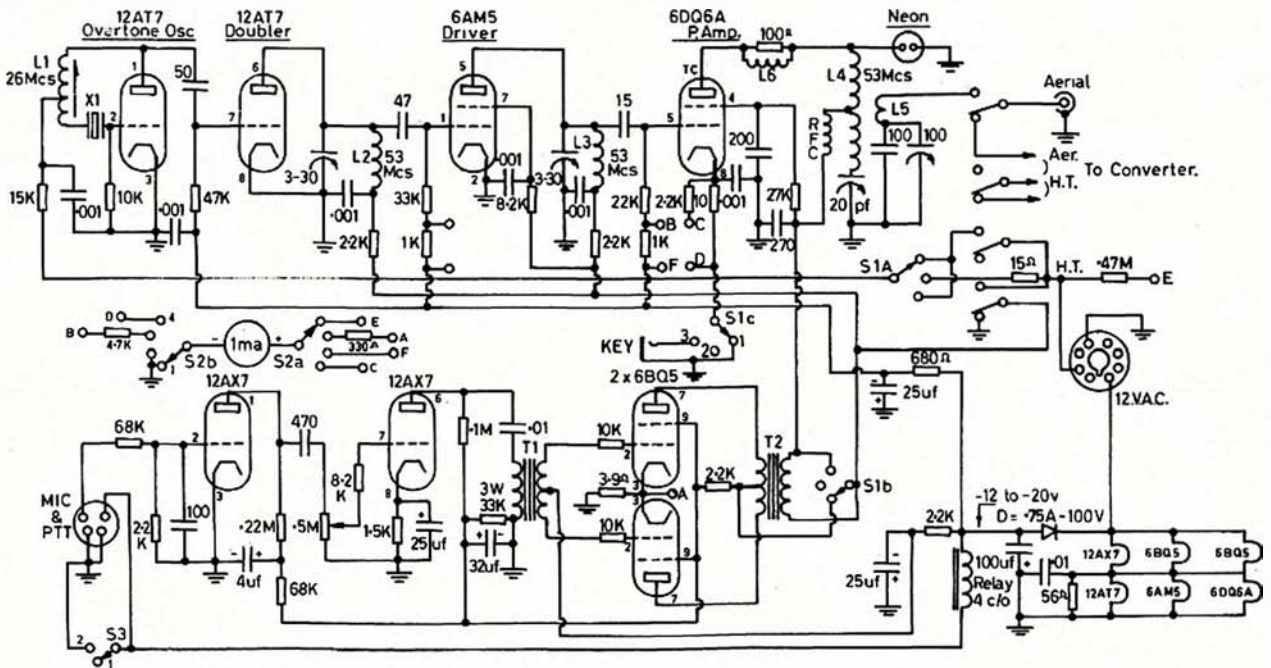


FIG. 1. 6 METRE 35-45 WATT AM-CW TRANSMITTER.

S1—1, a.m.; 2, net; 3, c.w.
 S2—1, h.t., 0-500v.; 2, mod., 0-100 mA.; 3, drive, 0-5 mA.; 4, p.a., 0-200 mA.

S3—1, Receive; 2, Transmit.
 Points marked "A" connect together; "B" together, etc.

SOLID-STATE MODULES*

For Valve Replacement in Communication Receivers

PART ONE

D. R. DRYDEN, G3BKQ

SINCE the introduction of transistors, many Radio Amateurs and S.W.'s have expressed great interest in the possibility of producing a solid-state communication receiver of satisfactory all-round performance, using an existing valve receiver as a basis. The advantages of transistors are well known, and in recent years they have proved to be better than most valves in respect of gain, noise and h.t. current drain.

Replacing valves with transistors directly is not practical because of the low input impedance of the transistor, the different nature of the neutralisation problem, and the necessity for complete re-organisation of bias and h.t. supplies.

The advent of the FET offered a possible solution, and the author therefore determined to re-examine the situation. In grounded gate, the FET has a low input impedance, which causes much the same difficulty in matching a tuned circuit as does the

● In this interesting series of articles, our contributor will show how valve stages in conventional communication receivers can be replaced by equivalent transistor units, made up as pluggable modules having the same input-output characteristics as the valves for which they are substituted—thus preserving the general tuned circuit layout and parameters of the original receiver.

This is done by using a combination of FET and transistor, and he shows that these modules can be designed to take care of any usual circuit-substitution requirement. The practical ideas brought out in these articles constitute original work in the field of solid-state circuitry as applied to receiver design, and thus will be of great interest to many readers. — Editor "Short Wave Magazine".

without altering the tuning and tracking characteristics. Furthermore, the circuit arrangement required is cut to a minimum.

It has also been possible to improve the gain, selectivity and a.v.c. characteristics, and reduce cross-modulation effects to negligible proportions compared with an original valve operated receiver. The modules are suitable for use in any receiver, car radios, and also 2 and 4 metre converters. In the case of the 2 metre converter, the noise

figure, gain and cross-modulation performance are outstanding.

Receivers may be modified one stage at a time if required, without affecting the performance of the remaining valve stages. This exercise was actually carried out by the author, to establish the complete interchangeability of the modules with existing valves.

The r.f. modules exhibit high gain, values of 300 at 30 Mc. and 80-100 at 144 Mc. being typical. Usually, if a valve is to be replaced by the device, the gain is reduced to the same as the valve to preserve the overall characteristics of the receiver. The stability of the device against temperature change, and in respect of neutralisation, is very high.

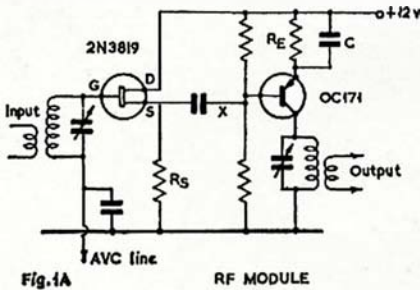


Fig. 1A RF MODULE

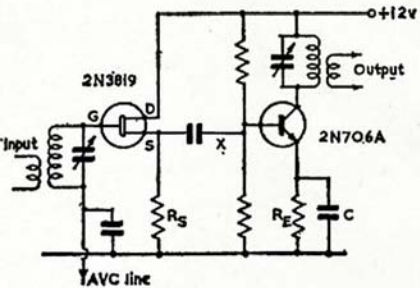


Fig. 1B

introduction of a transistor. In grounded source, neutralising a FET is rather difficult if it is to be used in a multi-band configuration, but the input impedance is better than with a valve.

The author therefore designed the plug-in modules discussed in these notes, using the FET as a matching device to produce a high input impedance. This drives a conventional transistor circuit which exhibits high output impedance. In this way, it is possible to utilise existing tuned circuits,

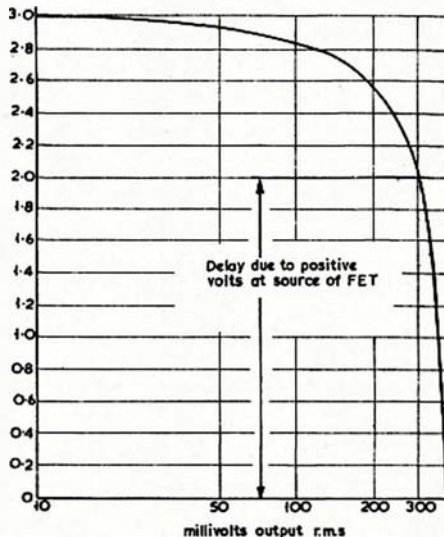


Fig. 1C.—In the r.f./i.f. module, this is the input/output curve showing the d.c. variation at gate to a.c. output.

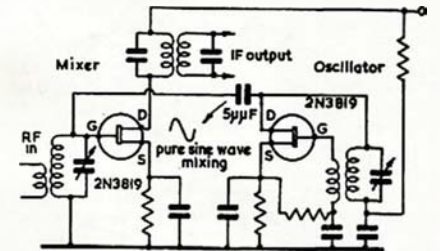


Fig. 2A

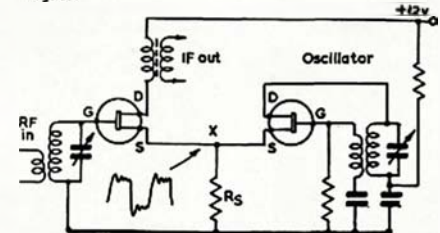


Fig. 2B MIXER OSCILLATOR MODULE

Fig. 2B.—The mixer/oscillator configuration shown in the lower sketch is not recommended because of the bad waveform at point X, which can produce unwanted beats up to 200 Mc.

To illustrate the application of the modules, this article will later include complete conversion data for the BC453/454 Command series of receivers. The ideas set out will enable a scheme of modification for any receiver to be evolved along the same lines. The BC series was chosen for illustration because they are in wide use for mobile applications, as Top Band receivers, tunable i.f.'s on the 2 metre band, and (particularly in the U.S.A.) for main-receiver i.f.'s in conjunction with xtal controlled converters. To illustrate v.h.f. applications, a description of a 2 or 4 metre r.f. stage is also included.

R.F. MODULE

The basic circuit of the r.f. module is shown in Figs. 1A and 1B. This will replace r.f. pentodes or triodes, e.g. 6AK5, 6SG7, 6K7, etc. The FET is

* Reprinted from "Short Wave Magazine," December, 1967.

Fig. 3C: This will vary the gain of the transistor stage by 15-20 db. in a typical case, is not frequency sensitive, and does not degrade the noise. The variable resistance of the FET in series with capacitor C alters the negative feedback due to R_s , the gain being maximum when the resistance of the FET is lowest. A swing of about 3v. d.c. is required.

PART TWO*

TRANSISTORISING A BC454

FIVE basic modules are used, one of each being required. They are: (1) r.f. module, (2) mixer module, (3) 1st i.f. module, with electronic attenuator, (4) 2nd i.f. module, (5) b.f.o. module. These are all depicted in Figs. 5, 6, 7, 8. The pin numbers refer to those used on the corresponding valve bases. These modules can be assembled on an octal valve base.

American metal-cased types of valve (e.g. 6SG7, 6SJ7, etc.) are easily stripped of their electrodes and leads, and the transistors and components then mounted on the base. The metal envelope is replaced to produce a well-screened unit. Examples of such assemblies are shown in the photograph in Part One of this article.

The audio amplifier is either constructed on fibre-glass board, and mounted in the rear of the receiver in place of the dynamotor, or constructed on the modular principle and plugged in instead of the 12A6 output pentode.

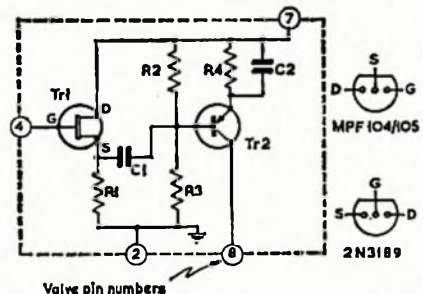


Fig. 5.—R.f. stage and 2nd i.f. module, with connections to replace a 6SK7 valve. Values are: C1, C2, 0.001 μ F. (C2 for a 2nd i.f. only); R1, 3.3K; R2, 22K; R3, 100K; R4 (r.f. stage only), 1K; R4 (2nd r.f. only), 330 ohms; Tr1, 2N3818, MPF104 or MPF105; and Tr2, OC170/171.

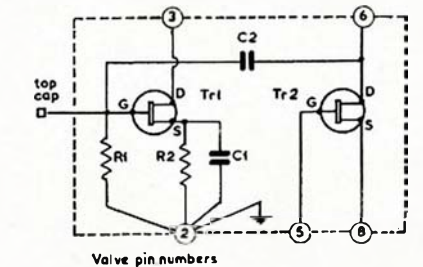


Fig. 6.—Mixer and oscillator module, to replace 6K8. C1, 0.001 μ F.; C2, 3-5 pF.; R1, 1 megohm; R2, 10K; Tr1, 2N3818 or MPF105; and Tr2, MPF104 or MPF105.

R.F. MODULE WITH GAIN CONTROL

A suggested practical circuit incorporating an attenuator-type control is shown in Fig. 4. The attenuator is introduced between the source of the FET and the base of the transistor to minimise side effects due to the introduction of the attenuator. It is recommended that this module should form the first i.f. of the completed receiver.

Continuing this interesting article, the author takes the example of the BC454—a well known surplus type, in wide use—to show how its various stages can be replaced, without undue complication but with results that can make even an old design like the BC454 into a very much better receiver, with improved gain and selectivity and a much lower inherent noise figure. This article should be read with Part One, so that all points are clear.

Alternatively, a cheap amplifier could be purchased, since there are several suitable ones available. The original BC453/4 circuit is modified as in Fig. 9, and indicates the location of the modules, and the extra circuitry required for the detector, a.v.c, r.f. gain control, etc.

All the heater leads are removed from the underside of the unit, together with the screen h.t. leads. All the suppressor connections are also taken off. It is strongly recommended that the potted capacitors be discarded, and only three of the existing resistors are used in the modified circuit. The b.f.o. coil is retained.

The r.f.-mixer-oscillator coil unit is removed by unfastening the two retaining screws at the side of the chassis

and lifting it out to expose the coil plugs. These are disposed as in Fig. 10. A 2.5 mH. r.f. choke is connected on the oscillator plug to the blank pin 4, using a covered lead. The other end of the r.f. choke goes to the 12v. h.t. line, via a zener diode. The coils may now be replaced.

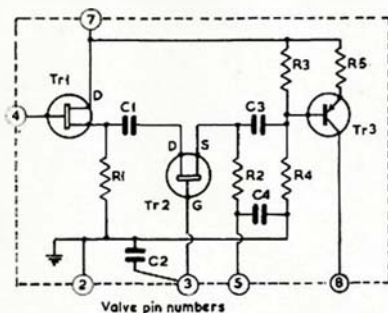


Fig. 7.—First i.f. amplifier with electronic attenuator. Values: C1, C3, C4, 0.001 μ F.; R1, 3.3K; R2, 8.2K; R3, 22K; R4, 100K; R5, 1K; Tr1, 2N3818; Tr2, MPF104; Tr3, OC170/171.

The 12v. h.t. line and decoupling networks are rewired and fitted according to the modified diagram in Fig. 9. Small resistors and condensers common to transistor radio practice are eminently suitable. The h.t. end of coils L2 (r.f. stage anode), L8 and L10 (i.f. coils) are earthed to the chassis.

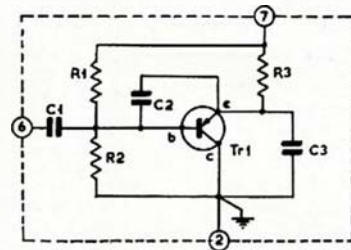


Fig. 8.—The Vacar circuit b.f.o. module, excellent for short and long-term stability and specially suited to single-frequency working. C1 is 100 pF.; C2, C3, 0.001 μ F.; R1, 4.7K; R2, 10K; R3, 2.2K; and Tr1, OC170/171.

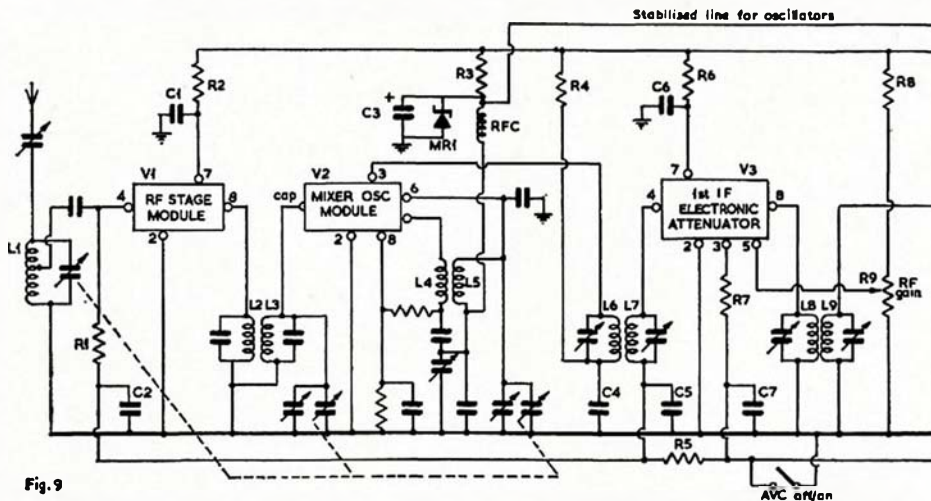


Fig. 9

Fig. 9.—Modified BC-454 Receiver, showing modules as follows: V1, r.f. stage; V2, mixer/osc.; V3, 1st i.f. and attenuation; V4, 2nd i.f.; V5, b.f.o. module; and V6, transistor amplifier.

Notes: Only added components are shown here. Parts differing from the original are alone numbered. R.F.C. is a 2.5 mH. r.f. choke. A pair of PP1 batteries (6v. each) will suffice for power.

* Reprinted from "Short Wave Magazine," February, 1968.

A.v.c. is applied to the r.f. stage and to the first i.f. stage, as shown in the diagram. The b.f.o. coil is removed and an additional 220 pF. condenser is connected in series with C27 across the coil. The b.f.o. coil is then replaced, also this winding has a lead connected to pin 6 of V7, which is retained. The remaining leads are removed, and the end of the coil earthed down, as in Fig. 9. The remaining modifications are self-evident, and although the job looks complex, in practice it is easy and quick once the modules are assembled ready to plug in.

CHECKING CURRENT DRAIN

Check the h.t. winding carefully, and switch on the h.t. (12v. d.c.) with no modules in place. Check the h.t. current, which should, at this stage, be about 10 mA. Then plug in the modules one at a time, starting with the r.f. module. The current increments should be as follows: R.f. stage, 1.8 mA.; mixer-oscillator stage, 4.0 mA.; 1st i.f., 1.8 mA.; 2nd i.f. stage, 3.0 mA.; audio amplifier, 1.5 to 3.0 mA. (for the recommended circuit). The total current should be about 17-20 mA. with no signal applied to the receiver.

If the aerial is now connected, the r.f. and audio gains turned up, and a.v.c. applied, it should be possible to tune in a signal. Select a weak one, and peak the i.f. coils. The tracking of the oscillator coils will be unchanged, but the input trimmer and mixer trimmer will require adjusting to give maximum output. The alignment is now complete.

A strong signal will increase the current drain to 50-100 mA., due to the class B audio output stage opening up. Owing to the great increase in selectivity, tuning will be very sharp. Also the noise figure of the modified receiver will be much lower than the original, which can be deceiving. Disconnecting the aerial seems to leave the set dead. However, a short length of wire connected to the aerial socket will immediately produce an output. The BC454 is particularly useful as a tunable i.f.

amplifier for a 2 metre or 70 cm. converter.

Note that the above procedure calls for weak signals to be located at maximum r.f. gain, a.v.c. A very strong signal will reduce the gain of the set by 100 db., a.v.c. on. The range of the manual r.f. gain control is around 32 db. If a single module is used to try out the effect of the modification of a single stage, care should be taken to disable the a.v.c. applied to the module. Valve receivers require a very much higher a.v.c. voltage than do the modules, and if the existing a.v.c. is applied, the module will probably be almost cut off, and its performance will appear disappointing. As the number of modules is increased, this problem becomes less acute.

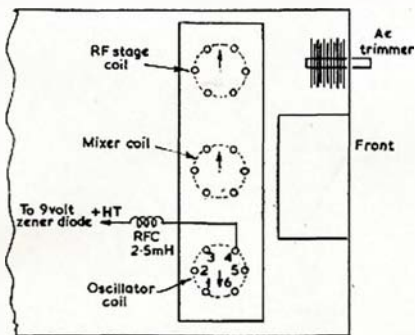
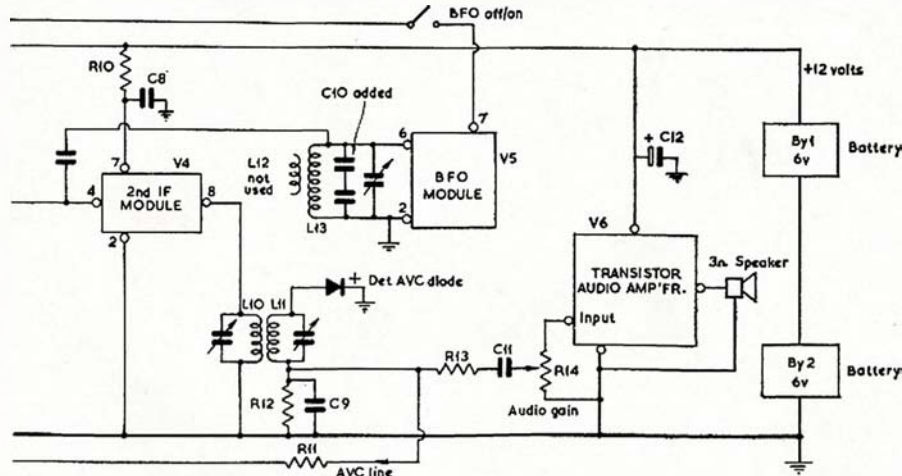


Fig. 10 Underside of BC454
Fig. 10.—Underside of BC454, to locate items mentioned in the text.

The overall gain attainable exceeds anything which can be realised using valves, but owing to the existing layout of the coils, the usable gain is limited by regeneration problems. As described, the modified set produces useful output for less than 1 μ V. in.

A 2 metre conversion for the r.f. stage will be shown later. This circuit produces a gain of 80-100, with a noise figure of around 2 db.



- C1, C2, C4, C5, C6, C8—0.05 μ F.
- C3—10 μ F. 12v.
- C7—0.01 μ F.
- C9, C10—220 pF
- C11—0.1 μ F.
- C12—250 μ F. 16v.
- R1, R5, R7, R11—1 megohm.
- R2, R4, R6, R10—470 ohms.
- R3—220 ohms.
- R8—33K ohms.
- R9—25K ohm potentiometer.
- R12—500K ohms.
- R13—50K ohms.
- R14—250K ohm potentiometer.
- Mr1—9v. zener diode.
- Mr2—OA5 diode.

1968 John Moyle Memorial National Field Day Results

SECTION A—SIX-HOUR DIVISION

Award Winners	
VK2ASZ/P	474 points
VK3JO/P	20 "
VK4PJ/P	131 "
VK5TN/P	184 "
VK6ZFY/P	129 "
Other Entries	
VK2ZCF/P	124 points
VK2RJ/P	45 "
VK5ZEJ/P	75 "
VK5TL/P	10 "

SECTION B—SIX-HOUR DIVISION

Award Winner	
VK2ZJM/P	87 points
Other Entry	
VK2YB/P	36 points

SECTION E—SIX-HOUR DIVISION

Award Winner	
VK2ZO	80 points

SECTION A—24-HOUR DIVISION

Award Winners	
VK1VP/P	115 points
VK3AMK/P	134 "
VK4IO/P	493 "
VK5QX/P	523 "
VK7ZKJ/P	60 "

SECTION B—24-HOUR DIVISION

Award Winners	
VK3EZ/P	193 points
VK5ZF/P	202 "

SECTION C—24-HOUR DIVISION

Award Winner	
VK2BCC/P	502 points

SECTION D—24-HOUR DIVISION

Award Winners	
VK2AAH/P	6400 points
VK3ATL/P	2140 "
VK6ZBF/P	253 "
Other Entries	
VK3LC/P	1534 points
VK3KO/P	1342 "
VK3RV/P	223 "
VK6ZFG/P	249 "

SECTION F—24-HOUR DIVISION

Award Winners	
VK2—P. Linsly	534 points
WIA-L3308	631 "
WIA-L5088	755 "
WIA-L7031	515 "
Other Entries	
WIA-L3042	485 points
P. Forbes	715 "
WIA-L5097	200 "

Incorrect Logs
L. Milne, D. Lloyd
Check Log
VK3TB

SLOW SCAN T.V.

A sizeable group of Canadian Amateurs in Ottawa are interested in slow scan t.v., according to VE3PW. The system used allows signals to be recorded on tape and played back through a monitor scope, or viewed direct on a 5BP7 tube. The group is building monitor scopes as described in March 1964 "QST". The address of VE3PW is 191 Clare St., Ottawa 3, Canada. Interested Amateurs are invited to write to him.

Some Thoughts on "V-V" Beams for 14 and 21 Mc.

C. WHALLEY,* VK6KK

Whilst paying a visit to England in 1964 I heard stories of a rather new type of antenna which, according to rumour, was working DX extra well.

Tracking down the designer, Neville Jackson, G3IAD, I made my way to his home only to find that he had left for abroad a short time previously. I talked with his wife and also examined, as best I could, his 14 and 21 Mc. antenna in the back garden of his home. I purchased the small booklet he has written on this type of antenna for the Amateur bands and later came back to my home in Western Australia.

Owing to working in the far north of this State, I was unable to build one according to his directions until mid 1966. This was built to the following dimensions:—

14 Mc.—

Driven Element, 36 ft. 4 in. total length.

Director, 34 ft. 5 in. total length.

21 Mc.—

*Driven element, 23 ft. 7 in. total length.

*Director, 22 ft. exactly total length.

(* The measurements given do not agree with the ones in the booklet, but were found to give the s.w.r. figures given later.)

The elements are made from aluminium tubing, fitted in fishing rod style, and mounted as suggested.

This was put on the air and the DX started to be worked as quite never before with many complimentary remarks about signal strength from my 145 watts p.e.p. Unfortunately, after about three months the vees started to lean over and whilst this made no apparent difference to the working of it, I could see that before long the whole thing would collapse.

STRENGTHENING THE VEE

After much thought and talks with others about how to build it strong enough, the following course was adopted.

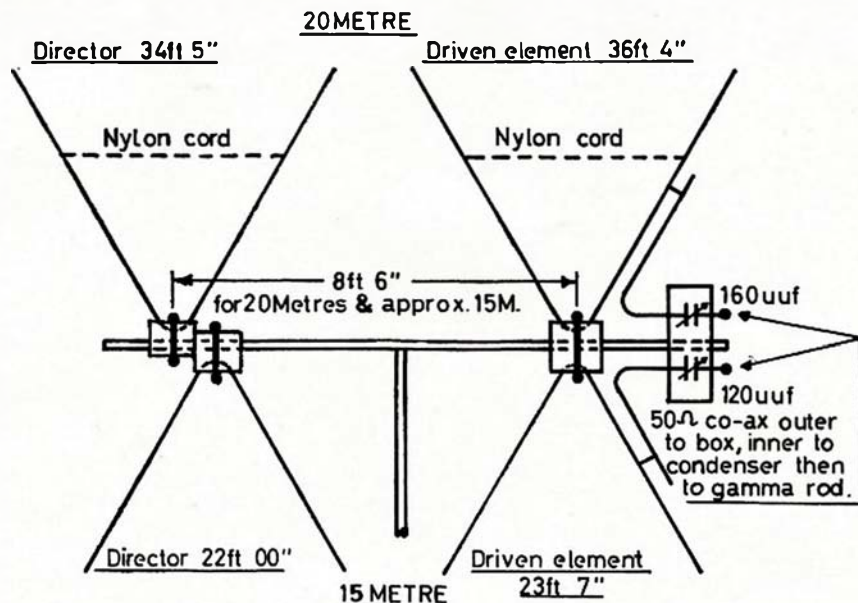
The two pieces of aluminium tubing that were to be bent in the form of the vee for the base of the 14 Mc. section were obtained in fairly thick gauge tube, 6 ft. long. A piece of solid aluminium rod which fitted neatly inside this tube was obtained, this was 3 ft. long and was centred inside the 6 ft. length. The whole then being cold bent to the angle of 90 degrees. The other lengths of tube were then packed with wood dowelling rod before being screwed into position. Remember that you have over 17 ft. on each leg poking up skywards with its only support at its base.

The previous method of using aluminium plates to fasten the vee to the boom was abandoned and aluminium clamps of the type used by scaffolding erectors were obtained, packing pieces made to fill up the extra width of the

clamp taking the base of the vee, and then the vees were mounted. The clamps were screwed up tight and a bolt passed right through the clamp, the packing pieces, the base of the vee and the boom, a nut was put on the bolt and tightened. A nylon cord was placed across each of the upper vees (the 14 Mc.) about 4 ft. from the top (this makes no difference even in heavy rain) and after around six months' use, with some gales, etc., to test it, it is still in position apparently as firm as ever.

This may help to answer.

With my friend VK6SM, whose home is about 150 ft. above sea level with a beautiful clear "getaway" in all directions, and who uses a 3 element full length close spaced Yagi for 14 Mc., on a 34 ft. high tower, tests were made with VK5, VK7 and W6. They were not told any details but just asked to give S meter readings. In all cases the reports were identical. This, despite the fact that my home is only about 10 ft. above sea level, in a hollow with trees right across the Eastern side (the



MORE DETAILS

There is no insulation whatever between the vees, the boom, and whatever the boom may be fastened to (plumber's delight type).

The driven elements are fed each with its own gamma match, fed by 50 ohm co-axial cable. For the 14 Mc. section the gamma match feeder from the box is kept around 5 inches away from the element it is feeding and feeds into it 4 ft. (approximately) up the leg. For 21 Mc., the same distance between the feeder and the element, but this feeds at 3 ft. (approximately) along the leg.

The boom is 10 ft. long to allow for the gamma match box, etc., and the distance between the director and the driven element is 8 ft. 6 in. This distance is the same for both 14 and 21.

When having the portion forming the base of the vee bent, have a six inch piece in the centre left straight as the clamp will fit around this for attachment to the boom.

S.w.r. on 14.250 Mc. is 1:1; at 14.010 Mc. it is 1:1.6. On 21.500 Mc. it is 1:1.

Much interest was aroused when this was first erected and the old solid question was, "How does it compare with other beams?"

way we were pointing for these tests) which are much higher than the antenna. The boom is 24 ft. above ground. We were, of course, both using the same power.

This short summary has been made owing to the number of requests for information from many sources. There are now three of this type working in the Perth area and the general opinion is that it is the best tried up to now.

My sincere thanks go to Mr. Jackson, G3IAD, for giving me the details of what has proved to be the best DX antenna I have ever used.

More detail than I have given is to be found in Mr. Jackson's booklet, "V-V DX Arrays" which can be obtained from Vee Vee Beams Ltd., Morcambe Lincs., England.



* 53 Arnott St., Trigg Island, W.A., 6020.

MORSE CODE PROFICIENCY (OR WHY "GOOF" AT 10 W.P.M.)

Some time ago, an article appeared in a popular magazine in the States, headed "Johnny never even made it, at 14 w.p.m." (13 w.p.m. is the General licence requirement, U.S.A.)

Sadly, here in Australia, there are probably several Johnnys who will "Goof" at 10 w.p.m. in the coming Code Examinations. Why? Let's look at a few of the reasons why, and for the sake of simplicity, divide the comments into receiving and sending.

RECEIVING THE CODE

Receiving is obviously the bigger stumbling block, but need not be so at all if one's mental approach is right. Those who sit down seriously to learn the Code (not just fiddle with it), must adopt the right psychological attitude to the task at the outset. The mental habits formed during this early period of 10 weeks or so, or prior to this, go a long way to make the passage to the ticket, and beyond, plain sailing. Too many, at this beginning stage, exhibit what might be called a "Bogey Syndrome", or a mild Morse neurosis—and it is this that beats 'em ere they've begun. Attitudes of tension, timidity and inferiority complex are felt within, and manifest themselves externally, as every Morse class instructor knows.

The oft heard expression, "I'll lick this thing if it kills me", is hardly the correct mental approach. It indicates that the user sees the mastery of code as something of an unsurmountable obstacle. In truth, he is trying to visualise himself achieving too much, too soon; subsequently, he lacks confidence. A young child learns a new language word by word, or step by step, but very easily and often quickly—simply because it has no subconscious, conflicting inhibitions to prevent it, or slow it up. Any beginner at the code will come along much faster if his doubts and tensions to it are resolved at the start. These inhibitions, if strong enough, can completely prevent any progress at all. This is where it is of prime importance that starters have access to tuition, by skilled instructors, who have the ability to impart confidence and correct procedures. True, many by dint of their own determination are completely self-taught operators, but many also fall by the wayside simply because no one was at hand to get them started sufficiently.

So, if you have decided to take the code test, these following pointers might help a little.

Firstly, don't set yourself a definite time limit, say, six months. This is the first "bogey" to be mentally ousted. You will come along at your own natural pace, depending on the amount of practice, etc. It may take 12 months.

Next, when about to receive code, be certain you are physically comfortable—unless you are, your concentration will suffer, be you aware of this or not.

Then don't attempt long practice sessions. Knock off immediately the mind begins to boggle at the "dits and dahs". Best practice method is a little, and often, perhaps two or three half-hour stints per day. A common complaint, is the self-criticism—"I can't concentrate for long". This obviously creates another "bogey" in the minds of young aspirants—don't let it cause concern. Come exam. time, you will cope well enough, if you've practised enough. It must be remembered that the ability to concentrate is very much a personal thing, with its broad basis in heredity-environment complex. If your daily bread-winning work does not require too much concentration, the new task of the code may well tire you easily. Even those whose working life is mostly concentration can often only apply themselves in short bursts. Rest assured, as you progress, this will give you no concern, but, do not attempt to learn code when feeling mentally flat.

Another Bogey. Many learners express their inability to copy code more than a letter or two, behind the sender. They point out that the pros can trail a whole sentence, or more. This is another self-created and unnecessary obstacle in the minds of beginners. Here again, they are allowing their thinking to wander into pastures they've not yet experienced—speed. The early beginner starts out by hearing a code letter, dit-dah-dit. This must be transformed by conscious mental effort into the letter R. The unpractised and untutored mind does this, at first, slowly and ponderously. The old pro on hearing "dit-dah-dit" transforms it into the same letter, but, by dint of prolonged practice, there is no conscious

juxtapositioning in the mind at all—in other words, it becomes automatic and flows off the end of his pen, just as all other habits become effortless.

After listening to many troubled comments on this, it is apparent that this, too, is a personal thing. Some minds are just more computer-like than others, i.e. more adept at this necessary transformation. Herein lies the ability of some to receive at 50 w.p.m., whereas others will never exceed 20-25 w.p.m. (which is quite fast enough). But this is no argument to say that 10 w.p.m. is not attainable. It is, and easily so, but with more practice, perhaps. If progress seems slow after six months of honest application, there's no reason to despair, because code proficiency has a habit of taking on coherence rather suddenly when it does commence. In other words, the mind eventually gets the message.

Individual and Personalised Instruction: This is the only way for the initial beginner but for so many impossible, such as those in country areas, etc. So only the best alternative arrangements can be made. Having grasped the dit-dahs of the alphabet to the point of correlating the simplest words, one should for optimum progress, be coached along at a speed slightly in excess of what one can handle comfortably. Just fast enough so that not every letter is received.

When a letter is muffed, don't fiddle with it. Learn the trick of dismissing it immediately and instantly preparing the mind for the next. At first you will probably lose two or three in a row, but do not be deterred. Try and receive original copy all the time. Repetitive paragraphs or sentences are useless in speed promotion.

The old cliché "that anything worth having requires effort" applies truly to code mastery. If you want your ticket, much practice is needed—and daily.

Come examination day, if you are ill prepared, you will take with you into the "den of horrors" a psychological barrier a mile high. You know you must do your best to pass. Consequently butterflies in the diaphragm region reduce your efficiency. Why tear yourself apart internally like this when to sit well prepared is to know that you will pass even if you don't produce your best effort on the day. There's no more comfortable and confident feeling than this.

It would be necessary to be able to receive word perfect 12-15 w.p.m. for at least three or four weeks prior to the test to be sure of 100 per cent. copy at 10 w.p.m. in a strange environment.

SENDING

After observing some at work at the key it is obvious why the "on air" effect brings the advice "Try the left foot". It seems unbelievable, but many don't monitor their own sending. No letter and spacing formation can remain conscientious and copiable under these conditions of sending. If you are going to be a code operator for the next 30 years it will be necessary to monitor every dot and dash, and develop the objective habit of being your own harshest critic in the process. Never imagine you will eventually reach the age of adeptness where a monitor is no longer a must.

It is wise when at practice to simulate exam. room conditions. Here in VK4 this means earphone copy (not speaker), with an audio oscillator at 1 kc. or a little higher and with the volume at its comfortable lowest. Excessive db is of no help. It only produces a "limiter like" effect in the ear drums. The P.M.G. type key should be mounted at the edge of the table (this is Departmental), but you can if preferred operate the key in a position best suited to you (such as those with some slight physical handicap).

Assuming you are right handed (reverse the procedure for left handed), sit facing the key so that the shaft is pointing just past your right side and when you reach out to touch the knob, your forearm should be level or horizontal and the angle formed by the elbow 90 degrees or a shade more. The elbow should not be tucked tightly by the side nor held away from it. Just let it hang in a neutral position. Never sit too low so that one has to reach up for the key. This quickly produces fatigue. It is better to err by sitting too high than low. Key point spacing and bar spring tension should be set at an optimum minimum, i.e. not so close and light as to produce forearm tension in an effort to control

it, nor so gappy and springy as to make key manipulation hard work and choppy. Forearms and wrists differ so radically in weight and strength that only experiment can produce the right setting for smooth sending.

Here again the same rules of concentration apply. Immediately the arm or wrist shows fatigue—stop. In the beginning this will happen within minutes, but practice produces surprising stamina.

Don't try and force yourself into speed—this is a fatal error. Start by sending one letter at a time, with a slight pause between. Like the young child learning a new language, pace simply comes as the result of practice.

The habit of correct character formation must be developed right from the start, and of course for optimum results, as stated before it is best if one has a professional operator to point out and correct mistakes. Sloppy sessions of practice sending are to be avoided. There will be unmistakable overtones of it remaining in a fist for a long time afterwards.

When in the exam. room take your time to get comfortable. Re-read what you have to send and make sure you can mentally cope with any rarely used characters such as the £ sign, etc. Adjust the key to your own liking by a little practice run. As stated before, if you are well prepared it should be a "piece of cake".

A FINAL COMMENT OR TWO

Rhythm sensitivity is a great asset in receiving code. Test yourself with someone who has a musical instrument. Get him to mix minims' and semiquavers' in lots of four or more and try yourself out repeating the long and short of it. It is rare, but there is the individual who is rhythmically dead.

To facilitate the effort of mentally turning dit-dahs into letters, some try what might be called, for want of a better description, "the phonetic association of sound". It works this way. Instead of repeating the alphabet to oneself in dit-dahs (never dot-dash, please), one tries to repeat audibly to oneself the particular dit-dah combination, such as the letter B as Bee-b-b-b; for M, Mm-mm. Or again, for Y, Yi-we-yi-yi. This is a gimmick for beginners only. I doubt its value when one has to increase speed.

Lastly, each day as you go about the bread winning chores, impinging on the eyes there is a galaxy of signs, ads. on hoardings, street names, and other directions of all sorts. These can be used to improve our code. Run through these in dits and dahs. It's splendid mental practice or conditioning.

If you are still unconvinced you'll make it at 10 w.p.m., take heart from the VK4 who reputedly sat thirteen times before he made it. (This probably has been stretched a little by the re-telling). Maybe the Department, out of respect for his intestinal fortitude and determination gave it to him.

At the other end of the scale is the ZS who I am told made it in a matter of days from scratch. He was a professional musician of high ability.

All the above is meant only as a pointer or a tip or two to make the code exam. easier. Much more can be said but obviously space does not permit.

There is one LAST word for Morse Code Proficiency, it's "PRACTICE".

—Alan Shawsmitth, VK4SS.

"CONCURSO MEXICO 1968"

Precis Rules for Mexican Contest

Aim: To contact as many Mexican stations as possible. Note that prefixes 4A1, 4A2, 4A3, etc., may be used in place of XE1, XE2, XE3, etc. Operation from XE4 through XE8 is expected for the Contest.

Time: 0001 hours GMT, 21st March, 1968, to 2359 hours GMT, 31st December, 1968.

Bands: 3.5, 7, 14, 21, 28, 52 and 144 Mc. Cross-band contacts are not valid but the same station may be worked on different bands.

Modes: C.w., a.m., s.s.b. and r.t.t.y. Cross mode contacts are not valid. However, each station may be worked on each mode on every band except that s.s.b. and a.m. will be considered as the same mode.

Scoring: One point per valid Mexican contact. **Logs:** Logs must contain call, date, band, mode and report. Send to L.M.R.E., Box 907, Mexico D.F., Mexico, before 31st March, 1969.

IMPORTANT RULES CHANGE FOR W.I.A. W.A.S. AWARD

New rules for the W.A.S. Award will apply as from 1/7/68 and no further applications will be accepted under the old rules after 30/6/68. The following is the full text of the new rules and intending W.A.S. applicants are requested to read these through carefully before making their application.

W.I.A. WORKED ALL STATES (AUST.) AWARD

OBJECTS

- 1.1 This Award has been created in order to stimulate interest in the v.h.f./u.h.f. bands and is of a high standard to fully acclaim the proficiency of the recipients on their achievements.
- 1.2 This Award, to be known as the "Worked All States (Aust.) Award", will be issued to any Amateur in Australia or overseas who satisfies the conditions following.
- 1.3 A certificate of the Award will be issued to applicants who show proof of having made two-way contact with the specified areas of the Commonwealth of Australia. Additional credit will be given for proof of contact with overseas countries, viz. New Zealand or Papua Territory. Countries, for the purposes of this Award, are set out in the Australian D.X.C.C. Countries List.

REQUIREMENTS

- 2.1 Contacts must be made on the v.h.f./u.h.f. bands 52 Mc. and above (Bands 8 and 9). Contacts made on 50-52 Mc. prior to 1/4/64 will count towards the 52 Mc. Certificate.
- 2.2 One verification from each of the following areas of the Commonwealth of Australia is required:—
 - (a) Australian Capital Territory.
 - (b) New South Wales.
 - (c) Victoria.
 - (d) Queensland.
 - (e) South Australia.
 - (f) Western Australia.
 - (g) Tasmania.
 - (h) Northern Territory.

- In all, eight (8) verifications are required.
- 2.3 It is possible under these rules for one applicant to receive one Award for each of the Authorised Bands between 30 and 3,000 Mc.

OPERATION

- 3.1 All contacts must be two-way contacts on the same band and crossband contacts will not be allowed.

- 3.2 Contacts may be made using any authorised type of emission for the band concerned.
- 3.3 Portable operation will be permitted provided that the portable location shall be in the State in which the licence was granted and in the call area in which the licence was granted in the case of overseas operation.
- 3.4 All contacts must be made in accordance with the Regulations laid down in the "Handbook for Operators of Radio Stations in the Amateur Service" or its successor for Australian stations or in accordance with those Regulations applying in the country of the applicant in the case of overseas stations.

VERIFICATION

- 4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that two-way contacts have taken place.
- 4.2 Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will lead to the disqualification of the applicant.
- 4.3 Each verification submitted must show the date and time of contact, type of emission and frequency band used, the report and the location or address of the station at the time of contact.
- 4.4 A check list must accompany every application setting out the details for each claimed station in accordance with Rule 4.3. If any contacts were made whilst portable, this must be stated and the portable location given. The applicant must also state whether they are members of the W.I.A. or not.

APPLICATIONS

- 5.1 Applications for membership shall be addressed to the "Federal Awards Manager, G.P.O. Box 2611W, Melbourne, Vic., 3001," accompanied by the verifications and the check list with sufficient postage enclosed for their return, registration being included if desired.
- 5.2 A nominal charge of 25c, which shall also be forwarded with the application, will be made for the issue of the certificate to successful applicants who are non-members of the W.I.A.
- 5.3 Successful applicants will be listed periodically in "Amateur Radio". Members wishing to have their verified country totals listed over and above those sub-

- mitted at the time of application for membership, will notify these details, in writing, to the Federal Awards Manager.
- 5.4 In all cases of dispute, the decision of the Federal Awards Manager and two officers of the Federal Executive, W.I.A., in the interpretation and application of these Rules shall be final and binding.
 - 5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the W.I.A. reserves the right to amend them when necessary.

NEW CALL SIGNS

FEBRUARY 1968

- VK1WL—L. R. Hodge, "Lawley House," Barton, 2600.
 VK1ZAV—D. R. Avdall, Cottage 48, H.M.A.S. Harman, 2600.
 VK2AHS—N. E. Parsons, 120 Ashley St., Chatswood, 2067.
 VK2BJN—J. M. Winsor, 8/52 Musgrove St., Mosman, 2088.
 VK2BNK—A. K. Nikku, 89 Cambridge St., Canley Heights, 2166.
 VK2BRK—R. R. Kearney, 6 Kurnell Rd., Cronulla, 2230.
 VK2ZJB—S. J. Brown, 5 Kentwell Ave., Thornleigh, 2120.
 VK2ZOJ—A. H. B. Brodrick, 18 Rhoda Ave., Wagga Wagga, 2650.
 VK2ZVU—J. Trenning, 48 Bexley Rd., Campsie, 2194.
 VK3AHP—J. M. Hamilton, 37 Byfield St., Reservoir, 3073.
 VK3ZVO—A. A. Saunders, 396 Buckley St., Essendon, 3040.
 VK4ZGD—D. J. Galloway, 72 Charlotte St., Aitkenvale, 4812.
 VK5AV—E. J. Mulholland, 19 Stuart Rd., Dulwich, 5065.
 VK6GG—H. E. Rhodes, 797 Canning H'way, Applecross, 8153.
 VK6LD—L. A. Dancy, 34 Chianthus Way, Koongamia, 6056.
 VK6TW—R. Thyer, Flat 118A, Graylands Hostel, Alfred Rd., Graylands, 6010.
 VK9RY—R. L. Johns, Station: Lot 1, Section 22, Gere Gere St., Boroko, P.; Postal: C/o. Public Service Commissioners Dept., Konedobu, P.

CANCELLATIONS

- VK1RJ—R. L. Johns. Now VK9RY.
 VK1ZSW—A. S. Waight. Not renewed.
 VK2WL—L. R. Hodge. VK1WL.
 VK2BCR—J. K. Ridgway. Deceased.
 VK2ZNK—A. K. Nikku. Now VK2BNK.
 VK3BH—Benalla High School Radio Club. Not Renewed.
 VK3FC—R. E. W. May. Transferred to N.S.W.
 VK3GE—G. E. Every. Deceased.
 VK3AMG—J. M. Barry. Not Renewed.
 VK3ASS—East Sale R.A.A.F. Radio Club. Not Renewed.
 VK3ZGL—R. F. Lloyd. Not Renewed.
 VK3ZON—A. T. Farrell. Transferred to S.A.
 VK4ZGC—McG. McCullough. Transferred to N.S.W.
 VK5ZCQ—J. A. McLachlan. Transferred to New Guinea.
 VK6FT—J. F. Reid. Not Renewed.
 VK6ZAH—J. D. Holt. Overseas.
 VK6ZGA—L. N. Smith. Transferred to N.S.W.
 VK8ZBB—A. H. B. Brodrick. Now VK2ZOJ.

OBITUARY

LEN SAWFORD, VK5LF

The VK5 Division regretfully announce the passing of Len Sawford, VK5LF, early in April.

A member of the 1932-33 Council, holding the position of Technical Officer, later becoming one of the three Divisional Trustees, he was extremely active in the early days of "slop rectifiers" and the like. Although he transferred his interest and activities to the audio side post-war, he still remained keenly interested in the VK5 Division; and at the time of his death, was seriously considering returning to activity on the air in view of his coming retirement.

A keen Rotarian, his quiet and unassuming manner won him many friends, and to his sorrowing wife and family, the VK5 Division extends their deepest sympathy in their bereavement.

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DX

Sub-Editor: ALAN SHAWSMITH, VK4SS
35 Whynot St., West End, Brisbane, Qld., 4101

The bands seem to be working really well. Twenty and fifteen probably being the best. The s.p. to Europe on ten seems to have fallen away—and will probably remain 'fringe' until next spring—but 28 Mc. is not quite as dead as it sometimes sounds; it suffers from lack of participants. During contest week-ends, it often carries a variety of prefixes. There is DX on 7 Mc., too, but the commercial QRM is very trying indeed.

Let's see who is active!!

NOTES AND NEWS

Barbados: 8P6AO, 14041 Kc. at 1104z. 8P6AF, 14225 Kc. at 0717z.
Ethiopia: ET3FMA, 14215 Kc. at 0255z. Also 3805, 1830z.
Gibraltar: ZB2AY, 14184 Kc. at 0200z.
Kure Is.: KH6EDY, 14212 Kc. at 0540z.
Kuwait: 9K2BV, 14110 Kc. at 2030z, using dipole there.
Mauritius: VQ8CS, 14212 Kc. at 1230z. QSL via VQ8AZ.
Mongolia: JT1AJ, 14195 Kc. at 1445z. JT2AB, 14040 Kc. at 1221z. JT1KAA, 14057 Kc. at 0250z. QSL via Box 639, Ulan Bator, Mongolia.
Mozambique: CR7FM, 14205 Kc. at 2245z.
Fernando with excellent signal. CR7CO, 14204, 1318z. CR7IZ, 1005, 1930.
Niger Rep.: 5U7AN, 14230 Kc. at 2300z, Bill. QSL via W4WMP.
Reunion Is.: FR7ZG, 14215 Kc. at 1230z. FR-7ZL, 14205 Kc. at 1240z.
Rwanda: 9X5SP, 14205 Kc. at 0130z.
St. Helena: ZD7FF, 14199 Kc. at 2319z. QSL via W8UAS.
St. Vincent: VP2SY, 14200-14220 Kc. between 0040 and 0315z.
Senegal: 6W8DY, 14227 Kc. at 2253z. Jacl. USA/VE QSL via VE4SK; P.O. Box 1021, Dakar, for direct QSL.
Tristan da Cunha: ZD9BJ, 21325 Kc. at 2223z for extended periods 1800-2300z.
Turkey: W6TNS/TA very active 14200 Kc. about 1800z.
Vatican City: HV3SJ, 14217 2130. QSL to WB2ETI.
Tunisia: 3V8TA, 21152 1935.
Pakistan: AP2MR is active most week-ends, 14110 1630.
Virgin Is.: KV4AA active most days now, 14080 2245. QSL 16 Commandant Gade, Charlotte Amalie, St. Thomas, 00801. Dick was QRT for quite a while.
Sweden: New prefixes for Swedish Club stations SK. Will be used from 22nd March. Fifteen already have been issued.
Sao Thome: CR55P 21056 1630. QSL W2GHK.
Guadeloupe: FG7TE and FG7GE active 14040-50 2000.
Bour Is.: JW2BH QRV 14105 1500 week-ends.
Nauru: VK6RJ using 14 s.s.b. only at the moment, but hopes to be able to be on other bands soon. QSL K6UJW. (VK3AOM).
Cape Verde Is.: CR4BC and CR4BL 14222 2300 and 14253 0200. QSL P.O. 64, Praia.
Central Af. Rep.: TL8DL 14196 1900.
Cameroon: TJ1AJ ex-DJ3DW QRV 14 s.s.b. TJ1QQ 14195 and listens up 10. The latter asks his cards via W4DQS.
Cyprus: ZC4RB, 14210 1400z.
Cyprus: OY5NS, 14202 2000z.
Falkland Is.: VP8JR, 14005 2200z.
Franz Josef Land: UA1KED, 14053.
Gabon: TR8AC, 14195 2130z. Parlez francais, s'il vous plait!!!
Nepal: 8N1MM, Father Moran, 14225 0130. QSL W3KVVQ/2.
Ruanda: 9X5AA, 21300 at 2000z. QSL P.O. Box 28, Kigili, Ruanda.
Gambia: ZD3F, 21260 2215z. QSL W2CTN.
Gahreln: MP4BEU, 7005 1900z.
Spanish Guinea: EA0TU, 21008 1500z. 14032 1800z.
Sierra Leone: 9L1GR, 14203 2240.
Ascension Is.: ZD8NK, 14018 2030z.
Swaziland: ZD5X, Vic still on most mornings, 7005 1900z.
Malawi: 7Q7LZ, 28584 1800z.
Fr. Somaliland: FL8FP, 21 s.s.b., 2000z.
Galapagos: 14206 0430z. HC8JG.
Port. Timor: CR8AH, 21190, 21210, 1300z.
Saipan: KG6SM, 14220 1100z.
East Carolines: 14216, 1300z.
British Honduras: VP1LP, 14201 2400z. QSL 3C3ACD.
Monserrat: VP2MW, 14215 2300z. QSL P.O. Box 274.

Somali: 601BG, 14208 2100z. QSL American Embassy, Dept. State, Washington DC.
Greenland: OX4AA, 14232 0200z. QSL K8REG. Palmer Arch.: KC4USP, 14228, 21235, 21006, at 1900z.
Trinidad: PY0BLR, 14195. QSL PY4BLR.
Fonseca: HR4SN, 14151 0300z.
Arctic: UA1KIP, 14006 1900. Looks for VK QSOs at this hour.
Spanish Morocco: EA9AQ 21290 1800; 28800 1700. QSL Cienent Herranz, B.I. Catlica 6, Mellica.
Iceland: 14210 2000. Also worked 14028 1935. QSL E. Daigree, Box 22, U.S. Naval Command Station, F.P.O. N.Y. 09571.
Iceland: JX6RL 14218 2100 for this Jan. Mayen activity. QSL via Norwegian Embassy, Reyjavik.
Svalbard: JW5YG 14200 2200. QSL via Norwegian Bureau.
Ten Metres.—Audible and working VKs: CO5PP 420 1810z, CX4JK 050 1740z, EP3AM 030 1442z, HC5EJ 628 1412z, H18XMT 578 1430z, PJ3CC 578 1450z, PK1AA 000 1310z, TG9XX 581 1925, TI2IA 590 1407z, VP1PV 600 1610z, VP9BG 510 1750z, XW8BS 580 0930z, ZD8J 033 1645z, ZP9AC 446 1940, ZS9L 633 1520z, 4U1ITU 580 1800z, JX3KJ 039 1630z, SU2AB 055 1007, 6Y5AR 018 1613z, 9G1KM 612 1602z, 9K2BV 580 1445z, 7Q1ZZ 580 1800z, XW8BP 030 0900z, VQ9B 020 1937z, ZS6J 020 0700z.

ACTIVITIES

Barry VK5BS has been listening on 160 mtr but reports no DX audible to this date. Just to keep his hand in he logged these on 14 c.w.: VO1FB, 6Y5GS, G3VMO, UQ2KBC, DLAKO, XE1WB, JH1AB. Give Barry a call if you hear him on the top band.

Dud VK4MY still picking off a few new ones each month. Reports conditions as good. 14 s.s.b.: UW1KAT, EA3NI, UA1CX, KK6GJ, OX3EL, VK9RJ, 6W8DY, HK0BKW, UA4CZ, VP2MK (Monserrat), VE1DW, KR6GS, HK4AET, UP2NV, CE8EF, PA9FE, LX1BW, IT7GAI, PJ5MMH, HS3TM, FM7WO, EA8FJ, FG1TI/FS7, HL9KD, HL9US, SK2AZ, VEARCS. All these mostly between 0700 and 1300. On AI mode: VE71Q, CT10I, 9J2HZ, CO2BB, EA8FJ, PJ5MM. (Thanks Dud.—A.)

Ken VK3TL says conditions to the Caribbean very f.b. indeed. 14 Mc. s.s.b.: CT2AF, FG7XE, FG7XX, H18AM, H18L, IT7GAI, LX1AJ, PJ2AQ, PJ2CZ, PJ2MI, PJ3CC, PJ3CJ, PJ5MM, PA9FE, PZ1BF, SK5AJ, VO1DZ, VP7NH, VP2AM, VP2GBG, VP8TJ, I9RB/SU, 6Y5CB, 8P6AF, 8P6AH, 8P6AZ, 8RIG. QSLs received: VQ9AA/C, IG5A, FR7ZP, VQ8AA/A, VQ8AA/F, CE0K, Y78BW, SL2ZI, ZS6H. (Magnificent list OM.—A.)

Keith VK4DU not very active due to other commitments, but occasionally unleashes the full might of his 8 watts into a random length antenna. These QSOs resulted. 14 Mc. c.w.: SV1BZ, EA8FJ, YU1ABQ, ON4ZO, G6ZO, SM4ASJ, SM5CAE, SP8AG, OK1YD, UA0EW, JH1EUQ; 21 Mc.: W1ELE, HB9OU, and W6 on 10 metres. It is possible that Keith will be vacating his magnificent Gold Coast QTH and setting sail in his yacht on a South Sea Island cruise, calling at many exotic spots, Amateur-wise, and perhaps for a period of four or five years. (Good luck to you, old man—you will be taking Amateur gear, of course.)

One or two activity reports arrived late last month (delayed), so if your notes do not appear, you will understand.—A.

Merv VK4DV, from the land of the "Wet", reports an insect plague which restricts his activities somewhat after dark. However, the following shows some real "goodies" worked. 14 s.s.b.: TU2BD, VP7DL, VE7ABS, VP2AA, 4A1FFC, YU1YG, 4S1PB, G3JAF, F5ID, OK1FV,

I1ZFT, CR5SF, G3AO, VP8IE, 4A2IH, 4A3AF, CE3CZ/CE0H, F3EG, CR3DY, 15 mtr: UA3HO, OH8NH, G6RC, SM7IA, DL2JQ, DJ1FC, UA-3KBO, GW3NNF, UP2NN, G3IUD, OH1OE.

Peter VK4PJ not very active but came up with the following: HA8CF 2050, VE2TI 1125, W2DR 1130, W2BCX 1150, G8UG 1100, 4Z4SO 2035, W2MHR 1155, G3ONQ 2040, F2MO 2045, ZS5FF 0730, ZS1DC 0745, 9H1M 2040, OK3ER 2030, G3TLJ 1225, DL2NO 0100, G2IC 0100, YU1KG 2030.

David VK3QV only on for part of the past few weeks, but "dug" out of 28 Mc. the following: DL4FS, HL9TG, KG6AA, KH6FBQ, KH6GKI, KR6CL, K56CQ, KW6EJ, OH2DP, UA3KBO, UA9CBW, UV9PP, UF8CR, VK8AU, VK8LR, VR1L, VU2DKZ, ZC4RE, ZL1AKK, ZS5FF, ZS5KI, 8U5BB, 9VIOM, XW8AX. (Nice work, OM.)

VK6IZ reports the following choice ones. 14 s.s.b.: PJ2CZ, F8VK, F8DR, FR7ZG, FR7ZS, 6W8DY, VR1L, 5WIAR, HS3TM, MPATCE, VQ-80H, CT1GD, ZL5AA, Z73AB, 3A2MJC, 21 Mc.: KM6BI, UA0CA, UI8KAD, 4U1ITU, UW3CS, UB5KLD, OY7ML, 28 Mc. c.w. and s.s.b.: XW8BP, CT1LN, ZC4RB, ZE1BS, ZS9Q, DM-3JMN, UL7AST.

Don VK3AKN produces a full page of prefixes worked on 28 Mc. Over 100 calls and nearly 50 countries. This gives the lie to those who say ten metres is dead. Here are a few at random: 9H1BC, SV0VY (Box 68 Rhodes), KR8DE, UF6DR, OH2BGD, DL5RC, Z1WPC, ZS2GE, UA4RK, W1EVT, UA0SU, OZ3CV, UL7AST, PA0VO, Y02IS, OK2EJ, 8J2VB, UO5FK, 9V1SJ, F8IH, UY5AL, SM4ARQ, 5R8CQ, VK7SM, ZL4BO, 5Z4SS, VETHQ, VS6FK, G5RI, VQ8SC, UA1FBI, HM9BI, UA8AI, UC3CX, HBAPV, UH8AF, UDEBD, JH1BEK, UQ2KCS, HG2KRD, KL7FI and many more.

SOME QTHs

HK0BKW—P.O. Box 219, S. Andreas Is. KX6GJ—P.O. Box 8515, A.P.O., S.F. 96555.

SK2AZ—SM2BHQ.
FR7WO—WBHXS.
HS3TM—K3LTV.
SV0WL—W2CTN.
VU2DIA—Says send his QSLs to this QTH: B. S. Hegde, I.S.P.W. Stn., Panjirn, Goa.

9U5BP—P.O. Box 14, Bujumbura, Burundi.
ET3REL—W5LEF.

Can anyone help David VK3QV with the QTH (the present one) of Roger MP4TBO?

SUMMARY

My thanks to LIDXA, G. Watts, Fla. DXer, Don Grantley L2022, "Air Waves," N.Z. DX Editor ZL2AFZ Geo. Studd for supplying most of the above DX items. Also on the home front to the ever-helpful gang of VKs who simply keep the column alive. 73, Al VK4SS.

CONTEST CALENDAR

- 21st March/31st Dec.: Concurso Mexico 1968 (L.M.R.E.).
- 6th/7th July: New Zealand Memorial Contest, 3.5 Mc. only (N.Z.A.R.T.).
- 5th/6th October: VK/ZL/Oceania DX Contest, phone section (N.Z.A.R.T.).
- 12th/13th October: VK/ZL/Oceania DX Contest, c.w. section (N.Z.A.R.T.).
- 12th/13th October: 21/28 Mc. Phone Contest (R.S.G.B.).
- 26th/27th October: "CQ" W.W. DX Contest, phone section.
- 26th/27th October: 7 Mc. Phone Contest (R.S.G.B.).

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OTL/78

VHF

Sub-Editor: CYRIL MAUDE, VK3ZCK
2 Claremont St., Avondale Heights, Vic., 3034

Well firstly I must apologise for the briefness of the notes this month, but owing to a rapid increase in cost of printing "A.R." and the reluctance of other Divisions to assist in meeting these costs, "A.R." will be greatly reduced in size until such time as more finance is available.

Generally conditions have been poor with only scattered DX activity. The most interesting news of late being the 146/438 Mc. translator unit that was raised by balloon to 102,000 feet and enabled Adelaide and Melbourne stations to work each other.

73, Cyril VK3ZCK.

WORKED ALL STATES AUSTRALIA AWARD

V.h.f. operators are reminded that new rules will apply to this award as from 1st July, 1968, and intending applicants should read carefully the new rules listed elsewhere in this issue.

No applications under the old rules will be accepted after 30th June, 1968.

—Geoff Wilson, VK3AMK, Awards Manager.

HUNTER BRANCH

144 Mc.: This band has been quiet, not much about, our only DX—Sydney—is even missing. The conditions on the whole have not been the best. Only Monday night is really active.

32 Mc.: There have been two openings during April—the 7th and 14th—both to VK5, and Bill VK2ZWM being the only lucky one at this end. During both openings, VK5s were working VK1s and VK2s down south. Generally conditions have been very poor with little activity. 73, Mac VK2ZMO.

VICTORIA

The April meeting of the V.h.f. Group was chaired for the first time by Gil VK3ZGS, who introduced the first speaker, Les VK3ZBJ, who gave a short talk on the Australia developments. He then showed the working unit. David Wardlaw followed with an interesting talk on the Intruder Watch in Australia. General business brought the announcement of the change of name of the "Converter Committee" to the "Projects Group". Over two hundred kits for the 6 metre converter were distributed throughout VK and ZL and with ideas for future kits, not essentially converters, a change of name and set up was thought to be needed.

Melbourne v.h.f. population was surprised when the call G3UJB was heard on 144.8 Mc. a.m. It was soon found out that Brian is a Maritime Mobile station on the ship "Hunting Don," which sails the Pacific. So if you hear him on give him a call and welcome him into the rag chew.

Alan VK2ZEO spent a short time during Easter in Melbourne and made his presence felt on 2 metres a.m. Now back in VK2, Alan listens on 2 every night for DX from Melbourne, so remember to give him a call.

Gavin VK3AEJ is now resident in Melbourne and active on 2 mx a.m. This will only be temporary as Gavin believes he will soon take out a VK4 call from Willis Island in the Pacific using h.f. and 6 metres s.s.b.

Col VK3FO, who lives in Maldon, would be grateful if a couple of the boys who have mobile 2 metre gear would make a trip to Maldon some week-end. The object is to try an experiment with the terrain in and around the district. If there are any "takers" for the trip they can get in touch with Col either by letter or phone on Maldon 75-2245.

73, Robert VK3ZPX.

Eastern Zone.—The Gippsland boys are slowly making more use of the 6 mx a.m. net frequency (53.032 Mc.). Active stations heard last month included VK3ZQZ Moe, VK3UG Warragul, VK3AOJ and VK3ZDP Sale. The following stations have been worked on this net: VK-3ZRG/3 Mt. Buller, VK3ZVK, VK3ZPK, VK-3ZYP/3, Mt. Dandenong, and VK3ZXP/3 mobile in Gippsland.

However, no interstate or overseas DX (in or out of band) has been logged or worked, even though George has spent many daylight hours listening. M.u.f. was peaking to 44 Mc. on March 26 and April 27.

The 2 mx f.m. nets have been very busy, especially during the Eastern Zone Convention week-end (April 20 and 21) at Mirboo North. VK3ANC was the control and talk-in station, working 20 mobiles using both the 6 and 2 mx nets. Les VK3ZBJ gave a very interesting and informative lecture, demonstrating solid state v.h.f./u.h.f. techniques, problems and the traps to watch out for. For competitions, we had 6 and 2 mx scrambles and a 2 mx hidden tx hunt.

A keen interest is being shown with the Australia "Highball" series of experiments. Firstly, using the experimental Ch. B1 translator, and secondly, VK3ZCG Morwell was heard and was hearing with difficulty VK3 Melbourne, Geelong and VK5 Adelaide stations via the Australia balloon 146/432 Mc. translator over Mildura. Signals faded out in Gippsland at 0825 hours (28th March). The zone looks forward to the next test in the series. 73, George VK3ZCG.

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

"A.R." MAGAZINE

Editor "A.R.," Dear Sir,

I was amazed to hear on the VK3WI broadcast of the possible ending of the publishing of "A.R." I quite realise that it must be maintained as a commercial proposition and kept within a budget. However I feel, and it is the opinion of many Amateurs with whom I have spoken during the last week, both on and off the air, that the loss of "A.R." would have very drastic and far reaching results.

Apart from the very obvious lack of news and information which would occur, all those with whom I have discussed the matter feel that many W.I.A. members, especially those in the country will take the attitude that there

is very little point in remaining members of the W.I.A. if they don't even get a magazine for their yearly sub.

As the number of members is only about half the number of those with A.O.C.P. or A.O.L.C.P. we feel that this could weaken the W.I.A. to a point where the whole structure would be weakened by smaller membership. This we simply cannot afford and especially at this stage when the number of Amateurs is on the increase and new operators need to be kept informed of the W.I.A. and its activities. The potential for growth is there if only it can be directed in the right manner. Also if the present very efficient set-up for "A.R." was to break up it would be very hard to get things moving again at a latter date and the valuable experience of the past would be lost.

Even if some other W.I.A. funds had to be diverted to maintain "A.R." until such time as it could hold its own or a price rise be agreed to, I feel that the importance of "A.R." is such that it must be kept at any cost. It is rather a strange thing to think Amateurs will think nothing nowadays of spending \$700 on a transceiver, perhaps \$200 on an aerial, \$200 on a tower, \$200 on a rotator, etc., etc., BUT are not prepared to pay a few extra cents towards their own magazine. If "QST" or "CQ" etc., push their price up 20 or 25 cents you don't hear any complaints from the locals, yet by comparison the value of the material in "A.R." is far greater to the local operator than the overseas magazine, as apart from the technical articles there is little of interest to people outside the U.S.A. The ads. are of local interest only as are the endless pages of notes on traffic handling, etc. Any DX info., etc., is usually 4-6 months old and meaningless by the time the magazines get out here. Do the people who are so against "A.R." realise this when they start comparing the overseas mag. value against "A.R."?—I think not.

Well, that's how I feel about the matter, and I know that there are lots of others who are thinking along similar lines. Whether they will make their thoughts known or not I don't know.

—Geoff Wilson, VK3AMK.

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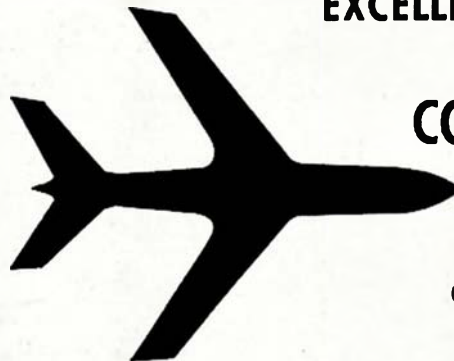
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Salary: \$98.88 per fortnight. In addition, minimum shift allowances (excluding overtime) average \$24 per fortnight.

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SWL

Sub-Editor: D. GRANTLEY, WIA-L2022
P.O. Box 222, Penrith, N.S.W., 2750

Those remarks of mine under the heading of "Comment" in the April issue have brought forth many letters from our out of town listeners who, in the majority, agree with my comments. On the subject, I have nothing more to say, but we would like some suggestions as to what can be done for the S.w.l., or should I say what the listeners can do for themselves. If any listener, particularly from an isolated area has any suggestions as to how the S.w.l.'s lot could be improved, then I would like to hear from them.

The mailbag this month has been very large and most helpful, and without further ado, we shall cross over to VK6 and say hello to George Allen, who comes in this month once again per medium of tape and letter. George has been on a trip to the Eastern States and has returned home after a fine visit, which included much time with his and our good friend, Eric Trebilcock. A very interesting log extract from his loggings on 1.8 Mc. is of exceptional interest, but keep in mind that George does operate from W.A. and is in a far better position to hear this DX. The following calls were heard on top band, all using c.w.: GM3FSY, G3UNT, KA9MF, W0GDH, W0GCL, KA9AK, JA4IO, W9NE, W6ITY, W6RW, W6EEN, W7SFA, JA2CLI, JA3AA, JA1CQ, W6EEN, K9YWO, W8CZT, VK9GN, W0VXO/0, VK3AFN, VK3GU, VK3TB, W8GDQ, G3MYI and G3RXH. Times varied from 2100 to 1200 G.M.T. and RST from 229 to 569.

Over to VK5 where Ernie Luff has scored some more QSLs, namely 3C4ZX, G3CFVL, G3JFB, G6XM, G6VQ, G2RO, OE1HJ, VE5CYL, OA4JR, 3C3WY, G3PRJ, G6RC, VK6CW, VK-8KK, W8BFFK, 6Y5BG and SM6BSW. His score is 239 heard, 174 confirmed in 38 zones with 42 States.

An old friend of mine in Ron Hanel, of Wodonga, L3308, has been very busy on the 20 mx band, using an EIL HCR-62 plus a ZL mini-quad and multiple dipole. With this gear he has logged 128 countries, with 56 confirmed in 25 zones, and if the list of countries heard of late is anything to go by, we will be hearing a lot of Ron in the days to come. Some loggings are: UP2NV, EP3AM, UG6AW, CR5SP, G3CFMV, CTIAW, F08BY, 91CN, ET3USA, VR1L, KJ6BZ, HRIKAS, TA1AH, VP7NH, HK-0BKW, VP9EP, OD5FO, TG8GF, KG4AN, YJ3BW, PY1CK and UA0IM to name a few.

Thanks to Jack Clayton, L3015, of Tantanoola, Al VK4SS, Ray Moseley, Bernard Hughes and others who have either written in or taped with news. By the way, chaps, if you hear anything out of the way in DX, particularly from Oceania, Al VK4SS, our DX Editor, would like to hear from you prior to the end of the month.

Recent prefixes heard by Steve L5088 include KS6, OX3, 9Q5, GM3, VP7, CR7, 9K2, FM7, JT1, UC2, 5W1, ZB2, PZ1, HB0, YK1AA, EP2, OY7 and EA8. Maurice Batt, of Rokewood Junction, Vic., made his first log entry in Oct. '66, and has now logged 200 countries in 46 zones, with 47 confirmed. This, too, is very good going and we look forward to hearing much more from central Victoria.

Mac Hilliard over in Campsie has been busy with the receiver and was fortunate to log two new countries, OY and EA8, in the one QSO, taking him to 253 heard. Mac was able to visit the Eastern Conference in Sydney and had the pleasure of meeting many old friends from VK3 and the overseas delegates.

Much the same report could be given from this QTH, plenty of good and interesting DX to be heard on 20, at all hours of the day, in fact my last log entry showed a QSO between TG8EP and LX2FB, not newbies unfortunately. Scores here 307 heard, 178 confirmed.

The first batch of cards from the W.P.E. Bureau have arrived here from Roy Waite, and where possible have been mailed direct to the listeners concerned. This procedure will be adopted for all cards which are received here for other listeners, there is no need to forward a s.a.s.e. Cards are held here for L2330, whose QTH I do not have. As I have no up to date list of S.w.l.'s in the various Divisions, if you are not in the '66/67 issue of the Call Book, and have the possibility of receiving cards from overseas, particularly via N.N.R.C., P.E. or I.S.W.L., would you give me your name and QTH so that I may forward any cards on. This applies regardless of whether you are an Institute member or not. One of the well known I.S.W.L. S.w.l.'s in Peter Thackeray, G11387, is migrating to VK2 and leaves G land in May.

DX NEWS

The following have been heard frequently of late: 19RB/4U, ZD5V (all bands incl. c.w.), VK9XI, VK9RJ, ZL5AA (who QSLs via Jock ZL2GX, but please make your reports good ones and cover a number of contacts), TA1AV, MP4DAT (Das Is., QSL G3USK), PX1CW (Box 86, Zaragoza), LA0AD operated by Bob Schneider, DU1DBT 14105 s.s.b. 4A4A was due to appear during mid April for six days from Socorro Is., using eight operators, c.w. and s.s.b. SK7s AA, AL and AX are reported to be on, QSL DX Club, Box 24, Vaggeryd. Last, but not least, 7Z3AB will QSL via W4HEG, and GWSB0C, who is regularly heard here, is Mr. H. Synge, Plas Draw, Ruthin, Denbighshire, Wales.

VICTORIAN DIVISIONAL NEWS

The first few meetings of the VK3 Group has shown a steady drop in attendances and we are down to around 15 members per meeting. What has happened to the other 300 members? We now have 375 persons issued with S.w.l. numbers in Victoria (but only 250 Associates.—Ed.) and the Group would be delighted to see some of the members of previous years. The Group wishes to thank the members who are regularly supporting band reports, etc., for the Sunday morning broadcasts from VK3WI, anyone wishing to submit reports should contact Harry Roach, 28 Foster Ave., Glenhunting. Thanks to Ian Woodman for the foregoing.

OVERSEAS CLUBS

We are always interested to hear of Amateur Radio being of assistance or comfort to those in need, and in view of this, I would like to pass on to you a short run-down on the Radio Amateur Invald and Bedfast Club. It will be readily understood what a valuable hobby Amateur Radio is for invalids, disabled persons and the blind. It is one sphere in which these fellows can compete equally with others; no distinctions or concessions are made or asked for.

It was to encourage this, and to help each other, that this club was formed 11 years ago by a handful of invalids, and the membership has now grown to over 400, with a further 200 supporters and representatives who visit the members in their area to keep equipment in order and to assist in any way necessary.

A monthly news-letter is circulated and there are twice weekly get-togethers on Amateur frequencies to exchange news and give pleasure to the S.w.l.'s in the club. The club also assists those wishing to obtain their tickets by supplying text books, and the use of recorded lessons and braille information. All this work is done by invalids themselves as is the recording of Morse on tape and the reading of the news-letter for blind members. Braille transcribing for the club is done by prisoners at two of H.M. prisons as a voluntary work.

As illness knows no barrier, the club therefore is class-less, and non-denominational, funds being raised by voluntary subscription. There are members in every continent and in many countries, and the exchange of letters and tapes does much to increase the family atmosphere which is so important for those cut off from the outside world.

Several homes of the Cheshire foundation for the Relief of Suffering have Amateur Stations and belong to the R.A.I.B.C. with their own weekly get-together, and it is the hope of Group Capt. Cheshire that in time, all the homes will be linked by Amateur Radio. Club stations are flourishing at Orthopaedic Hospitals and Schools for the disabled. On the supporting side, various schools with radio clubs take a great interest and are ready to help wherever possible.

QSL CARDS

Quite often I get a query in the mail from a newcomer to the S.w.l. ranks, who is at a loss when it comes to the designing and printing of their own QSL cards. Design of the card is most important. It is necessary to have the call sign of the station heard in a very prominent position to assist the QSL Bureau, and other considerations are to have as much data printed on the card and have adequate provision for all the necessary information of the QSO being reported. Of course, if you attach a report sheet, or send the card direct to the station concerned, you can write as much as you want, but my remarks are directed to those who will be using the Bureau.

The days when a fancy and expensive card would extract a QSL are over and these days a station either QSLs a S.w.l. report or he does not, thus the elaborate card is quite unnecessary. A plain black and white card on the lightest possible board, provided it is well designed, is adequate. The proven "log extract" type of layout is ideal, with printed details of gear, QTH, etc., if possible, with a

clear impression of your club identification and affiliation, and most important, cut to size to fit a standard envelope, will do just as good a job for you as will the glossy effort which costs you a packet.

Recently the Elizabeth Amateur Radio Club, of which I am proud to be a member, had a large number printed and made them available to members at a very reasonable cost. Printed on good quality card, and well laid out, it caters for Amateur and S.w.l. alike, and I feel that it is well up to standard. One suggestion though, for S.w.l.'s using this card, fill in the name of the station being reported in a different color to the rest of the report. It assists our overworked QSL managers to sort them out. Also I pass on a request from the VK2 QSL manager, Ted Whiting, who asks that where possible, if you know a station's QSL manager, write his call on the back of the card.

Costs of cards vary, the first ones I had printed cost me about the equivalent of fourteen dollars for two thousand. This E.A.R.C. cards compared favourably to this figure, but of course had to be overprinted (I use a rubber stamp). Recently I had a quote for a reprinting of my original card and for 2,000 of the same quality I finally got a similar quote. The more you have printed, the less they cost, and 2,000 I find is a handy sized order. Don't write and ask me to recommend a printer because I can't do this, however there are plenty of them, even possibly in your own town, whose quote will compare more than favourably with anything you can bring in from the States.

That winds it up for now. Thanks to the many who have written and whose letters have not been acknowledged through this column, and for a final final, those comments in the VK5 column of the April issue of "A.R." were entirely the property of the gentlemen concerned, I didn't have a finger in the pie at all. '73, Don L2022.

Publications Committee Reports

The committee met on 6th May and received correspondence from VKs 1VK, 3AMK, 4AT and 4LW. Technical articles have been received from VKs 2ZIF, 2AOU, 3WW and 5FS, and the DX Editor VK4SS. Al has indicated he is going on a much-needed vacation and will be unable to submit any DX notes for the July issue. He also indicated that he would like to be relieved of his task and asks if anybody would be prepared to continue his column. He indicated early this year that his health was far from good and he did not think he would be able to continue much longer. We ask anybody prepared to carry on the burden to write to us at P.O. Box 36, East Melbourne, 3002.

Some discussion was held on the subject of the poor standard of some of the notes we received during the last two months, but in view of the fact that notes will be discontinued with this issue, no immediate action need be taken. It was decided, if and when notes are resumed, we will once again publish the correct method of preparing the notes and only accept those which conform.

A review of technical articles on hand was made and it was agreed that in view of "A.R." being financially embarrassed, the cost of blocks was going to be a problem and we should if needs be, restrict ourselves to 20-page issues.

It was agreed that every effort should be made to keep "A.R." afloat, but that the Victorian Division should not be expected to carry the loss. The additional 2 cents per copy voted for at the Federal Convention was considered unrealistic and it was agreed that Federal Executive be asked to conduct a postal ballot of the Divisions asking for the 5 cents originally sought by the committee.

ANNUAL QUEENSLAND STATE CONVENTION

will be held at
ALEXANDRA HEADLANDS
(70 miles North of Brisbane)

over the week-end of
14th, 15th, 16th JUNE, 1968

Competitions will be held for HF, VHF, A.O.C.P. class members, Y.R.S. members and the XYLs.



FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT END OF PARAGRAPH)

FEDERAL QSL BUREAU

The annual Independence of Columbia Contest is scheduled for 0001Z, July 20, to 2359Z, July 21. All bands, 80 to 10 metres, and all modes, but no cross modes. A limited supply of details and log forms is available from this Bureau.

The L.R.E.M. (Mozambique) has made available a new award known as "Mozambique," and also the W-CR7-A Certificate. Details of both from this Bureau.

The N.R.R.L. (Norway) draws attention to its Norwegian Award 1968, which celebrates the 40th year of the foundation of the N.R.R.L. Full information from the Federal Bureau.

QSLs for the operation of VK4HG from Willis Island in 1967 have been issued either direct or via the Bureau.

A further supply of information slips on the Budapest Award have come to hand and are available on application.

Cards through this Bureau totalled 6,000 for April. While this 50 per cent. reduction is appreciated, the envisaged reduction to 25 per cent. has not been attained, mainly due to the reluctance (or obstinacy) of the U.A. Bureau to conform to the arrangements. A despatch received in April from Moscow consisted of 17 packages totalling 23 lbs. weight and contained 3,000 QSLs! Three air mail advices of the new arrangements have been ignored. In a further attempt to bring them into line, a fresh copy of the arrangements, written in their own language has been sent to the President of the Radio Sports Club, Moscow. The translation was composed by Alan Elliott, VK3AL.

Am still awaiting information on the disposal of QSLs for VK9RJ, ex New Guinea and now at Nauru. Any dope will be appreciated as the pile is steadily mounting.

Ray Jones, VK3RJ, Manager.

NEW SOUTH WALES

COUNCIL NEWS

At the time these notes were written the main topic of news is the I.A.R.U. and Federal Conventions, which by being held in Sydney, consumed all available Council effort. The N.S.W. Bulletin is being held up so as to contain a preliminary report of these events and to include the Annual Report and Balance Sheet for the Division's last financial year.

The auditor's report of the Division's finances shows an increase from just over \$9,000 to \$11,320 in totals since last year and a loss of \$1,650 overall. While the loss quoted appears excessive, some \$500 covers written off furniture, 8890 depreciation, and costs of repairs and renovations of \$1,538.

A visit to W.I.C. Atheson St. will soon show that the money expended has been put to good use, the building both externally and internally has been improved considerably, both for members and visitors to the new store. If you have not been to W.I.C. since the New Year, then how about coming to a meeting? By the way, if you read this column and you have not yet renewed your subscription, then this may be your last "A.R." until you do renew. The sub. is cheaper than anything else you buy . . . and it has an assured life of 12 months!

Senior Vice-President of the Division, Peter 2AXJ, has advised of his resignation from Council due to ill health. Peter has rendered considerable service to the Division both as Councillor and W.I.C.E.N. President-Chairman. However, Peter will continue to carry the important position of President of W.I.C.E.N., it being hoped that the lessening of the burden will help him to recover his health. Your correspondent is to some extent amazed at the small number of office-bearers carrying the 1,500 odd members of this Division, many holding two or more positions as did Peter. Maybe the time is approaching when a member can hold only one office position at once.

After some nine months as Secretary of the Division, Mrs. Long ceased duties in early May. Mrs. Long was of tremendous assistance to Council in re-organisation of the office services of the Division and the thanks of all are due for her untiring efforts for tasks involved. The position of Secretary has been taken up by Miss R. Fletcher.

MONTHLY MEETING

On Friday, 26th April, the April monthly meeting was held at Wireless Institute Centre, Atheson St. The President, Keith 2KJ, was absent due to business commitments and the Senior Vice-President was also absent so the meeting was opened by Councillor Don 2GN. The minutes of the previous monthly meeting were read and accepted. The customary list of new applications for membership was presented to those present for acceptance and were duly passed and welcomed to membership of the Institute.

Don then advised the meeting that due to the absence of the President and the lateness of the arrival of the Bulletin, which contains the auditor's report, the adjourned Annual General Meeting would again be adjourned until the following general meeting in May. Don then introduced the lecturer, Mr. Nicols, Director of Forward Planning of S.T.C., who then gave a very interesting lecture on telecom. systems needed to meet the requirements of the Mt. Newman iron ore operation in W.A. Colour slides of the ore handling operations at Hammersley were shown.

The magnitude of the project was quite impressive and the lecture was enjoyed by all. A vote of thanks was moved by Bill 2YB and passed by acclamation.

Following the lecture, a report of the Conventions was presented to the meeting by Pierce 2APQ who endeavoured to cover the various aspects of the Conventions in some detail. From the topic of the Conventions, the meeting then discussed a number of matters finally being closed for the usual cuppa and ragchew.

W.I.C.E.N. NEWS

During April the annual meeting of the Group was held and the election of officers for 1968 took place. The result of the election is as follows: President-Chairman, Peter 2AXJ. Secretary-State Co-ordinator, Vic 2VL. Committee: Brian 2ZQX, Ian 2ZIM, Ken 2ANT, and Dave 2ZDD.

Activity during April was centred on Atheson St., with a visit to Newcastle by Peter 2AXJ to lecture to the Hunter Branch at their May meeting on W.I.C.E.N. The Branch has a considerable number of mobiles and it is believed that a link with Sydney net is being established this year.

BLUE MOUNTAINS BRANCH

At their recent meeting the Branch held the election of office-bearers for 1968, the results of these elections were: Chairman, Bill 2HZ; Vice-Chairman, Alex 2EX; Secretary/Publicity, Danny Cliff; Treasurer, Alf 2ZMW; Catering, Peter Elchauer; Construction Committee: Bob 2ASZ, 2ZGW, E. Broderick, and Peter Elchauer.

The Branch meets on the third Friday at Springwood. Details of the meetings are published in the Bulletin.

JAMBOREE-ON-THE-AIR 1968

The Australian Boy Scouts' Association will be holding the 11th Jamboree-on-the-Air on 19th and 20th October this year. If you would like to participate in this event contact Asst. Branch H.Q. Commissioner for Training, Mr. R. V. Lawrence, C/o. Branch Headquarters, Baden Powell House, 285 George St., Sydney.

Your assistance in this event could lead to some Scout or Guide taking up Amateur Radio and even making a career of the hobby. Another Amateur and W.I.A. member added to the ranks won't take up too much space.
73, Stan 2ZRD.

HUNTER BRANCH

At the meeting held on 3rd May, a good gathering of members was present to hear an interesting lecture on emergency procedure.

SILENT KEY

It is with deep regret that we record the passing of the following Amateurs:

VK5LF—Len Sawford.
VK6BA—Bill Moore.

given by Peter 2AXJ who had travelled from Sydney for the occasion. A great deal of discussion ensued and many views were expressed. However, it was agreed that the v.h.f. 1.m. has meant the introduction of more activity for quite a few members. Even though most of those on this band seem to be equipped with crystals (germanium diode type) in the receiver, it may come some day that they do tune the front end to hear the signals from the few with good gear. (That, by the way, should cause a stir!) And while on the subject of v.h.f. operation, mention must be made of the return of the wanderer, John 2ZBD, or baby doll as one Marine View Villain put it. Not only did John return but he brought with him a brand new XYL, Vivienne, to share the joys of Amateur Radio. I am told that no lessons in theory of radio are being given lest there be the need for duplication of equipment, but this could all be a wicked fable.

And, since we did say something about new XYLs it is my great pleasure to thank all those who were concerned with the beautiful gift given to the 2AKX's at the last meeting. With almost military secrecy the task was accomplished and the most surprised member of the audience was the person who was supposed to be most surprised. I certainly never expected such an honour to be bestowed upon us and words are inadequate to express my gratitude for the thought. Thanks chaps from me, and Arigato gozaimasu from Kayoko.

Members had known for some time of the departure of Past President, Stuart 2AYF, for the wilds of Wollongong, Port Kembla, or whatever, but the action of the Branch in giving him an inscribed microphone as a memento of the time spent with us was a very fitting one. Stuart is to become an even more important man with his company, John Ly-saght, and the general manager's chair will be his in the southern city. We wish you all the best Stuart, and now that you will have a bit more time for the hobby, let's hear you on the air—often. The presentation of the departure gift was ably carried out by Lionel 2CS.

For some, membership fees of the Institute are easy to pay, for others difficult. For this reason, the Branch decided at the last meeting to subsidise the initial membership fees of our new junior licensees as from the meeting date. Those benefiting by this move are Ian Miller, a fifth form student at Newcastle Technical High School, and Greg Cross, a sixth former from Whitebridge High. Both young men have just won the coveted A.O.L.C.P. and this as a result of membership of the Westlakes Radio Club. Congratulations are due to these chaps who have shown again that it can be done. And, of course, the score at the Club grows by the day, or exam, if you like, it now having the largest number of school student passes in the Commonwealth. Another two who were also successful at the last quiz were Les Payne, another Westlakes Club member, and Neville Threlfo. It goes without saying that all are awaiting the issue of the call sign, perhaps most of all Neville, our hard working broadcast co-ordinator, who wishes his appearance on the broadcast with the call to be the first news of its issue. Well done all, and welcome to the ranks.

One who has been in the ranks for quite a long time now but who never loses his interest in Amateur Radio is Bill 2XT. In the recent I.A.R.C. Propagation Research Contest he made the almost unbelievable score of 90 thousand plus with over 700 contacts for the month. Surely this tally must win him a pennant or plaque from Geneva. All on side-band of course.

Whether by chance or design, many members are now thinking about a.s.b. gear and reckoning that it may be the answer to at least some problems of communication. The Westlakes Club is the latest to take the plunge and, by the time you read this, you may have heard them on the air with a duck talker. It was made possible by the generosity of the members and many Hunter Branch members as well. Thanks chaps for your great interest.

And while on interest, how about the next interesting Branch meeting on Friday, 7th June, or 5th July, if you miss that one. The usual venue will be used, Room 6 in the Clegg Building at the Tech. at 8 p.m. See you? 73, 2AKX.

VICTORIA

EASTERN ZONE

The Eastern Zone held their annual convention over the week-end, 20th and 21st April, at the Gippsland Educational Tours Hostel, near Mirboo North, and this convention turned out to be one of the best conventions we have had for several years, with a different format having technical sessions included. Attendance was excellent, having 70 sitting down for the dinner, after which David 3QV gave an excellent discussion on the history of quartz crystals, their limitations, and modern uses, demonstrating frequency shift with circuitry and overdriving.

The annual general meeting followed, the outgoing President, George 3ZCG, handed out a written detailed President's report and gave a brief verbal report. New office-bearers then were appointed as follows: Stan 3ZPL, President; David 3ZQZ, Vice-President; Graham 3QZ, Zone Co-ordinator and Organiser; Lee De Vries, Secretary; Zone call-back stations, 3AWV and 3DY; Zone correspondents, Rod 3UG and George 3ZCG (phone 4-3953).

The convention portable station, 3ANC/3, provided talk-in facilities. During the meeting many points were discussed, also Graham 3QZ spoke on W.I.C.E.N. and the Zone DX award certificate, which should be printed by our award committee shortly. During the meeting the ladies enjoyed a pottery demonstration by Dennis Dwyer, one of our foremost potters. After supper, a survival W.I.C.E.N. disaster film was screened. 30 members and their families stayed overnight at the convention site.

We also had a very good roll up for the Sunday events, starting after breakfast, whilst the women and children visited the pet animals, rabbits, monkey and kangaroo, etc., and went for nearby walks, finding some mushroom rooms. The men collected technical literature and visited the trade display, represented by Pye Pty. Ltd., Bai Electronics, and Dalmat Electronics. The first lecture was given by Fred 3YS about s.b. equipment and accessories, followed by Les 3ZBJ who spoke for quite some time on v.h.f. and u.h.f. solid state Amateur circuitry with practical sub-chassis and units on display.

After the midday dinner, the field competitions took place, which included children's events, 6 and 2 mx scrambles and a 2 mx hidden transmitter hunt won by Trevor 3ZGA. After afternoon tea, the "prize giving" took place, some excellent prizes being donated by the trade. This year's winner of our new "David Scott Award" was Rodney 3UG (ex VK0CR).

Everyone had such a good time and excellent meals, etc., the members decided to hold our next convention same date (approx.), same place, next year. On the way home, some of the members visited Reg Dyke's Mirboo North Displays. Please pass all news on to either myself or Rodney. 73, George 3ZCG.

GEELONG AMATEUR RADIO-T.V. CLUB

Office-bearers elected at the annual general meeting of the Club were: President, Ian 3ZIB; Vice-President, Mike 3ASQ; Secretary, Bob 3IC; Treasurer, Russ 3ZUC; Librarian, John McKeown; Equipment Officer, Graeme Pattie.

With visits to radio stations, etc., fox and transmitter hunts, field days and portable operations, the new year should be a very active one. Theory classes for both novice and advanced students will be held. The Club is to have a stand at the Geelong Trade Fair and Motor Show being held in July.

The last week-end in April saw an invasion of the Latrobe Valley by Club members who inspected the Traralgon studio of GLV10, the radio section, power stations and open-cut coal mines of the S.E.C. V.h.f. radio contact was made with local Amateurs on both days.

QUEENSLAND

The big event in June is of course the Alexandra Headlands Convention. Just about all of South Queensland's Amateur fraternity will be attending. For those in VK2 who, perhaps, would like to attend (or for those who don't read their "QTC"), the Convention is being held over the week-end of 14th, 15th and 16th June. Again this year, the Bundaberg Amateur Radio Club will be organising. Those who remember last year's successful Convention will be along again this year to enjoy the surfing, eyeball QSOs and popular contests.

At this time, this Division is in perhaps the strongest position it has ever been in. This is due to the good work being done by Council and to the fine support of members. For the first time, our part-time Assistant Secretary is being paid a small honorarium. As members will have already noticed, this has meant efficient and speedy handling of all business conducted through Box 638J.

In line with the progressive policy of Council, the disposal business has been expanded. While some miscellaneous items have been offered, they have cleared well. Such items as alarm bells and electric clocks have to be purchased by the disposal officer in order to obtain electronic equipment in the same sale. Perhaps not unexpectedly, some members have shown keen interest in these odd items. The tangible result of this has been the transfer of a sum of \$500 from the disposals account into the general building fund. Members will remember that the last major item purchased with excess funds from the disposals account was the Galaxy V. for VK4WI.

Those who listened to the Sunday morning news broadcasts from 4WI during April and May will have noted the absence of the familiar voice of Vince 4VJ. A bout of illness forced Vince to enter hospital. Temporary arrangements were made to have Harold 4HB conduct the broadcasts. While the 20 mx transmission had to be made using a.m. (5PS to note!), country members were still able to copy this transmission quite well. Stations heard in the 20 mx call-back recently have included VKs 4OW, 4LB, 4VX, 9WD, 4QW, 4BQ, 4LZ and 4LO.

The big event for next month is, of course, the Sunshine State Contest. This will be held on the week-end nearest to the 20th July as a tribute to Jack Files. More details next month. —VK4 Division.

CENTRAL QUEENSLAND BRANCH

Our regular monthly meeting was held on 15th April with a good attendance of members present. Main business centred around the projected trip to Tannum Sands—details are mentioned later—and the advice that the printing of the QSL cards was now under way, with distribution to members being effected in the near future.

On the week-end, 20-21st April last, Amateurs from Rockhampton, Biloela and Wide Bay areas converged on Tannum Sands for the "Get Together". As predicted, it was an outstanding success—17 Amateurs were present, and with associated XYLS, harmonics and visitors, a total of 78 persons enjoyed a most interesting and pleasant week-end. It should be mentioned that Jimmy 4HZ and KYL made a special trip from Gympie to renew acquaintance with old friends.

Several valuable items were donated by commercial and private sources for competition prizes in fox hunts, etc.; incidentally, one hears that some enthusiastic "foxes" employed camouflage reminiscent of wartime, to elude the "hunters". One of the highlights of the week-end proved to be the screening of interesting travelogue colour slides made available by several of the Amateurs present. In retrospect, the "get-together" was highly successful, and the general consensus of opinion indicated that these events should be held twice each year in future—the personal contact between families, from different areas, serves to strengthen friendships already made by radio.

On the h.f. band, the return of Hal 4DO from holidays has been evident—daily DX contacts are once more in full swing, and the word is that his latest stock of QSL cards will only suffice for a short time! Geoff 4FK still frequents the h.f. area, but seems to spend most air-time on 6 mx. Incidentally, 4FK has installed the 6 mx mobile gear into the new chariot, complete with remote control system—works f.b. to boot, you might say!

During this April, the Rocky v.h.f. gang were very active in the DX sphere; with almost daily openings into JA area, and the pages of the log books have been rapidly filling with a wealth of JA call signs—there seems to be almost no end to the number and variety of JA Amateurs calling "CQ VK!". The ever consistent group, Lance 4ZAZ, Bob 4NG, Frank 4ZFF, Doug 4ZDK, Gordon 4ZGA and Lyndsay 4ZIM, have kept the Rockhampton area name well to the forefront on JA-land. Reliable reports have it that certain QSO tallies are well up in the multiple hundreds for the present 1968 JA season, so far! However, at time of writing these notes, the band openings seem to be decreasing, and perhaps one may be pardoned for paraphrasing somewhat diffidently "In the main, JA name calls plainly on the wane" (shades of My Fair Lady!!).

From Biloela we hear that Dave 4ZDR is back again in that area—looks like Don 4ZFB will have some competition in the DX field now! The espionage service reported that these two gents had a good time at the Tannum Sands affair!

By the time these notes are published, several local Z call aspirants for full licences will have braved the c.w. hurdle—we hope that the result will be successful for all; and the thanks of the group are extended to Geoff 4FK who does yeoman service in providing regular Morse sessions. His meticulous Morse is particularly good copy practice.

Mention must be made of the visitor, John 4ZJT from Pialba, who made short-stay trip to Rocky to meet the local gang. A smart shack-crawl under guidance of 4FK and an eye-ball QSO with members at the monthly meeting, enabled John to make many new friends in quick time.

We understand Frank 4FN will be back again in local area very soon. We miss his lively presence at the meeting, that's for sure; also, we must record that our Secretary, Charlie 4ZBQ, has to face up to a return to the "salt mine", after three or four months' long service leave! Things are tough, Charles!

Now the scribe is QRU—just let me close with the usual invitation to all visiting VK Amateurs, please contact us if you visit Rockhampton. You will be made welcome. 73, Lyndsay 4ZIM.

BUNDBERG AMATEUR RADIO CLUB

The monthly meeting was held on 1st May, at the club rooms in Avoca Street. A good roll up of members was present. The item of interest for the night was a discussion on FETs.

The main item of news this month is, of course, the very successful camping week-end held at Tannum Sands on April 20-21, together with the Central Queensland Branch and the Biloela Club. The roll up far exceeded our expectations and the Club members really enjoy the company of the Rocky and Biloela boys. I'll leave the write-up of this camping week-end to my CQ counterpart, Lyndsay. At our April meeting we welcomed John 4ZJT. John lives at Pialba, about 80 miles from Bundy. He had worked many JA stations but no VKs. We soon fixed the situation by all turning our beams to the south and John worked five Club stations in the first four hours.

Roy 4ZWR and John 4ZJT claim the record for the longest 6 mx QSO in the Club of 5 hours 4 minutes with the complete time devoted to technical discussion.

The A.O.C.P. classes are progressing well in the capable hands of Roy 4ZWR. Roy runs two classes a week with eight class members. The Y.R.C. classes are very popular every Saturday morning with 16 elementary and eight junior lads. Peter Fry and Ray Evans are in charge of these Y.R.C. classes.

During last month, we had the pleasure of gaining a new Club member in the person of John Meyer from Mundubbera. We haven't had an eyeball QSO with John yet, as he lives about 150 miles away, but we look forward to doing so. 73, Rusty 4JM.

IPSWICH AND DISTRICT RADIO CLUB

According to my calendar the necessary number of days have passed to make a month so once again we have news time, and as usual the brain is wracked to remember what happened during the month.

The main adventure of the Easter holidays was a trip made by 8 club members, XYLS and harmonics to Auburn, some 70 miles north of Chinchilla and the holiday in the country was enjoyed by all. Some nearby caves were visited and these caves contained some old Aboriginal paintings which made the visit more interesting. Contact with the holiday gang was maintained on 40 mx by Dave 4HW, and Ron 4RG kept his end up with the 40 mx 8w. mobile. Other members travelled to VK2 for a short stay in Casino, but no gear was taken.

A film evening was held the other Saturday evening, the films being supplied by the JA Consul in VK4, and were most entertaining. All present hope that more films of the same calibre will be available for screening again in the near future.

A very interesting piece of v.h.f. gear was shown at the meeting by Roy 4ZRM. It was a 2 mx converter built around three FETs and the size of the unit was impressive. We hope we can get Roy to give us a burst on its construction and other interesting points. It is possible that members may scrap their valve models and construct this unit as it uses a minimum number of components and cost-wise it should run out cheaper than the valve models. With a bit of luck we might be able to let all "A.R." readers in on it if we screw Roy's arm a little.

It won't be long now before we will be up to our ears in election of officers and you may even score a new scribe to present the Club notes, but until then you will have to put up with me. 73, Warren 4GT.

SOUTH AUSTRALIA

The April monthly general meeting of the VK5 Division was held in the club rooms to a little below-average attendance of members and visitors. The President, Tom 5TL, opened the meeting on time and introduced the guest speaker, Mr. P. Rhen, from the S.A. Institute

of Technology, who was to lecture on "Solid State Integrated Micro-Wave Circuitry". During this very interesting lecture, he covered quite a bit of ground and discussed at some length, thin film circuits, semiconductor integrated circuits, multi chip integrated circuits, and thin film integrated circuits. He then gave a short history of these devices, together with a description of their construction, and also described the three types of packaging of the integrated circuits, military space and industrial. Closing the lecture with a discussion of the costs and the advantages and disadvantages of integrated circuits, he also gave his opinion as to where it is all going. All in all, a very interesting lecture, both on the blackboard and with the plentiful supply of samples to illustrate his point, and judging by the applause which followed the vote of thanks ably proposed by Bob 5PU, it was much enjoyed by all present, and if I may be permitted to offer my humble opinion, he certainly knew his onions and how to put it over.

Very little business, either Divisional or Federal was discussed, and Geoff 5TY presented his report on the Federal Convention and joint I.A.R.U. congress held in VK2 over the Easter week-end, and was thanked for his efforts in this regard.

He took the opportunity of presenting the two Life Membership badges that he had brought from the Convention to George 5RX and Warwick 5PS and said a few words of commendation to them both for their long services to the VK5 Division.

George, in replying to the presentation, said he was stuck for words, but he had always tried to do his best for Amateur Radio and the Division in general, and if every Amateur present did the same, then all would be well for our hobby. Warwick, noted for his modesty, self-effacement and natural shyness, said without hesitation that he was stuck for words, but would content himself with agreeing with all that George had said, and added for good measure, that now the Liberal Government had got back in power in VK5, a couple of O.B.E.'s should also be considered! Judging by the reception this received from all present, I feel that the chances of such an honour being bestowed on him at least, are decidedly flimsy. George perhaps, but that blowhard, never.

One or two matters, purely of a domestic nature only, were then discussed, and with the hands of the clock showing 11 p.m.—deadline for you—the meeting closed somewhat in a hurry, so much so, that I had the impression that the Alsatian Houndawg had returned from his burying place, a thought that speeded me homewards.

Of particular interest to members at the meeting was the presentation of the J.A.R.L. pennant that Geoff 5TY brought back with him from the convention with the compliments of the J.A.R.L. The President, in accepting the pennant on behalf of the VK5 Division, said a few well-chosen words, which were received with acclamation by all present.

Among the welcome visitors at the meeting, was none other than Don 4GP, who, incidentally, is an ex VK5, better remembered as 5DL, and he was busy most of the night in greeting many old friends. He recognised me immediately, probably my athletic build, and when I suggested that I might one day visit VK4, he said at least I would not slip on a banana, but in the tone in which he said it, leads me to believe that possibly some other more painful fate was in his mind. Good to see you again Don.

Hear my favourite doctor on the air whilst listening on 7 Mc. band at Oakbank this year, none other than Colin 5XY who was heard to say that he had not done much radio of late but was being bitten by the bug once again. So far he is on a.m., but that does not mean a thing in these days!!

I also heard Barry 5YB at Keith in QSO with Huck 5JU and spent some time reading their mail. Was amazed to hear Huck say that he was anxious to cut the lawns, but as it was Sunday he did not want to be the first in the neighbourhood to start. However, let him hear just one lawnmower start up and he would be in it pronto. How unchivararolous—unchivarir—unchlv—how low can one get?

Had the pleasure of working Colin 5CY and Ron 5ZRW who were portable at Port Clinton. Col. was doing a Simon Legree act with a whip, and Ron was weeding the lawn at his orders. Ron had a bit of a grizzle when he spoke to me, but the whip proved too strong and back to work he went.

Nobby 5WK gave me a call, he described it as his annual, but I treated that with ignore and told him to call again as I was having trouble resolving his signal, a fact that caused him to prance all around the room, but we finally made it and swapped exaggerations for quite a while. His XYL was visiting one of his daughters interstate and Nobby was spend-

ing the Easter week-end alternating between QSOs and making cups of tea, and believe me he makes a potent cuppa!

Also had my usual annual contact with Carl 5SS and Frank 5MZ, although I felt for a while that I was going to miss them, but fortunately they gave a break at last and I burst in. Missed out on quite a lot of the usual VK5 contacts this year, whilst portable, mainly because there did not seem to be so many stations from the "big smoke" on the air. However, the wise men from the east made up for it and I had more than my share of interstate calls this year.

Dave 5DS was putting the loudest and strongest signal of them all when I heard him, he was working the Admiral 5VB at the time, and was telling him that he was going to make a visit to the Zoo on the next day. I have not heard him since and fear the worst. Hope they never managed to catch you Dave!!

Called Bob 5RI at Mount Bryan and managed to contact him, although he told me that the dust that was blowing at the time was reading several db. over plus 9 and naturally was making it very difficult to copy me. I finally lost him, apparently in the dust, but was well satisfied because my little 25 watts was above the dust at times.

Hughie 5BC heard on 7 Mc. working 2AHL mobile at Renmark. Stuck around in the hope that I would be able to give Hughie a call, but he folded up without any warning. Hope all is well, Otto?

Another stranger to me to be heard on 7 Mc. was none other than my old football mate of years ago, Keith 5ZY. I usually manage to work him from Oakbank, but missed out this year. Met a bloke named Bob somebody or other, who works on the Tote with me, and he claims to know you Keith. I tried to pump him for a little espionage news on Keith, but he was too canny.

Kevin 5EP is a new one to me on 7 Mc., but as he was heard to say that he is not very active, this is probably the explanation for him being a newcomer to me.

About this time every year when I take my annual leave Comps 5EF usually takes over these notes and does such a splendid job that I gnash my teeth for several months after. This year, however, my holidays have fallen in such a way that I am able to fit the notes in, and Comps has lost his annual chance to flourish his "little black book" containing the names of all the quack-quack stations in VK5, much to my mortification. Sorry about the notes Comps, I know how upset you will be over not being able to have the annual shot, but stern issues require stern measures!

Talking about quack-quack, don't let anybody tell you that they won't work Ancient and Modern stations, or won't even answer a call. I called them, and was called by them, at Oakbank, and never missed out on one. I have heard this story of social status on a number of occasions, but can only speak as I find. Maybe it is because of my modest nature, or possibly my winning ways and charm—the same to you.

Was quite surprised at the number of letters from country members of VK5 that I received commenting on my write-up on the recent lecture at the monthly meeting concerning U.F.O.—unidentified flying objects. I have always been a little dubious on my writing up the lectures on the meeting nights. I feel that I could be accused of being something of a padder—down Pincott 3AFJ, down—but apparently the country member likes to hear about the lectures. Without being over modest, I felt that I did a good job on the abovementioned lecture, and Leith 5LG agrees with me, don't you Leith? I thanguyou—I thanguyou.

Notice by the VK4 notes for April that VK5 was honoured by a visit from Bob 4RW and my life was only spared because he could not remember my initials to find me in the telephone book, and he had left his Call Book behind. Well, I suppose that I have to be lucky sometimes, although I think I would have been prepared to run the risk for the opportunity of meeting him, despite all he said about the heat in VK5. VK3, yes, but never VK5!!

Listened in to 5JQ and 5JD having a spirited discussion on the merits of their respective antennas. John is using a ground plane, whilst Al. is using a G5RV, and all in all, I felt that honours were about even in the discussion.

It is a funny thing how call signs stick in the mind, no matter how long ago the call may have been relinquished. Was listening to 5MV working Les 5NJ the other day and the call of 5MV rang a bell in my mind, but somehow I could not place it. I looked up the book and found that 5MV was the Rev. Winkler, a gentleman that I had met several times in connection with the dubbing of the session "Luthereon Hour," but I still could not get the call off my mind. Eventually it dawned on

me, the original 5MV was none other than my Chief who was licensed some thirty years ago, and gave it away to concentrate on commercial radio. Don't tell him that I had forgotten his call, he might give me a dirty job!!

Some of these Amateurs are brave men these days. Rex 5HO working Frank 5MZ, was heard to say that he had been called 50 times to the evening meal and he felt that he would have to do something about it. 50 times!! I have gone as many as three calls, but 50, not me brother!

Any time that I listen on 7 Mc. when it is open there are always more than their share of VK3s about, but the other night, or should I say the other early evening, the band was full of stations, but only one VK3, none other than Murrie 3AVO, and with a signal that did him credit. Don't know whether he had scared all the other VK3 stations away, but nary another one could I hear.

Les 5NJ, not being a "died in the wool" c.w. man, did not recognise the call of Harry 5MY when he heard it on phone and had to be very apologetic when he woke up to just who 5MY really was, and after all these years, too. Harry had shown up on 7 Mc. testing, prior to undertaking to handle the SWI broadcast on the following Sunday morning.

5M2GD passed through Adelaide recently and called Ray 5RK, late at night, with an invitation to visit the city's Chinese restaurants. Owing to the hour being close to midnight, the invitation had to be declined, but Ray and the President 5TL met him later at the airport on the way out, as he was only here for a few hours. He was a member of a party that visited the famed Barossa Valley as part of his look around our fair city and would have also visited VK6 on his way home.

Incidentally, Ray 5RK has almost completed his term as President of the Air Force Association and is hoping to see more of us than has been possible of late. One of my espionage agents planted right in the middle of the Association, tells me that he has had to entertain some high ranking Air Force "Brass" during the past year or so.

The last Scavenger Hunt organised by W.I.C.E.N. was well attended with 12 vehicles taking part. These nights are quite educational in matters of local geography and observation, and the winner turned up in John 5ZDZ, with one competitor having travelled some 62 miles to get his answers. Much to the organiser's surprise, no one called him from Bahannah in reply to the question as to how far it was to that country town from I think he was half expecting someone was on the road there before "waking up".

Regarding the geography part of the hunt, Uncle Tom 5TL found himself looking for the Tusmore Police Station on Greenhill Road, and finally had to resort to looking in the telephone book in a public telephone (a canny bird is our Uncle Tom), only to find that there was a Burnside Police Station on Greenhill Road, Hazelwood Park, but nary a sign of a Tusmore Police Station. It is now concluded that there is no such station.

One thing came out clear from the hunt. Likely future contenders or competitors should first consult their piece of paper and place the points of call in a good sort of order before leaving the starting point, as there is not much to be gained by travelling any more miles than necessary, even if you are just driving for the fun of it.

Uncle Tom 5TL passed through Berri recently and attempted to seek out Hughie 5BC, but no sign of anybody at home or at the treadmill. It is presumed Hughie had gone to Walkerle where there was a "Fishorama" with a first prize of \$1,000. My spies have not as yet reported him winning it!!

George 5RX was telling me at the meeting, with a tinge of sadness in his voice, that in 1929, when he was married, Dougal 6BY, Mayo 5WR and Len 5LF were his best man, groomsmen, and M.C. at the festivities respectively. With the passing of Len 5LF this month, only George now remains of the foursome. Such is life.

I have mentioned in these notes before of the G.M.H. Firebird Club and their net on 14 Mc., but up to date I have never been lucky enough to hear them in action. It appears that I have missed them again, because one of my spies, planted right in the middle of the Firebird, tells me that last Sunday night George 5CV, Rob 5WA, ZSSSG of Port Elizabeth in South Africa, and about 10 members of the Club in W land, were hooked up for quite a long while. Such is my luck, never mind I will get them yet.

Well, I have run out of news, and will have to be satisfied with this little lot for this month. One of these days I will manage to get a real bag full of news and have the pleasure of a real big column in the magazine—down Pincott 3AFJ, down!! I think I am going to have trouble with this bloke!!

73, de 5PS—PanSou to you.

WESTERN AUSTRALIA

Hi there! Well another page has been removed from the calendar, another Easter has slid by and our new Federal Councillor, Neil 6ZDK, is still stunned by the Federal Convention, I think. From all accounts a busy though enjoyable time was had by all, both at the Convention and at the Region 3 Congress. It was perhaps unfortunate that some countries which had expressed interest were prevented by lack of funds and various other reasons from sending a representative to the Congress.

Of most interest to us here in the West is the good news that 1969 should see the Convention held in our own fair city. This will mean that a great deal of preparatory ground work will be necessary if this function is to be a success. So, when the call comes for voluntary assistance, two paces forward march — you and YOU and me!

The merry month of April saw a smaller than usual attendance at the monthly meeting, which was of course followed by the Annual General Meeting. Perhaps it was because of the cold wet night or the fact that some folk were still enjoying the Easter break—who knows? Ours is not to reason why, etc. Sufficient to say that the necessary reports were read, revealing a satisfactory state of affairs within this Divvy. Luckily, sufficient public spirited fellows were offering and the "press gang" will not have to "co-opt" members to fill positions on the Council. Thanks chaps, and good luck as you go forward into advising and guiding the affairs of the Institute.

Our new President is Bob Elms, VK6BE, who has always given great service to this Division over the years. Congratulations Bob.

A number of new jobs have been found for members of the Incoming Council, mainly designed to lighten the burden of our hard working Secretary.

It is with deep regret that we must record the untimely passing of Bill Moore, VK6BA, and our sincere sympathy goes to his wife and family.

For those who are unable to hear the Sunday news broadcasts and neglect to read the local Bulletin, it may be of interest to note the re-commencement of Slow Morse sessions on

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Monday evenings on 80 and 6 metres. Together with the lowering of the c.w. requirements, perhaps these sessions may encourage a few more bods to tackle the Morse section of the examination.

Welcome to Kevin VK6ZKR—a new call to appear on 6 metres.

One of my ex-spies (yes, I have just sacked him) let me down badly. It seems from the meagre information offered me that Keith 6KH has moved to a new QTH. But where? When? What's the good of half a story.

Roger 6DT, struggling manfully with the problems which beset those who attempt to home-brew five-band transceivers, has been heard recently on 80 and 20; good work OM.

Alex 6AS is now sporting a very nice piece of sideband transmitter which will enable him to appear on any of five h.f. bands. He is currently delving into the receiver side of the question and discovering things about a trapped vertical antenna which adorns a small space in his back yard.

Remember that space that I have been advising you to watch with regard to the Zone 29 Award? Well keep watching!

Well that winds it up for now. 73, Ross 6DA.

TASMANIA

Your Council appointments for the year 1968-69 as follows: President VK1CT, Senior

HAMADS

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FOR SALE: Heathkit RF Signal Generator, 180 Kc. to 220 Mc. in five bands. Calibrated against laboratory standard, \$30. VK3OY, Chas Richardson, 1252 Neapean Highway, Cheltenham, Vic. Phone 93-5577.

FOR SALE: Heath Solid State Voltmeter, Model IM16 Kit. \$70. K. Pincott, VK3AFJ, Phone 25-5775.

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Vice-President, VK7AL; Junior Vice-President and Zone Representative, VK7CR; Treasurer, VK7ZRO; and Secretary, VK7EB.

The Annual General Meeting of this Division was held at the Club rooms on 23rd March, and was followed by the Annual Dinner attended by 77, made up of guests, members and their friends. We were delighted to receive the Director of Posts and Telegraphs, Mr. R. R. Gilson, and Mrs. Gilson; the Senior Radio Inspector, Mr. A. Monrow, and Mrs. Monrow; and Mr. H. Melling and Mrs. Melling as our official guests.

Northern Zone elections for the year 1968 were as follows: President, VK7ZCP; Secretary, VK7PD; Treasurer, VK7ZCW.

Our most sincere thanks go to Ted VK7EJ, our Federal Councillor, and David VK7MD, his official observer, for attending on our behalf the Convention and Region Congress held in Sydney over Easter. We look forward to their reports.

Congrats to Peter ex-VK7ZPD on gaining his full licence with the call of VK7PD, and Reg ex VK7ZAO in the same regard, call sign yet unknown.

Many old timers will remember Charles VK7CM. I am glad to report that he is again living amongst us with that call sign, having been appointed to a Professorship at the Tasmanian University.

73, Ian VK7ZZ.

former, valves, etc., \$40. SSB Exciter, output couple watts on 14 Mc., 5.5 Mc. filter, 6 valves, 7 crystals, compact handul, \$40. "Bendix" BC312 Receiver, U.S. Army version of BC348 Receiver, coverage 1.5-18 Mc. in six switched bands, 455 Kc. i.f., in-built 240v. a.c. supply, \$50. VK2ASZ, 179 Rusden Rd., Blaxland, N.S.W.

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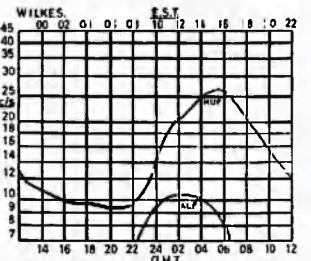
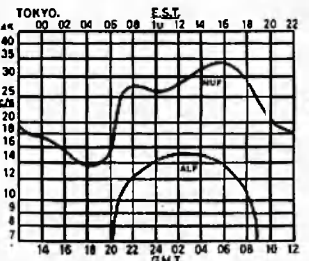
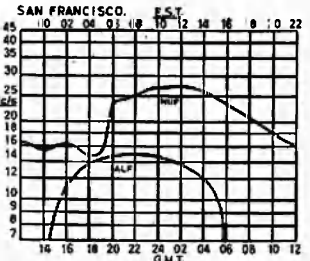
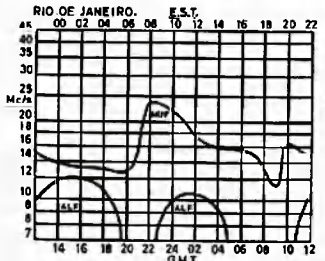
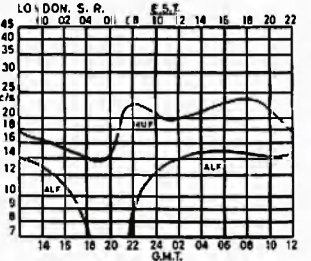
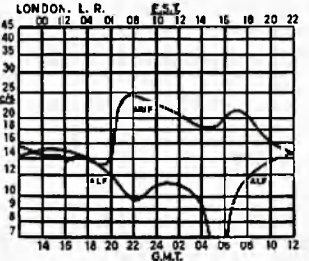
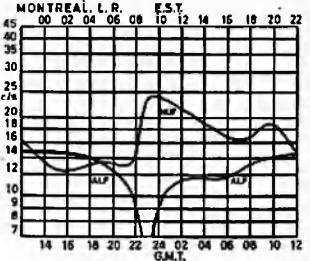
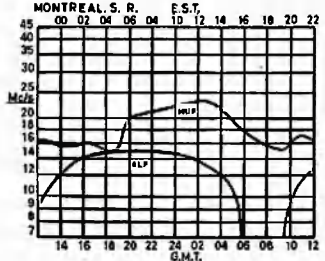
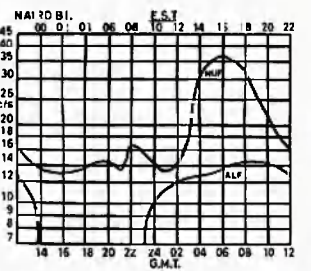
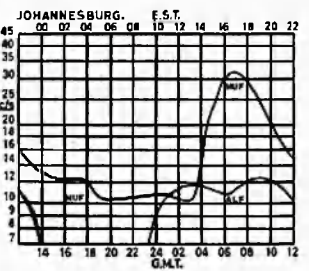
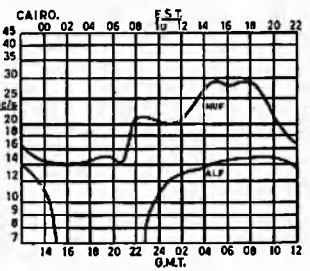
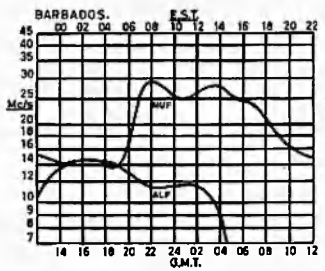
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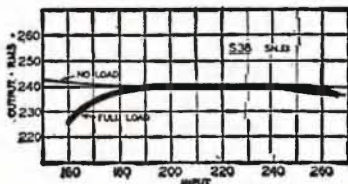
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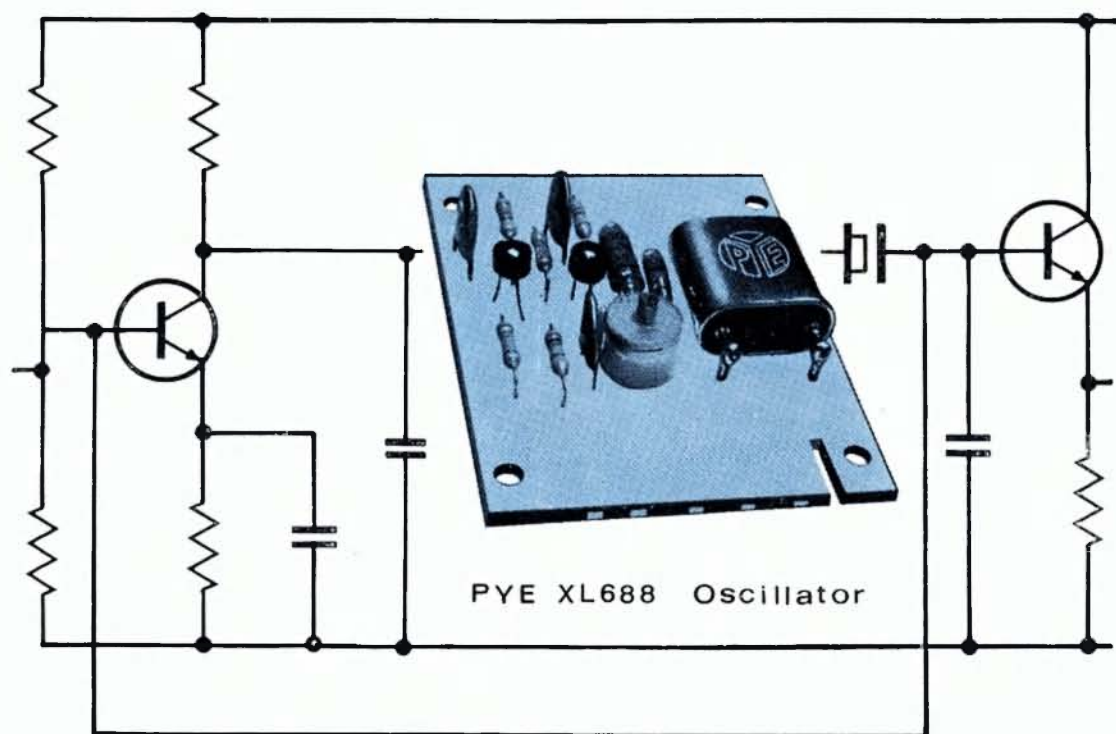
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amateur radio

Vol. 36, No. 7
JULY
1968

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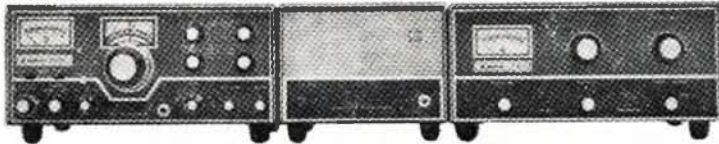
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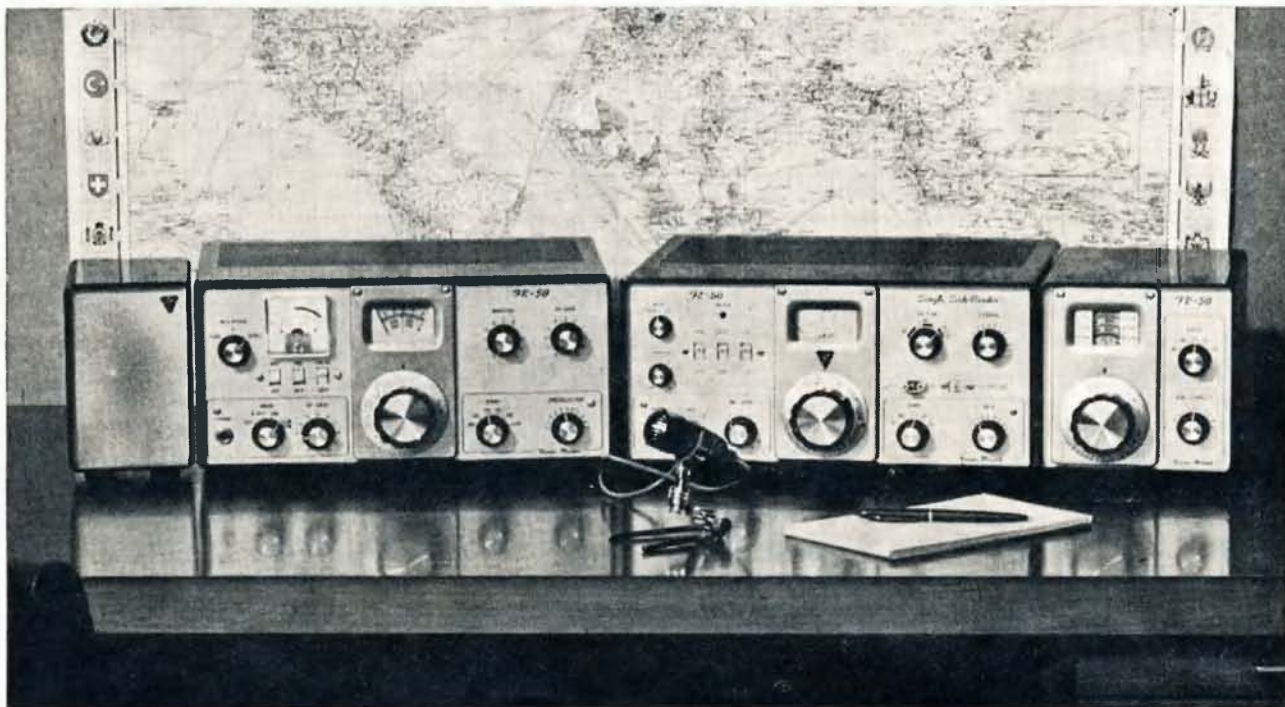
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AN ALL FET 2 METRE CONVERTER

H. L. HEPBURN,* VK3AFQ, and K. C. NISBET,† VK3AKK

THE converter which is the subject of this article is a result of work done to take advantage of advances in semi conductor devices since the 144 Mc. converter described by the authors some twelve months ago in the June 1967 issue of "A.R." Similar circuitry was briefly outlined by one of the writers in a recent issue of the Bulletin of the Mountain and Eastern District Radio Club.

The original 2 metre converter, using bi-polar transistors throughout, worked extremely well and many were built. However, the subsequent availability in Australia of Field Effect Transistors (FETs) led to their use in converters and other equipment. Examples of such use are the series of h.f. converters developed by the Moorabbin Radio Club and the six metre converter described by the VK3 V.h.f. Group. Both of these converters used T.I. 2N3819s as r.f. and mixer stages, but retained the use of bi-polar transistors in the oscillator chain.

Subsequent developmental work showed that performance could be improved by the use of cascaded r.f. stages and the replacement of the bi-polar transistors by FETs in the oscillator section.

The recent availability in Australia of the dual gate FET (specifically the 3N140/141 series made by R.C.A. and distributed through A.W.V.) led to further experimentation and the design now offered is the outcome of this work.

The overall effect has been to produce a much simpler unit having a better performance, a wider bandwidth and a significantly lower cost.

As with any converter it is meant to be fed at low impedance into a tuneable "back end" such as the station receiver. The range of output i.f.'s available with the present converter is quite wide and falls between 3 Mc. and 30 Mc. with no circuit changes and only minor alterations to the coils in the oscillator section. The circuit and coil details given in this article refer to an output i.f. of 14 Mc.

GENERAL DESCRIPTION

Fig. 1 gives the circuit, from which it can be seen that the r.f. stage is an R.C.A. 3N140, the mixer stage is a 3N141, while Motorola MPF102 single gate FETs are used as oscillator and multiplier. A third MPF102 is used as a source follower output stage to effect the necessary impedance transformation between the mixer drain and the input to the tuneable i.f.

The source follower, besides making this required impedance change, also replaces the more usual tuned circuit in the drain of the mixer and thus, not being frequency conscious, allows a much greater usable bandwidth to be

achieved. In this converter the usable bandwidth is the full 4 Mc. of the 2 metre band.

Input to the converter is via L1, which is tuned by circuit strays to the operating frequency. The antenna lead is tapped down the coil to provide the proper impedance and noise factor matching.

A 1,000 pF. capacitor (C1) is included in the antenna lead to provide d.c. isolation should the converter be used in conjunction with other equipment having a positive ground rail.

The signal is fed to gate 1 of the 3N140 r.f. stage. While the (rather scant) literature on dual gate FETs suggests that forward biasing of the signal gate has some advantages with regard to gain, no significant effect was

Oscillator injection to the mixer is via gate 2 which has d.c. bias applied through R11 and R12, decoupling being provided by C11.

The mixer load is R5 and the mixer drain is coupled directly to the gate of the MPF102 source follower. The source follower load is R6 and output is taken via C7.

In this design an i.f. output frequency of 14.00 Mc. has been adopted and oscillator injection is on the low side, i.e. 130 Mc. This is obtained by using an MPF102 as a crystal oscillator on 32.5 Mc. and a second MPF102 as a quadrupler to 130 Mc.

The crystal oscillator itself calls for some comment in that provision has been made for "pulling" the crystal to an exact frequency. While this may

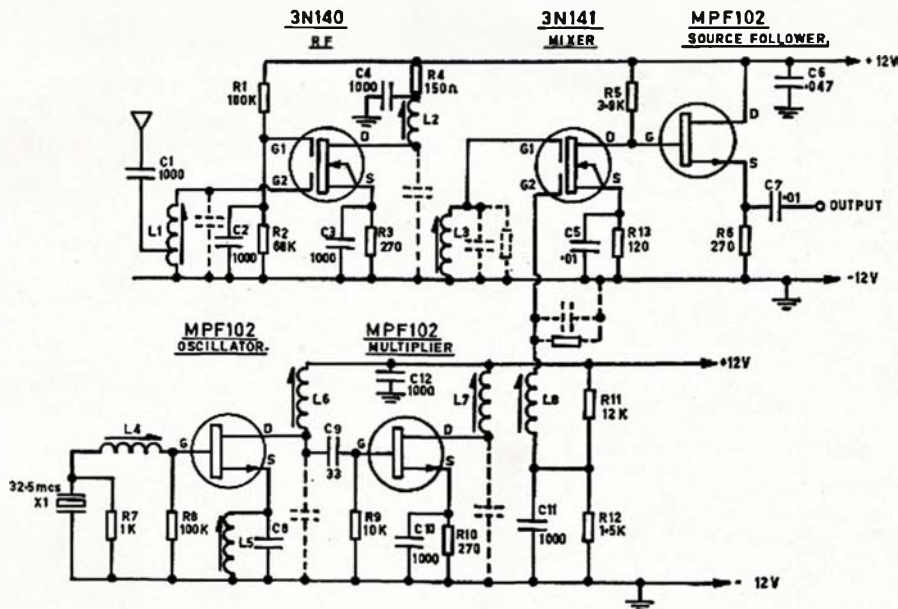
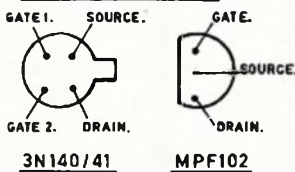


FIG. 1. TWO METRE ALL F.E.T. CONVERTER.

BASE CONNECTIONS.



noticed by so doing and it has been left at d.c. earth. Gate 2, however, is biased for d.c. by R1 and R2 but grounded for r.f. by means of the 1,000 pF. capacitor C2. R3 provides a degree of device protection but r.f. grounding of the source is assured by C3.

The amplified signal then goes through the band pass coupler L2/L3, both coils using circuit strays for resonance. The signal is then applied to gate 1 of the 3N141 mixer. The makers do not recommend the use of d.c. bias on the signal gate in mixer service.

not be strictly necessary in the majority of Amateur applications, the facility is of great importance if the converter were used in conjunction with a fixed channel i.f. For example, a three channel "front end" for the 2 metre f.m. nets and a 10.7 Mc. i.f. channel with a block or crystal filter does need precise adjustment of the first oscillator if each channel is to be lined up "spot on".

A very low resistive load (R7) is placed across the crystal and a coil (L4) used in series with the lead to the oscillator gate. This inductance should have a reactance equal to (but of opposite sign) the parallel capacity of the crystal at the crystal frequency. Adjustment of the core of L4 allows a frequency variation of some 0.25%.

The tuned circuit in the oscillator source (L5, C8) resonates at two-thirds of the crystal frequency while the

* 4 Elizabeth St., East Brighton, Vic., 3187.
† 25 Thames Ave., Springvale, Vic., 3171.

oscillator load (L6) resonates at the crystal frequency.

The band pass coupler in the multiplier drain circuit (L7, L8) is on the required injection frequency and serves to "clean up" the injection waveform by removing harmonics other than that required. This has the effect of eliminating possible images.

The capacitance shown dotted across all the coils except L4 and L5 are not needed for operation on 144-148 Mc. but have been shown to indicate that all that is needed for operation on lower frequencies is the addition of parallel capacity. No change is needed to the signal coils down to 50 Mc. but obviously changes in the crystal, L4, L5 and C8 will be needed for such wide excursions in frequency.

By making changes in all the coil data the converter will work right down to 21 Mc. but, since the gains of the devices rise as frequency decreases, it was found necessary below 80 Mc. to add some resistive damping to L3 and L8.

COIL DATA

Coil	No. of Turns	Spacing	Wire Gauge
L1	8	Over 1/2"	20 s.w.g.
(tap at 2)			
L2	9	Over 1/2"	20 s.w.g.
L3	8	Over 1/2"	20 s.w.g.
L4	15	Close Wound	28 s.w.g.
L5	20	"	28 s.w.g.
L6	25	"	28 s.w.g.
L7	12	"	28 s.w.g.
L8	10	"	20 s.w.g.

Notes—

- (a) All wire is enamelled. Use of the nearest B and S wire is satisfactory.
- (b) All coils are wound on Neosid type 722-1 coil forms and use F29 cores. Bases are not used but screening cans (type 7100) are fitted.

RESULTS

At the time of writing, one 160 Mc., three 144 Mc., one 80 Mc. and one 21 to 30 Mc. converters have been built and tested.

In the case of the 144 Mc. units, all have a bandwidth of 4 Mc. plus or minus 1 db. and the noise figures range between 2 and 4 db. in the "as built" state. Noise figure improvements can be obtained by optimising the antenna coil tap position. Sensitivity is more than adequate and, using a reasonable communications receiver as the tuneable i.f., a signal of 0.1 uV. is quite readable. Since the noise factor of this converter is so low, the noise level in the tuneable receiver can be of significance in determining overall sensitivity.

CONSTRUCTION

The converter is built on a 4 1/2" x 2 1/2" epoxy glass printed circuit board. Components may be put on in any order, but the mounting of the r.f. and mixer FETs calls for some care. While not as sensitive as some MOSFETs, it is still advisable with the 3N140/141s to short all leads together by wrapping them with fine wire (5a. fuse wire is fine) at the case end before soldering them into circuit. Once in place this

wire can be removed. As an added precaution, it is best not to handle the devices by their leads but only by the case.

Mounting screws should be electrically independent of the circuit "wiring" to allow the converter to be used in systems of mixed polarity. This has been done in the board used in this design.

AVAILABILITY

During the development of this converter a considerable amount of interest was shown by local Amateurs, and indeed by non-Amateurs in the flying and gliding fraternity. This article is a direct result of that interest.

In keeping with the trend set by the Moorabbin Club, full or part kits will

be made available. It is anticipated that the cost of the complete kit, including all components, crystal, printed circuit board, diagrams and full instructions will be \$23.50 plus postage. Printed circuit boards will be made available separately at \$2 (plus postage), while the diagrams and instructions will cost \$1 plus postage. For club projects a 10% reduction in cost of complete kits will be available if ordered in lots of 10 or more.

Since, in previous projects of this sort, several enquiries were received for completely made up and operating units, consideration will be given to providing this service if required.

Enquiries should be directed to the Project Officer, 4 Elizabeth St., East Brighton, Vic., 3187.

A Simple and Easy to Build Product Detector

Over the past six months or so, I have been experimenting with product detectors and I think by now that I have made up and tried all of the available types, with somewhat mixed success. Some worked fair, some worked poor, one reasonably good, but all in all, due probably to my ignorance on the subject at the beginning, I never succeeded in finding a circuit which gave me complete satisfaction.

However, in "CQ" for March 1967, page 67, and "73" for May 1967, page 75, there appeared a diode product detector which, by its very simplicity, seemed too good to be true and was dismissed from the experimental and constructional programme until it again appeared in a recent R.S.G.B. Bulletin.

It was eventually assembled and wired on a piece of wiring board, three inches by one and a half inches, in less than an hour, and under test proved to be the answer to the product detector experiments.

Containing three condensers, two diodes and one resistor, it worked perfectly at first trial and the switch gives a bonus of a.m. plus s.s.b. reception by shorting out the second diode when needed.

Several types of diodes were mentioned in the articles, but I used a couple of old OA85s, pinched from the grandson's crystal sets, which were not matched in any way, in fact they were both of different makes. The circuit worked perfectly at the first attempt and is still in use in the receiver and can be thoroughly recommended to anybody desiring to use s.s.b. reception with the least trouble and energy.

—VK5PS, W. W. (PanSy) Parsons.

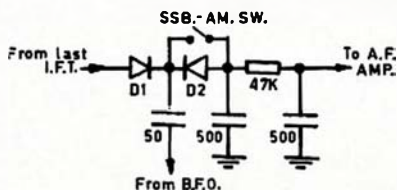


FIG. 1. PRODUCT DETECTOR CIRCUIT.

NEW 576 Mc. RECORD

On Saturday, 13th April, the present 576 Mc. record of 145 miles held by VK5QZ and VK5ZJL was broken. Contact was established over the 184 mile distance from Port Augusta to Eden Hills, a southern suburb of Adelaide, between Charles VK5KW/5 and Rod VK5ZSD (formerly VK6LK and VK6ZDS).

Two metres was used as a link, and contact was made on this band at 1815 C.S.T. with signals about R5 S3 with some QSB. On shifting to 576 Mc. signals were surprisingly stronger—a steady S5 both ways. Both stations then stayed on that band until about 1835 C.S.T., signals remaining fairly steady during the QSO.

The equipment used at both ends is as follows:—

(1) Adelaide, VK5ZSD—Tx: QQE03/20 straight final, input 25w., output 8w. Rx: TIS88 (FET) pre-amp., 2 x EC88 r.f. amps., 60W nuvistor to SE700B receiver. Antenna: 4, 15 element Yagis, 30 ft. high.

(2) Port Augusta, VK5KW/5—Tx: QQE03/20 tripler, input 20w., output 4w. Receiver: TIS88 pre-amp., 7077 r.f. amp., 1N21 mixer, to CR150 receiver. Antenna: 16 element screened beam, 15 ft. high.

The path between the two stations was nowhere near line of sight, as the heights of the Adelaide and Port Augusta stations were 700 ft. and 60 ft. respectively. However, a considerable portion of the distance was over water, and the remainder over fairly flat country. Indications are that the equipment used is capable of operating over even greater distance beyond 200 miles.

—Reprinted from W.A. V.h.f. Group News Bulletin.

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TRANSISTOR SIDEBAND—C.W.

COL. HARVEY,* VK1AU

HAVING deserted the brass-pounders union many years ago in favour of s.s.b. with vox, I now find that some of the pioneer sidebanders have turned back to c.w., apparently to develop and use automatic keyers.

Although many a cross-mode contact has been enjoyed, the lack of that peculiar satisfaction that comes from skilful c.w. operation had begun to nag.

Granted that c.w. is a slow means of communicating, it still has the virtue that skilled operators can often "communicate" when other modes are out of business (e.g. summer nights 7 Mc. DX). Also, when conditions are good, the skilful c.w. operator can enjoy the challenge of high speed Morse communication, which with auto keyers is somewhat akin to having a "tiger by the tail".

As a prelude to construction and occasional use of an auto keyer which would exploit this aspect of Amateur Radio, an effective means of keying the VK1AU transistor s.s.b. exciter had to be found. Initial experiments were made using carrier obtained by unbalancing the modulator just enough to allow the linear amplifier to draw its rated plate current. Although satisfactory, this method had the disadvantage that the modulator subsequently had to be rebalanced before carrier-free s.s.b. could again be radiated. As many will have noticed, carrier "nulling" is not always a quick adjustment, and even a minor inadequacy in suppression is, for some obscure reason, quickly noted and commented upon.

The results of recent experiments in search of a suitable carrier keying method for my s.s.b. transmitter can be summarised as follows (first the method, then the result):—

(a) Keyed tone oscillator adjacent to microphone.

Broad m.c.w. signal (unless audio drive to balanced modulator removed).

* 16 Leane Street, Hughes, A.C.T., 2605.

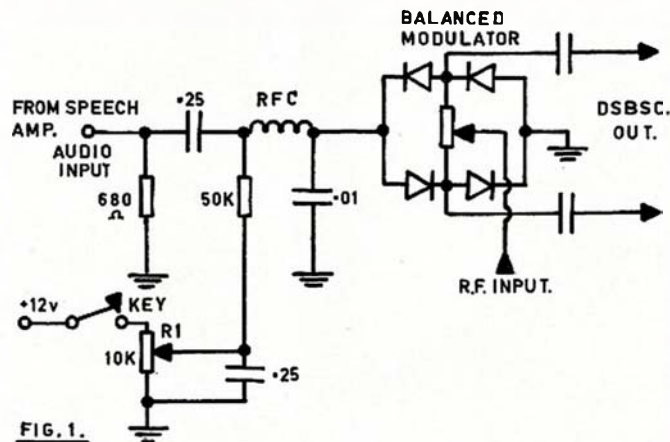


FIG. 1.

"Clipped" Morse, due to effects of acoustics and vox and ant. relays.

Full break-in.

(b) Centre tap keying of linear amplifier.

Excessive clicks locally, despite classic filtering methods.

Extra relay needed.

No break-in.

Mechanical noise.

Strong residual carrier locally.

(c) Emitter bias keying of transistor amplifier stage.

Excessive residual carrier.

Rather hard keying characteristics.

Instability.

(d) Keying 12 volt line to first transistor amp.

Noticeable residual carrier.

Slight clicks, hard to filter.

(e) Keying vox relay tube bias.

Full break-in.

Limited keying speed.

Occasional imperfect Morse unless vox trip and anti-trip gains turned off.

None of these methods seemed good enough to warrant construction of an auto-keyer. Despite the prevalence of "hard" keying characteristics needed for fast keying, the most irritating deficiency was the presence of residual carrier on the transmitting frequency. Although not particularly harmful on DX contacts, it affected the clarity of the signal locally and became irritating to listen to in the monitor.

Keying a mixer or oscillator would obviate this problem, but with the diode mixers in use there seemed initially to be no easy method of keying.

Eventually, however, the penny dropped. It was realised that with the complete transmitter chain "on-the-air", and with carrier balanced out, very little carrier was heard locally (i.e., the residual carrier was about 50 db. down). Yet with full carrier, signals were paralysing. Therefore why

not transmit c.w. by inserting about 50 db. of carrier via the balanced modulator?

An obvious method was to key (by use of a relay) additional resistance or capacity across the previously balanced bridge modulator. A better method was to unbalance the bridge with a suitable keyed d.c. voltage whose amplitude could be adjusted to set the desired amount of carrier insertion, and hence carrier level. The basic schematic is shown in Fig. 1.

On-the-air reports using this method show the result to be the best of all methods tried to date. There is, however, a minor problem—during c.w. operation, the audio input to the balanced modulator should be removed. Although not absolutely essential, it is preferable that the mechanical and other noises which accompany handset Morse not be superimposed on the carrier via the microphone and speech amplifier. The simplest way to avoid this is to forego break-in operation, use a d.p.d.t. switch to isolate the d.c. supply to the microphone amplifier, and at the same time activate the vox relay (so as to initiate receiver muting and antenna change-over).

Since the vox unit in use at VK1AU has the capability to set the receiver mute level anywhere between fully cut-off and not cut-off (by a negative bias on the i.f. strip suppressor grids) monitoring is accomplished simply by adjusting the receiver muting bias level to a value which provides a suitable audio output from the receiver. Where incoming signals are sufficiently strong, it will still be possible to work full break-in. Regrettably, full break-in with weak stations is not possible because the antenna change-over relay remains in the transmit position whenever the vox relay is energised for the transmit mode.

Readers who require full break-in can probably devise a method of controlling the antenna change-over relay in sympathy with keying. A simple but generally effective method is to

(Continued on Page 11)

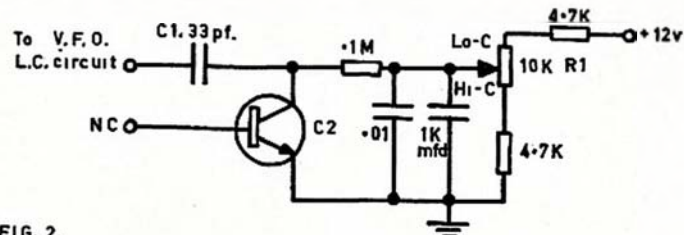


FIG. 2.

Fig. 1 (at left).—No Keying Filter is required, nor need the keying leads be shielded. Values given are not critical. The 10K potentiometer (R1) can be pre-set to the carrier level required for c.w. operation.

Fig. 2 (above).—The voltage variable capacity C2 can be either a diode which exhibits the effect, or as in this case, an unidentified NPN audio transistor. The amount of frequency change is determined by the size of the series capacitor C1 and by the voltage change available across R1. The values shown provide about 3 Kc. at 2 Mc. The 0.01 and 1,000 uF. filter are needed to prevent power supply ripple, etc., from frequency modulating the v.f.o.

"A HANDY D.C. SUPPLY FOR THE BENCH"

Editor "A.R.," Dear Sir,

In the April issue of "A.R." I found the publication of my article on "A Handy D.C. Supply for the Bench." On looking through it, I found that a few errors had been made and list them below.

- (1) Transformer 1 has only five windings on the secondary side. S1a selects the same point for 30v. and 36v.
- (2) The bottom OA210 connected to transformer 2 is shown the wrong way around.
- (3) The reservoir and output filter condensers in the reference supply should be 1,000 uF. 30v. The 100 uF. (25v.) connected to junction of 2.7K and 1.5K is correct.
- (4) The output filter condenser in the main supply should be 5,000 uF. (35v. min.).
- (5) The shunt resistor for the meter should be 40 milliohms, not 40 megohms as stated.
- (6) Type number of series regulator in reference supply missing (2SO18), also a and b on switch 1 and pointer in meter. Output voltage is 0-36v. (zero to 36). Circuit printed says -36v.

The accompanying two photographs of the unit are explained below.

The front panel shows the meter which is red-lined at 36v. and 2a., the high-low load switch S3, mains fuse holder, mains switch, and 6v. pilot lamp.

Below the load switch and a little to the right is the meter switch, reading volts in the up position and amps. in the down position. This is also the way in which the meter scales are drawn.

Under the meter switch we find the voltage step selector S1, to the right of it is the fine adjust control, which was later fitted with a knob.

The output terminals are below the meter.

The left side of the housing is liberally vented, as is also the back panel and the rear quarter of the top (not shown in photograph).

The rear view shows the series regulator, 2N513B and its heatsink. To the left of it is the pre-regulator, with epoxy resin encased tranny and diodes plus condensers and 330 ohm resistor mounted on a small piece of matrix board.

Looking towards the front, the terminal board of transformer 1 can be seen. To the right of it is the 4,000 uF. reservoir condenser, and the top portion of the main rectifier heatsink.

Transformer 2 is mounted between transformer 1 and the front panel.

Just behind the 4,000 uF. condenser is the 5,000 uF. output filter condenser. The small transistors and associated components are all mounted on two small pieces of matrix board right behind the air vents in the side panel.

All wiring in the unit should be of fairly large cross-section where high currents are being handled, particularly around transformer 1, S1a and main rectifier. 40/0076 is a suitable size. The zero volt and negative 0-36v. line between the 5,000 uF. condenser and the output terminals should also be of heavy gauge.

Due to the "growth" of the supply beyond the originally envisaged size (electronically) space inside the cabinet is now rather limited and I suggest to provide a bit more room around most components than does exist in my unit, in the interests of ease of maintenance and to provide some breathing space for the overload protection circuit which will be provided in the near future.

The ripple voltage on the output is about two to three milliwatts peak to peak, which is sufficiently low for tests on sensitive pre-amps. of many kinds. This figure holds good for loads up to 2 amps.

—Rolf B. Petersen, VK5ZIE.

Adapting the Gelson G209 for S.S.B. Reception

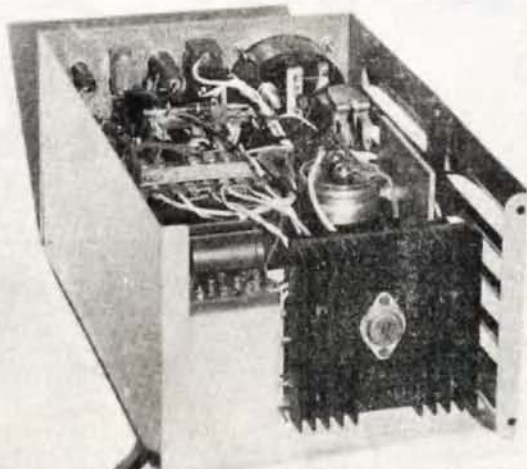
The Gelson G209 Receiver was designed some ten years ago and incorporated many features that were well up to date at the time. These included selection of upper or lower sideband, also a product detector. Why, then, you might ask, do we need to "adapt" the receiver for s.s.b.—after all, it has an s.s.b. position on the front panel (two in fact) and the handbook gives details on how you should tune s.s.b. Here are the reasons:—

It is quite impossible to resolve strong s.s.b. signals with the r.f. gain fully advanced and very difficult with the r.f. gain fully off, due to apparent overload somewhere along the line. Now most of this overload distortion occurs because the Gelson engineers forgot to put bias on the 6BE6 product detector. The remedy—put some in.

Lift the earth connection from the cathode of the 6BE6 (V9, pin 2) and wire in a 500-ohm $\frac{1}{2}$ watt resistor and bypass this with a 25 uF. 6 volt electrolytic. This cleans up all the distortion but now there is too much r.f. input to the 6BE6 from the i.f. strip when the r.f. gain is full up. A 47 pF. ceramic or mica condenser from the input grid (pin 7) of the 6BE6 to earth now enables us to run the r.f. gain full on even with strong signals.

Now we are starting to get somewhere, however there is still one problem left. With the r.f. gain fully up, the a.g.c. action is too fast. To slow the a.g.c. down a bit a 2 uF. 12 volt electrolytic condenser is connected from the a.g.c. line to earth (positive to earth). You might prefer to connect this through a switch to give a choice of fast or slow a.g.c.. however the slow acting a.g.c. is still okay for a.m. reception.

This completes the modification, you can now tune s.s.b. with full r.f. gain, slow release a.g.c. and of course the S meter will now give a comparative indication.



S.W.R. INDICATORS—FACT OR FICTION

J. G. REED,* VK2JR

RECALLING the hullabaloo following the publication of my earlier technical article explaining the real reason for generation of sideband transients in overmodulated a.m. transmitters, it is with trepidation that I commit a further iconoclastic outrage by questioning another cornerstone of Amateur Radio faith.

So-called Standing Wave Indicators and Reflectometers are accepted by the overwhelming majority of Amateur station operators as instruments of precision capable of measuring a somewhat mythical quantity referred to as reflected power in radiating systems and transmission lines. Forward and reflected waves may be factual in a bathtub, but are somewhat of a mathematical fiction. Electrons do not rush madly forth and back at almost the speed of light. Amateur s.w.r. indicators and reflectometers are credited with the power to discriminate against the direction of flow of these fictional travelling waves.

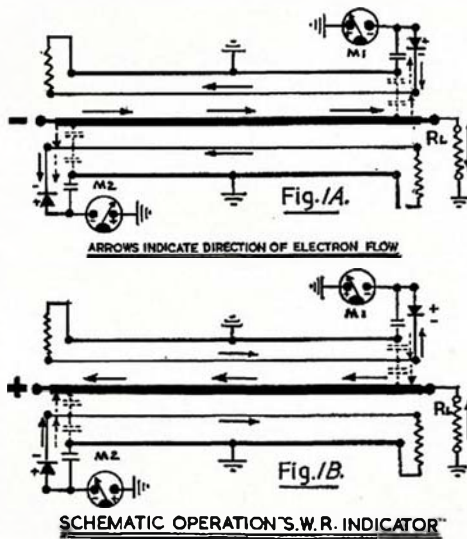
Fig. 1 illustrates the simplified connections for a typical commercially available s.w.r. indicator. The two diode circuits are supposed to measure the magnitude of the alleged forward and reflected waves. Without fear of effective contradiction it is my contention that nothing of the sort occurs.

Current in the central conductor has a magnetic and electrostatic component which induce current flow in the two metering circuits, the diodes of which function on alternate half cycles to provide the d.c. component to the meters. The magnitude of these currents depend on the phased combination of magnetic and electrostatic components. A basic initial adjustment in these instruments is to select a so-called terminating resistance for the diode lines which will cause a voltage drop due to the electrostatic component, equal in magnitude to that due to the magnetic component.

Examine Fig. 1A carefully and note the instantaneous values of electrostatic and magnetic components, both as to magnitude and phase. The lengths of the internal lines are assumed to be very small fractions of a wavelength at the highest measuring frequency. Assume nominal electron current flow on the negative half of a cycle from left to right, and from right to left on the positive half. Corresponding flow of induced current in the metering lines will be in opposite direction. Electron flow in the metering and diode circuits is shown in solid lines for magnetic component and dotted lines for the electrostatic component. Under condition "B" neither meter M1 nor M2 will read. The first meter M1 because magnetic and electrostatic components are in opposition, and meter M2 because both components, although in phase, are in opposition to the diode conductivity. Condition "A", where the

direction of electron flow (nominal) reverses, meter M1 again reads "nil" because of opposition of magnetic and electrostatic components. Meter M2, having both components in phase and in the correct direction of flow for the diode to conduct, will read. Calculation from respective meter readings will now produce the much sought after figure of s.w.r. = 1 with zero "reflected" power component.

Should the external load "RL" be varied without corresponding adjustment of the so-called terminating resistors to maintain balance between magnetic and electrostatic components in the metering circuits, both meters will read currents, and depending on the magnitude of the resultant currents, calculation will reveal the disturbing fact that the standing wave ratio is no longer ONE, and in addition the completely non reactive external load resistor has started to "reflect" power.



If the external load is of complex nature containing both resistive and positive or negative reactive component, even though the "Z" or complex impedance may equal numerically the figure for a simple non-reactive resistance, the phase relationship of voltage and current components will permit both meters to read and indicate an increasing so-called "standing wave ratio and reflected power".

Internal switching of terminating resistors permits operation in circuits with load values of 50 or 75 ohms. If measured it will be found that the internal resistors increase in value for a lowered external load and vice-versa. This is essential to maintain a balance between magnetic and electrostatic components.

On many occasions I have heard conversations between Amateur station operators employing half wave doublet radiators fed by open wire balanced

resonant lines coupled to the transmitter by a tuned and balanced coupler. One Amateur operator possesses a s.w.r. meter and the other does not. The second operator seems to be a happy and contented man, working his near and far stations with evident pleasure. Poor old No. 1 operator, owner of the s.w.r. meter, seems to be forever worried over his standing waves and fiddles away at tuning and coupling until his precious instrument finally is coaxed to read as near 1:1 ratio as eyesight can detect. He fondly imagines that the entire radiating system is now operating "standing wave free", as flat as the proverbial pancake, and with no mythical reflected power bouncing back from his radiator. All that he has done is to adjust coupling link and tuning to make the immediate load to the s.w.r. meter look like a resistive load of the instrument selected value of 50 or 75 ohms. From the output terminals onward of the tuned coupler matters have not changed one proverbial iota. The hypothetical standing waves and imagined reflected energy, still, mathematically speaking, bounce forth and back along the transmission line; the latter and its attached doublet behaving like any normal and self respecting resonant dissipative circuit. Happiness now reigns in the household of the owner of the s.w.r. meter for such is the power of suggestion and deep almost reverential faith in the "Hartford Bible".

Another piece of Amateur measuring equipment goes under the peculiar name of Antennascope, although for the life of me I have never been clear as to what this outfit sees. It is a simple form of bridge which indicates in terms of a known variable resistance the degree of balance against the external circuit. No discrimination is made against the respective components of a complex impedance although inability to get a complete null reading on the indicating meter makes it evident that the external load is not a simple dissipative resistance.

To design and construct an efficient radiating system it is essential that the R and jX values of complex loads be known with reasonable accuracy. Commercial r.f. bridges are very expensive items not available at bargain prices through disposal stores. By application of a little elementary mathematics and using small meters and test instruments available in all experimental stations worthy of the name, it is possible to measure with considerable accuracy the resistive and reactive components of lines, radiators and circuits of equipment.

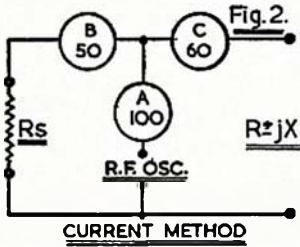
Two forms of measurement are available, the current and voltage methods. For the former, three low range thermomilliammeters are required, and for the latter a v.t.v.m. or low reading microammeter. I have found that for the current method two meters of 125 mA. and one of 250 mA. full scale are

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ideal. In the early twenties and intervening years, I made considerable use of several Weston model 425 thermogalvanometers which are thermo-milliammeters with evenly divided 0 to 100 scales. These required a simple slide rule calculation on the "square scale" to resolve to milliamperes.

THE CURRENT METHOD

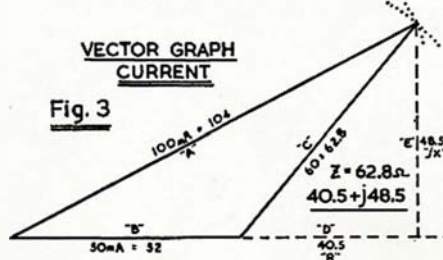
Commencing with the three milliammeter method (see Fig. 2), mount the three meters on a small insulating panel. Tempered Masonite is excellent for experimental panels. Now construct several reference resistors from half or one watt units connected in parallel to give reasonable wattage dissipation. Do not use individual units below 100 ohms in value as these are often wire wound and unsuitable for r.f. work. Most accurate results will be obtained when the reference resistor is of the same order of magnitude as the external circuit impedance or resistance. I have used four paralleled 160 ohm units for 40 ohms, four paralleled 300 ohm units for 75 ohms, five paralleled 1,000 ohm units for 200 ohms, and five paralleled 3,000 ohm units for 600 ohms. Bunch and solder the pigtailed of the paralleled resistors and open out the group to form a hollow cylinder. The r.f. resistance will be very close to measured d.c. value.



Use short interconnecting leads to avoid introduction of undesirable inductance, and for the power source a small variable oscillator of several watts rating. Some form of variable control of output is very desirable. In an experimental oscillator at VK2JR, I have used interchangeable plug-in coils for the tuning inductors with an old "honeycomb" coil plug and socket supporting a basketweave coil of several turns for fine control. For easier and remote control of power output I have under construction an improved wide range oscillator incorporating crystal locking for accurate frequency generation within Amateur bands plus a high tension power supply unit employing a small "vari-volt" auto transformer. The latter permits primary supply to the h.t. transformer to be varied from zero to maximum with resultant following r.f. power. This eliminates the need for a mechanical variation of coupling to the variable oscillator. Construction details will be given in a future article to be published in "A.R."

Select a reference resistor of a value approximating the load value of the external circuit, and adjust the output of the r.f. oscillator to produce approximate mid-scale readings on the "B" and "C" meters. Meter "A" will read the approximate sum of these two cur-

rents. Make careful note of the three readings, whose values form the basis to construct a triangle with sides of relative lengths, as in Fig. 3. Final solution is made easier if the length of side "C" is made in measuring units equivalent to the impedance of that circuit in ohms.



Assume the following meter readings for meters "A", "B", and "C". "A" = 100 mA., "B" = 50 mA., and "C" = 60 mA. As currents in the "B" and "C" arms are inversely proportional to impedance, and if the reference resistor has a value of 75 ohms, the impedance of path "C" must be 75 multiplied by 50/60, or 0.833 times 75 = 62.6 ohms. This figure is 1.04 times the current figure, therefore multiply meter readings "A", "B", and "C" by this figure to produce relative figures of "A" = 104, "B" = 52, and "C" = 62.8. Lay off line "B" 52 units long. Millimetres are a convenient unit within the opening capabilities of simple pencil or drawing instrument compasses. Tenth inch scale graph paper on large sheets will permit construction of a man-sized triangle, reducing greatly any error in final measurements.

From the left end of line "B" draw an arc with radius of 104 units and from the right end of line "B" another arc with radius 62.8 units. At the intersection of these two arcs drop a vertical line to the projection of line "B" to form a new triangle with side C-D-E. Carefully measure the lengths of sides D and E. The length of D will correspond to the value of the "R" component of the complex load, while side E length will be that of the "jX" or reactive component. Only one doubt remains and that is the phase sign of the reactive component to determine whether it is positive or negative. This may be resolved in a very simple manner by slightly increasing the test frequency either by circuit tuning of the oscillator or introduction of a crystal lock on a higher frequency crystal within the Amateur band. If the current in arm "C" increases relative to "B", the former must be negatively reactive and vice-versa. For Fig. 3, $Z = 62.8\Omega = R \pm jX = 40.5 + j48.5\Omega$.

Should meter readings "A" = "B" + "C" the triangle will disappear, indicating that the external circuit does not possess reactance and is a pure resistance. By application of some fairly simple high school trigonometry, it is possible to solve the triangles and determine the phase angle and relative magnitudes of R and jX without need to draw a triangle. As the majority of Amateur station operators unfortunately panic at the sight of even simple mathematical calculations I shall not give the solution in this article, but will do

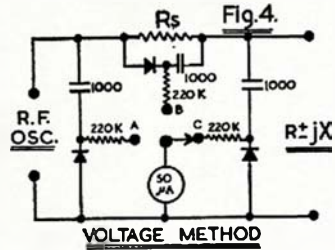
so in a later one describing the construction of measuring equipment.

Leonardo-da-Vinci gave some very good advice many years ago: "He who spurns the great certainty of mathematics fills his mind with confusion, and will never be able to silence the sophistical teachings that lead only to a battle of words". That this is so is evident by the s.w.r. and reflected power "gobblydegook" heard during many Amateur station QSOs.

THE VOLTAGE METHOD

Thermo-milliammeters are delicate instruments capable of being destroyed by accidental overloading, and in addition are not very common items of equipment in Amateur stations. The voltage method of measurement should prove most popular as the only indicating instrument required is a low range v.t.v.m. or microammeter.

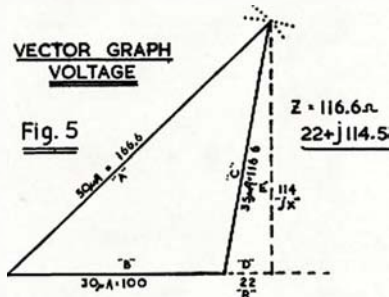
Circuit connections for the voltage method are given in Fig. 4. Three matching diodes are easily obtained and may be wired together with other items in so compact an arrangement as to permit measurement to be made at very high frequencies with negligible error. A batch of reference resistors should be assembled so that one commensurate with the order of magnitude of the external load impedance may be selected. It is not necessary to know the actual value of r.f. voltage measured. Relative values only need be known, and if a microammeter is used as an indicator, microampere readings in positions "A", "B", and "C" will suffice. Knowing the relative voltages across the Reference Resistor "Rs" (meter reading "B") and the external circuit (meter reading "C") the impedance of the latter will be directly proportional to these voltages in contra-distinction to the inverse procedure used with the current method.



Assume that the reference resistor has a value of 100 ohms, and the relative readings of the microammeter are "A" = 50 uA., "B" = 30 uA., and "C" = 35 uA. If "Rs" = 100 ohms, the impedance of the external circuit "C" will be 100 multiplied by 35/30, or 116.6 ohms. The multiplication factor between microamperes and ohms is therefore 3.333. Multiply meter readings "A", "B", and "C" by this factor to become "A" = 166.6, "B" = 100, and "C" = 116.6.

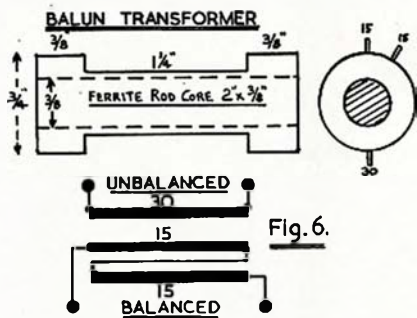
With pencil compass complete a triangle A, B, C as in Fig. 5, with sides 166.6, 100 and 116.6 units long. Draw the triangle on graph paper if available. Any convenient unit scale within the extension capability of the pencil compass will do. Drop a vertical line from the intersection point of arcs "A" and "C" to an extension of line "B"

and measure the respective lengths of sides "D" and "E" of the new triangle so formed. These will be found to be 22 and 114 units respectively, therefore the value of the complex impedance $Z = 116.6 \text{ ohms} = 22 + j114.5 \text{ ohms}$. The plus or minus ambiguity of the "j114.5" ohms is resolved by slightly increasing the testing frequency. If the voltage across "C" increases with frequency relative to "B", the external circuit must be positively reactive and vice-versa. A complete mathematical solution without resort to drawing a triangle is possible. A future article will cover this fully.



The circuit arrangement described and illustrated is suited for work associated with unbalanced circuits in which one leg is at earth potential. Balanced circuits are best coupled through a small balun transformer of 1:1 ratio. A toroid construction is not essential.

Fig. 6 illustrates a simple construction for a 1:1 ratio balun capable of operating between 3 to 30 Mc. The former is turned from close grained wood or "Misco" transformer insulating bushing material, the latter being $\frac{3}{8}$ " external diameter with $\frac{3}{8}$ " hole to take a 2" length of $\frac{3}{8}$ " ferrite rod, grade Q1 or Q2 or 4B, which are the respective code designations for Ducon or Mullard ferrites.



For the balanced winding, wind two parallel strands, each of 15 turns of No. 22 s.w.g. d.c.c. copper wire cross connecting the end of winding "A" to the beginning of winding "B" to form a bifilar 30 turn winding. Cover this with several layers of insulating tape and wind a further winding of 30 turns continuous of similar gauge wire. This gives a 30 to 30 turn ratio with high degree of magnetic coupling and balanced electrostatic coupling between the balanced and unbalanced windings. Cut or file small grooves into the end cheeks of the former to allow the windings to bed down to their respective

levels without fouling end turns. Terminals at the ends may consist of $\frac{1}{4}$ " brass screws, or pieces of No. 16 gauge tinned copper driven into 1/16" holes. Slightly flatten the ends of the short lengths of No. 16 gauge terminal wire to bite into the 1/16" holes. Short flexible leads should connect to the measuring panel. All measured values are what are known as "series" components.

Do not be afraid to perform a little practical measurement work. In one of my lectures to the N.S.W. Division of W.I.A. I showed a slide containing two very important pieces of advice. The first is credited to an Arabic scientist born in A.D.721. No date is available as to the date of his death. Probably he was murdered by one of the prototype Christian Crusaders who played havoc in the so-called Holy Land at around that time, and hated scientific enquiry with religious zeal. The name of this Arabic scientist was Jabir ibn Hayyan, and he said: "The first essential is that you perform practical work and conduct experiments, for he who performs not practical work nor makes experiments will never attain the least degree of mastery".

Lord Kelvin, another very wise scientist, once said: "When you can measure what you are speaking about and express it in numbers you know something about it, and when you cannot measure it, when you cannot express it in numbers your knowledge is of a meagre and unsatisfactory kind. It may be the beginning of knowledge, but you have scarcely in your thought advanced to the stage of a science".

Get moving brother experimenters, make some factual measurements around your station. Leave your s.w.r. meters and reflectometers in the cupboard and do not be content to spend the rest of your life as a technical Lazarus living on the crumbs which fall from the disposal store table.

POSTSCRIPT

Taking Lord Kelvin's injunction to heart, I decided that it would be of interest to express the speed of electron current flow in figures. What is generally assumed to be an actual flow of electrons is in reality a vibration travelling in the conducting medium somewhat similar to the shock wave through a string of marbles or ball bearings in long line when, if struck at one end by an incoming marble or bearing releases a corresponding unit at the far end of the line, with inappreciable bulk movement of the system.

A check through Physics and modern Chemistry books gave some very interesting information. One ampere current flow is equivalent to 6.25 times 10 to the eighteenth power (6.25 x 1,000,000,000,000,000,000) electrons per second. The number of electrons in one gramme of copper is 1.74 times 10 to the twenty-fifth power (1.74 x 10,000,000,000,000,000,000,000,000).

If a piece of copper of one gramme weight (No. 16 s.w.g. with length = 5.42 centimetres) has its electrons moving at the rate of one ampere it would

take 2,770,000 seconds to completely move through this distance of 5.42 centimetres, or 0.0876 year.

For a conductor 10 metres long, corresponding to about one quarter of a wavelength at 7 Mc., the time for travel would be 16.15 years with another 16.15, or a total of 32.3 years for a reflected wave of really travelling electrons to bounce back from the distant end of the circuit!!!!

The above describes a direct current flow of electrons. With alternating current, the to and fro electron vibration even at the power frequency of 50 cycles is of truly molecular dimensions as a little simple calculation will show.

In an interesting technical book, "Physics for the Enquiring Mind," by Eric M. Rogers, of Princeton University, there appears on page 187 the statement: "In modern atom models we often picture the behaviour of electrons and nuclear particles in terms of standing waves. These are not in themselves proper waves, but they are wavy patterns of vibration that do not travel along."

TRANSISTOR S.B.-C.W.

(Continued from Page 7)

arrange the coil of the antenna relay in the h.t. feed to the linear amplifier so that whenever the linear's plate current rises a little above idling level, the antenna relay is pulled to the transmit position. Parallel resistance and capacity can be used across the relay coil to set the desired time delay. Alternatively, a separate set of contacts on a keying relay could be used to activate the vox relay (and through it the aerial relay) simultaneously with the unbalancing of the modulator.

The purists claim that the s.s.b. carrier should, for c.w., be moved to the centre of the filter passband, and that the antenna relay should be closed in the transmit position, before the transmitter supplies power. Certainly, if changing from receiving s.s.b. to c.w., the receiving station will have to retune to obtain a c.w. beat note, but this seems to be an automatic reflex action anyway. So far as the antenna relay is concerned, no sign of contact trouble is evident at VK1AU after more than 10 years' operation in which the antenna changed over after the vox relay was tripped and the linear energised.

If there is a real desire to transmit c.w. in the centre of the receiver passband without using the v.f.o. main tuning, I suggest the cheapest method is to use a voltage variable capacitor across the transmitter v.f.o. tank circuit. Adjustment of the voltage control potentiometer will then smoothly shift the v.f.o. as far as is needed. Because full rotation of the potentiometer represents only about 3 kilocycles change of frequency, it is possible to easily QSY a few tens of cycles, often making the difference between a ruined or lost contact, and a completed c.w. contact. The circuit in use at VK1AU is shown in Fig. 2. If enough voltage range is provided, the same control will also act as a calibration reset facility.

REMEMBRANCE DAY CONTEST, 1968

A perpetual trophy is awarded annually for competition between Divisions. 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 Call Area will endeavour to contact Amateurs in other Call Areas. In addition, Amateurs will endeavour to contact any other Amateurs on the authorised bands above 52 Mc. (i.e. intrastate contacts will be permitted on the v.h.f./u.h.f. bands) for scoring purposes.

Contest Date

0800 hrs. GMT Saturday, 17th August, 1968, to 0759 hrs. GMT Sunday, 18th August, 1968.

All Amateur Stations are requested to observe 15 minutes' silence before the commencement of the contest on the Saturday afternoon. An appropriate broadcast will be relayed from all Divisional Stations during this period.

RULES

1. There shall be four sections to the Contest:—

- Transmitting Phone.
- Transmitting C.w.
- Transmitting Open.
- Receiving Open.

2. All Australian Amateurs may enter the Contest whether their stations are fixed, portable or mobile. Members and non-members will be eligible for awards.

3. All authorised Amateur bands may be used and cross-mode operation is permitted. Cross-band operation is not permitted.

4. Amateurs may operate on both Phone and C.w. during the Contest, i.e., Phone to Phone or C.w. to C.w. or Phone to C.w. However only one entry may be submitted for sections (a) to (c) in 1.

An open log will be one in which points are claimed for both phone and

c.w. transmissions. Refer to Rule 11 concerning Log entries.

5. For Scoring, only one contact per station per band is allowed. However, a second scoring contact can be made on the same band using the alternate mode. Arranged schedules for contacts on the other bands are prohibited.

6. Multi-operator stations are not permitted. Although log keepers are permitted, only the licensed operator is allowed to make contact under his own call sign. Should two or more wish to operate any particular station, each will be considered a contestant and must submit a separate log under his

membrane Day from VK4BBB log VK4BAA."

C.w.: Substitute operators will call "CQ RD de" followed by the group call sign comprising the call of the station they are operating, an oblique stroke and their own call, e.g., "CQ RD de VK4BBB/VK4BAA."

Contestants receiving signals from a substitute operator will qualify for points by recording the call sign of the substitute operator only.

7. Entrants must operate within the terms of their licences.

8. Cyphers—Before points may 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 (telephony) or RST (c.w.) reports plus three figures, that will increase in value by one for each successive contact.

If any contestant reaches 999 he will start again with 001.

9. Entries must be set out as shown in the example, using ONLY ONE SIDE of the paper and wherever possible standard W.I.A. Log Sheets should be used. Entries must be clearly marked "Remembrance Day Contest 1968" and must be postmarked not later than 9th September, 1968. Address them to "Federal Contest Manager, W.I.A., G.P.O. Box N1002, Perth, 6001, West. Aust." Later entries will be disqualified.

10. Scoring will be based on the table shown.

SCORING TABLE

		To								
		VK0	VK1-2	VK3	VK4	VK5-8	VK6	VK7	VK9	
From	VK0	-	6	6	6	6	6	6	6	6
	VK1-2	6	-	1	2	3	5	4	6	
	VK3	6	1	-	3	2	5	4	6	
	VK4	6	1	2	-	3	6	5	4	
	VK5-8	6	2	1	3	-	5	4	6	
	VK6	6	1	2	4	3	-	5	6	
	VK7	6	2	1	4	3	5	-	6	
	VK9	6	1	2	3	4	5	6	-	

Note.—Read table from left to right for points for the various call areas.

In addition, all intrastate contacts on bands 52 Mc. and above are worth 1 point each.

Portable Operation: Log scores of operators working outside their own Call Area will be credited to that Call Area in which operation takes place, e.g. VK5ZP/2. His score counts towards N.S.W. total points score.



Remembrance Day Contest Trophy

own call sign. Such contestants shall be referred to as "substitute operators" for the purposes of these Rules and their operating procedure must be as follows:—

Phone: Substitute operators will call "CQ RD" or "CQ Remembrance Day" followed by call of the station they are operating, then the word "log" followed by their own call sign, e.g., "CQ Re-

EXAMPLE OF TRANSMITTING LOG

Date/Time G.M.T.	Band	Emission and Power	Call Sign Worked	RST No. Sent	RST No. Received	Points Claim.
17 0810	7Mc.	A3 (a)	VK5PS	58002	—	2
17 0812	"	"	VK6RU	59007	—	5
17 1035	52"	A3"	VK4ZAZ	56010	—	3
17 1040	"	"	VK3ALZ	58025	—	1

Note.—Standard W.I.A. Log Sheets may be used to follow above form.

EXAMPLE OF RECEIVING LOG (VICTORIAN S.W.L.)

Date/Time G.M.T.	Band	Emission	Call Sign Heard	RST No. Sent	RST No. Received	Station Called	Points Claim.
Aug. '68							
17 0810	7Mc.	A3 (a)	VK5PS	58002	—	VK6RU	2
17 0812	"	"	VK6RU	59007	—	VK7EJ	5
17 1035	52"	A3"	VK4ZAZ	56010	—	VK5ZDR	3
17 1040	"	"	VK3ALZ	58025	—	VK3QV	1

Note.—Standard W.I.A. Log Sheets may be used to follow the above form.

11. All logs shall be set as in the example shown and in addition will carry a front sheet showing the following information:—

Name..... Section.....
 Address..... Call Sign.....
 Claimed Score.....
 No. of Contacts.....

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 (see Rule 4). If an invalid contact is made it must be shown but no score claimed.

Entrants in the Open Sections must show c.w. and phone contacts in numerical sequence.

12. The Federal Contest Manager has the right to disqualify any entrant who, during the Contest, has not observed the regulations or who 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.

13. The ruling of the Federal Contest Manager of the W.I.A. is final and no disputes will be discussed.

Awards

Certificates will be awarded to the top scoring stations in Sections (a) to

(c) of Rule 1 above, in each Call Area. There will be no outright winner for Australia. Further Certificates may be awarded at the discretion of the Federal Contest Manager.

The Division to which the Trophy will be awarded shall be determined in the following way.

To the average of the top six logs shall be added a bonus arrived at by adding to this average the ratio of logs entered to the number of State Licensees (including Limited Licensees), multiplied by the total points from all entries in Sections (a), (b) and (c) of Rule 1.

Average of top six logs +

$$\left\{ \frac{\text{Logs Entered}}{\text{State Licensees}} \times \frac{\text{Total Pts. from}}{\text{all Entrants in}} \right\}$$
 (includ. Z Calls) Sect. (a) (b) (c)

VK1 scores will not be included with VK2, nor VK8 with VK5.

Acceptable logs for all Sections shall show at least five 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, but no active transmitting station may enter.

2. Contest times and loggings of stations on each band are as for transmitting.

3. All logs shall be set out as shown in the example. The scoring table to be used is the same as that used for transmitting entrants and points must be claimed on the basis of the State in which the receiving station is located. A sample is given to clarify the position.

It is not sufficient to log a station calling CQ—the number he passes in a contact must be logged.

It is not permissible to log a station in the same call area as the receiving station on the m.f. and h.f. bands 1.8-30 Mcs., but on bands 52 Mcs. and above such stations may be logged, once only per band, for one point. See example given, VK1/VK2 and VK5/VK8 are considered to be the same area for scoring purposes.

4. A station heard may be logged once on phone and once on c.w. for each band.

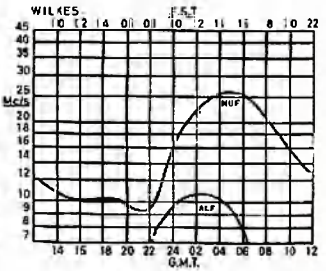
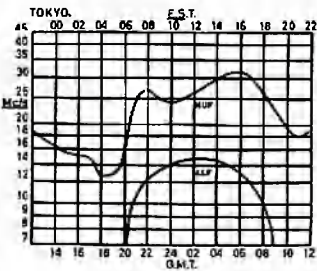
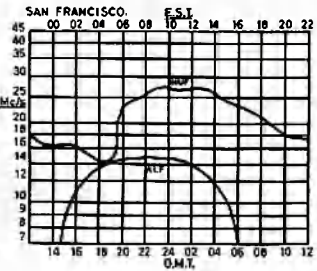
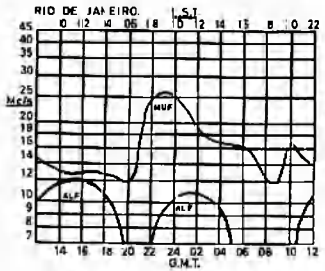
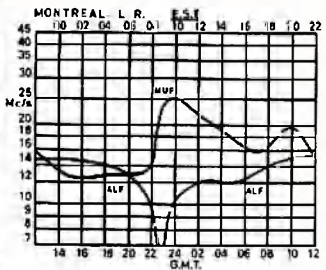
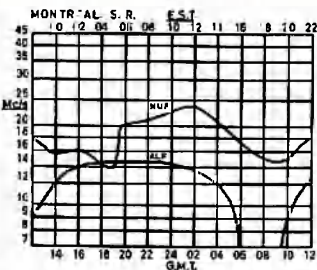
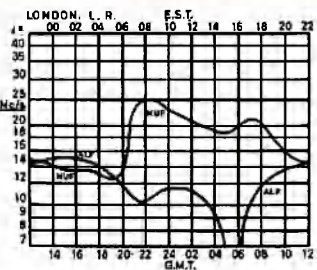
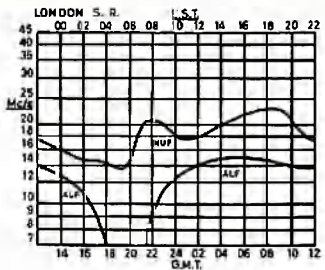
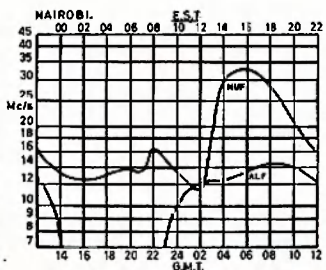
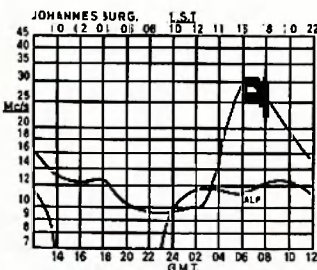
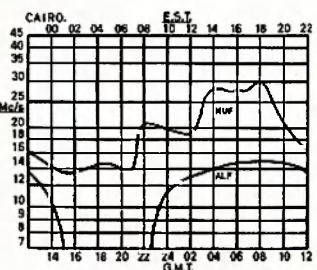
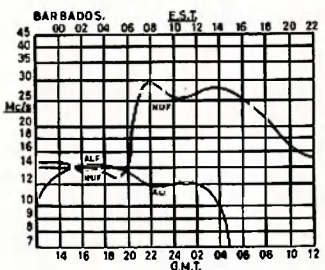
5. Club receiving stations may enter for the Receiving Section of the Contest, but will not be eligible for the single operator award. However, if sufficient entries are received a special award may be given to the top receiving station in Australia. All operators must sign the Declaration.

Awards

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.

PREDICTION CHARTS FOR JULY 1968

(Prediction Charts by courtesy of Ionospheric Prediction Service)



VK3 V.h.f. Group 6 Metre Converter—Untuned Output

G. S. BYASS,* VK3ZWA

Book Review

RADIO AMATEUR'S HANDBOOK 1968 Edition

The A.R.R.L. Handbook has been the standard reference manual for Amateurs since its first publication in 1928, since when over four million copies have been sold.

This 45th edition is once again an improvement on its predecessors. The use of non-gloss paper and very clear and sharp photographs and drawings make this edition very easy to read. Also, at last, much more emphasis has been placed on solid state devices, bipolar transistors, field effect transistors, integrated circuits, zener and variable capacitance diodes, and SCRs.

Many of the construction projects appearing in earlier editions have been replaced by new material. Also, information has been included in the construction practices section on how to fabricate etched-circuit boards, build transistor heat sinks, and assemble SCR-operated motor-speed controls.

Other changes include new v.h.f. and u.h.f. antennas and stacking methods, solid state portable and mobile equipment, new transistor data tables and revised vacuum valve tables and charts. If you have not bought a copy of the A.R.R.L. Handbook for a few years, this is the issue to buy to bring you up-to-date.

Published by The American Radio Relay League. Australian price \$5.85. Review copy from Technical Book and Magazine Company Pty. Ltd., 289-299 Swanston St., Melbourne.

WORLD RADIO T.V. HANDBOOK, '68

Since its inception more than two decades ago, this handbook has been a favourite with all international radio listeners. During this time it has amazingly been able to extend, improve, correct and bring completely up-to-date its valuable contents of information. It not only provides a quick and easy reference to all radio and t.v. stations in the world, but also contains practical suggestions and examples to help S.w.l. DXers to enjoy their hobby to the full. All in all, a must for all serious short-wave listeners.

Australian price \$5.40 plus 25 cents postage. Review copy from Technical Book and Magazine Company Pty. Ltd., 289-299 Swanston St., Melbourne.

HOW TO BUILD A TRANSISTORISED AMPLIFIER

Although designed for the newcomer to radio construction, this booklet could also be an interesting one for the valve man who has finally decided to get his feet wet in the field of transistors. Based on a three-transistor circuit from Mini-watt Digest Vo. 3 No. 3, the text and drawings are excellent, and the booklet contains a metallised cardboard circuit board.

Price 75 cents. Review copy from A. H. and A. W. Reed Pty. Ltd., 51 Whiting St., Artarmon, N.S.W.

The VK3 V.h.f. Group 6 Metre Converter was designed with a tuned output stage employing a pi network and for the majority of applications this system offers a number of advantages. However, there are applications where an untuned output is desirable (e.g. when using a low i.f. frequency or when it is desired to change the i.f. to suit different receivers), and with this in mind one of the prototype converters was modified as shown in Fig. 1.

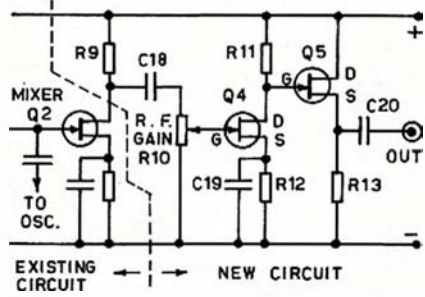


FIG. 1 MODIFIED OUTPUT CIRCUIT

- R9—15K ½ watt.
- R10—100K ½ watt.
- R11—10K ½ watt.
- R12—6.8K ½ watt.
- R13—560 ohm ½ watt.
- C18—1000 pF. ceramic.
- C19—5000 pF. ceramic.
- C20—5000 pF. ceramic.
- O4—2N3819 FET.
- O5—2N3819 FET.

DESCRIPTION

The circuitry is relatively simple, consisting of a resistive load in the mixer followed by a common source FET amplifier and a FET source follower to provide a low output impedance. The r.f. gain control and the extra stage of gain was provided because the tuneable i.f. was to be a car radio with a rather doubtful performance. If the tuneable i.f. receiver has adequate sensitivity it should be possible to eliminate the extra amplifier stage and merely couple the source follower direct to the mixer. Similarly, the r.f. gain control could be dispensed with and replaced by a fixed resistor or a pre-set control as required.

CONSTRUCTION

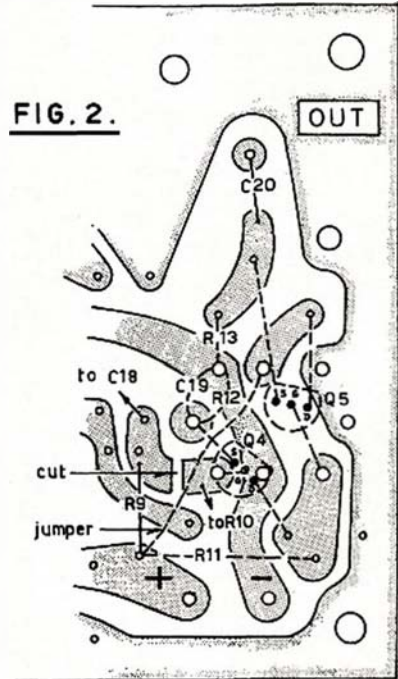
All the components with the exception of the r.f. gain control can be mounted on the existing board with only one copper land having to be modified. This is shown on the accompanying sketch of the board and component layout, Fig. 2.

Components L4, C8, C10, C11 and R5 should be removed from the board and the copper land cut as shown with a sharp knife and the small strip of copper peeled away from the board. The components R11, R12, R13 and C19 are mounted on the top of the board as are the two FET's Q4 and Q5.

R9 and C20 are mounted on the underneath (copper) side of the board with C18 and R10 placed where convenient, taking care to keep the leads as short as possible.

The sketch, Fig. 2, shows the bottom of the board with the added components on the top of the board shown with dotted lines. R12 and R13 have to be mounted vertically as there is insufficient room to mount them flat on the board.

NOTE: — ONLY ADDITIONAL COMPONENTS SHOWN. DOTTED LINE SIGNIFIES COMPONENTS ON TOP OF BOARD



UNDERNEATH VIEW OF P.C. BOARD

CALL BOOK, 1968-69 EDITION

IMPORTANT NOTICE TO RADIO CLUBS

Are the details of your Club, as listed on page 58 of the 1967-68 edition, still applicable? If not, make sure your Secretary writes to us without delay.

If your Club was not listed and you feel it should be, send the details now.

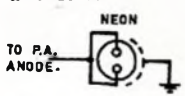
We go to press mid July.

ERRATA

Below are listed two corrections to an article entitled "A Crystal Locked AM-CW Transmitter for 6 Metres" that appeared in the June issue.

(1) The resistor shown as connected to the centre contact of S1A should be 15K ohms not 15 ohms.

(2) The neon on the p.a. output is shown incorrectly wired, it should be as illustrated below.



* Flat 10, 137A Woodland Street, North Essendon, Vic., 3041.

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

MR3A CARPHONE ON A.C.

Editor "A.R.," Dear Sir,
Reference the article about three months ago enabling the MR3A Carphone to be used on a.c. by applying 12v. a.c. to the primary of the vibrator transformer and removing the vibrator and putting a shorting plug in its place, etc., etc.

I tried this out and feel the following experiences should be made known to would-be modifiers.

(a) The vibrator transformer runs too hot for my liking. No transformer should be subjected to this heat for too long. After 20 minutes or so it was as hot as a finger could stand when held against the laminations.

(b) Reports of drifting off frequency after transformer heats up. Quite obviously the power transformer's heat radiation is heating the tx tctal after warm-up (it is only about 1/2 inch from the transformer) and causing frequency shift.

Either the tx tctal would have to be moved away from the transformer to a cooler section of the set or heat absorbent shielding would have to be placed around it. I have not tried this as I don't like the heating effect on the transformer and will supply the required voltages another way from an external source and such heat problems will not then arise. So in my book this modification is definitely not good enough.

—H. S. Michael, VK3ASI.

[The original article included a warning on this matter and stressed the importance of restricting the input voltage. The method outlined to operate the MR3A from a.c. is useful when making adjustments or repairs to the equipment.—Ed.]

ROSS HULL CONTEST RESULTS 1968

Editor "A.R.," Dear Sir,
In the rules of the above Contest published in your issue of October 1967, three sections were described: (1) Transmitting Open, (2) Transmitting Closed, (3) Receiving Open.

I entered the first two sections, but in the results published in May "A.R." no result was shown for my Open section entry.

This has been discussed with the Federal Contest Manager and I now invite comment from others through your columns on this matter.

It appears that to be eligible to participate in the Open section of the Contest an operator must have a c.w. contact. What is so special about c.w.? Why select this mode of emission as being the difference between the Open and Phone sections? Why not select r.t.t.y.?

As I see it, the "Open" section should be open to ALL modes. If I choose not to use c.w. then this may handicap my opportunity to make certain contacts, but this is my choice. By all means have a c.w. section in the Contest, but please let an open section be really "open"!

—W. J. Howse, VK6ZAA.

P.S.—The modes used by me in the Contest were A3, A3a, F3.

"A.R." MAGAZINE

Editor "A.R.," Dear Sir,
I wish to write in support of VK3AMK's letter in June issue. I read with dismay in "A.R." that our Zone notes were to be deleted, due to lack of funds to continue a magazine of the present size.

Admittedly, I don't read every page of "A.R." as some information is of no particular interest to me, but it is of importance to others. In my opinion we would do well to consider increasing the size of the magazine, even though it would cost more. As Geoff has commented, we are prepared to spend \$700 for a transceiver, etc., but think our W.I.A. dues too high at \$6. or thereabouts. Some other organisations we belong to have membership fees much higher than \$6, so I feel we shouldn't grumble. To keep our Amateur Radio politically as it is, money is an important item. With extra dues a more effectively financed I.T.U. representation is possible and our method of communications to the Amateur population in general through Amateur Radio assured.

As Max VK3ZS has also commented, we cannot continue to increase dues and so we must increase membership. I agree with his remarks and feel perhaps our complacency regarding Amateur Radio's future is why our

membership numbers have not increased and why we are not keen to increase our dues. In general, the average Amateur is not aware how much time and effort has gone into Amateur Radio politics via the W.I.A. and its unpaid staffing.

Okay chaps, what about us all doing a bit more for our organisation, the W.I.A. It won't run itself. Help the W.I.A. in whatever way you can do service, the many officers in your Division are always after keen chaps; Federal officers, "A.R." editorial staffing, notes and articles for "A.R." There is sure to be some way you can help.

Finally, please allocate more money to "A.R." even if our dues go up, "A.R." is too valuable to have its standard lowered.

—Rodney Champness, VK3UG.

Editor "A.R.," Dear Sir,
A few years ago, I passed a remark to a VK5 Federal Councillor (I'll wager you recall the remark, Phil) to the effect that "Amateur Radio" is a fairly lousy magazine.

It is a very small amount of self analysis has led me to believe that I am a fairly lousy Amateur, because I have done nothing to contribute to the improvement of the magazine.

Now we find that through lack of support we are about to get even less in the way of a monthly publication. What's wrong with the VK5 Amateur? A great number rave over the wonders of "QST," "CQ," "73," "R.S.G.B. Bulletin," "Electronics Australia," to name a few (have you counted the ads.) and pay respectively, \$6.40, \$5.20, \$4.50, \$8.25, \$3.60 per annum for the privilege. Many purchase all the above magazines, i.e. \$25.95 per year.

Let's be original! Many VKs have a reasonably high I.Q.—their articles are well worthy of printing. Why don't we give them an opportunity? A wise old man once said, "You can have everything in this world that you wish to have, provided that you are prepared to pay the price."

So I ask you, chaps! How about throwing in \$10 per year to enable those stalwarts to produce a magazine of which they can be justly proud? We, too, can also be proud of being part of it. Let's DO IT NOW.

—Bill Crawford, VK5XB.

[Similar letters have been received from VK2ZGW, VK3UG, VK3ZCG, L2022 and L3102. Space does not permit their inclusion, but they will be incorporated into the report being prepared for Federal Council.—Ed.]

S.W.L.'S AND VK/ZL/OCEANIA DX CONTEST

Editor "A.R.," Dear Sir,
On page 15 of the April 1968 issue of "A.R." appeared the results of the 1967 VK/ZL/Oceania DX Contest (Phone and C.w.).

After perusing the results listed, my mind stirred and my heart bled (literally) at noting that only a paltry one per cent. of W.I.A. S.w.l. members saw fit to submit an entry.

I find it hard to believe that only 10 of approx. 1,000 "could-be starters" showed sufficient interest in the 1967 Contest to submit an entry to the Federal Contest Manager—but the proof is there all right.

It puzzles me to no end in trying to think out why so many persons who profess to have interest in our hobby fail to submit a contest entry, or even take part in the event. Surely an hour or two could be spent by 100 S.w.l.'s once a year in taking part in this long standing annual event—even if you don't know your c.w., what's wrong with logging radio telephone signals for a short period and then spending half an hour or so writing up a contest entry log. Should be no effort at all for most if not all S.w.l.'s.

As a contest entrant (Amateur Radio type) for nearly 40 years (and veteran of over 100 contests) I write from experience when I say that an S.w.l. gains much, and loses nothing (except sleep) by taking part in contests such as the VK/ZL/Oceania DX Contest.

I appeal to the various State S.w.l. Groups, as well as individual S.w.l.'s throughout Australia to organise to enter the 1968 event—and submit a log by the entry closing date. Even if only two or three hours can be devoted to contest activity, I know the contest manager would be thrilled to get your entry. It's not so much the winning of such an event, as entering it, which satisfies most. Prove this by being a contestant yourself. I am sure you won't regret it. You will be a much more competent S.w.l. operator and your know-how of our great hobby will have increased immensely. It will certainly go much of the way to making you a better operator for the days when you become a transmitting operator type.

Finally, let's see 100 S.w.l. entries from VK in the 1968 VK/ZL/Oceania DX Contest results.

—Eric Trebilcock, L3042.

EXPRESSION OF THANKS FROM THE FEDERAL PRESIDENT, W.I.A.

Dear Fellow Amateurs,

During Easter 1968 I presided as Chairman of the 32nd Annual Federal Convention of the Wireless Institute of Australia in Sydney and as such it brought to a close my 18 years of service on the Federal Executive of the Institute.

On the occasion of the official dinner on the Saturday evening I was presented with a most handsome stainless steel drink tray and ice-cube jug—very nicely engraved—together with a cheque for the purpose of obtaining a suitable piece of Amateur equipment for my personal use.

These were presented as a mark of appreciation for my long devotion to the requirements of the Amateur Service by the Federal Executive, Federal Council and the Amateurs of Australia.

I cannot express in suitable words the real thrill it gave me to realise that my humble efforts had been deserving of such a wonderful thought by those with whom and for whom I had worked for the love of Amateur Radio over all these years. It has been my great pleasure to have been associated with the Institute Administration during almost two decades of tremendous growth, and I am bound to express my thanks to all the officers—past and present—throughout the Institute without whose assistance such growth would not have been possible.

I therefore take this opportunity—through the pages of "Amateur Radio" magazine—to say thank you for your appreciation extended to me by means of this presentation. It came as a complete, but pleasurable surprise to know I had so many friends who had thought fit to express their feelings in this way. It will be an event which will always remain with me as being one of the only times I have ever been "stuck" for words and an event which I shall always cherish in my memories until the inevitable day when I join the ranks of silent keys.

Might I also take this opportunity of extending my hearty good wishes for the future prosperity of the Wireless Institute of Australia in its major role of representing the Amateur Service in this country. The Institute is indeed entering a new era with the introduction of a Region III. organisation of the International Amateur Radio Union (I.A.R.U.) as a result of the inaugural Regional Congress held in Sydney conjointly with the 32nd Annual Federal Convention.

The next few years will be fraught with many problems and require an immense overall effort by those conducting the affairs of the Institute. Without the support of members such an effort would be in vain. I am hopeful, therefore, that the Amateurs of Australia will become aware of the dangers besetting the Amateur Service world wide, and be prepared to make the small individual sacrifices which they may be called upon to do to preserve for posterity the greatest of all hobbies—Amateur Radio.

I again thank you all for your magnificent presentation.

Yours sincerely,

G. Maxwell Hull, VK3ZS,
(Federal President—Retired)

PROVISIONAL SUNSPOT NUMBERS FOR APRIL 1968

Dependent on Observations at Zurich Observatory and its Stations in Locarno and Arosa.

Day	R	Day	R
1	122	18	114
2	108	17	91
3	93	18	63
4	96	19	53
5	89	20	63
6	85	21	64
7	79	22	68
8	82	23	50
9	94	24	48
10	104	25	64
11	95	26	50
12	83	27	57
13	60	28	82
14	96	29	71
15	110	30	98

Mean equals 81.0.

Smoothed Mean for October, 1967: 94.0.

Predictions of the Smoothed Monthly Sunspot Numbers:

May 109	August 108
June 110	September 108
July 110	October 107

—Swiss Federal Observatory, Zurich.

NEW CALL SIGNS

MARCH, 1968

- VK2BAK—M. T. Webster, 7 Gorse Close, Loftus, 2232.
- VK2BAL—A. L. McCutcheon, 54 Salisbury Rd., Willoughby, 2088.
- VK2BAP—V. L. Shillcock, 4 Ellalong Rd., Cremorne, 2090.
- VK2BBG/T—J. Potts, 103 The Boulevard, Oak Flats, 2527.
- VK2BDL—D. L. Stevens, Radio Transmitter 2BA, Princes H'way, Bega, 2550.
- VK2BIG—M. W. Cookson, 15 Bolwarra Rd., Elanora Heights, 2101.
- VK2BPJ/T—P. B. Jackson, 66 St. Johns Ave., Gordon, 2072.
- VK2ZPU—P. S. McWhinney, 138 Mortimer St., Mudgee, 2850.
- VK2ZQE—L. N. Smith, Avondale College, Cooranbong, 2265.
- VK2ZSZ—D. T. Stevens, 33 Kathleen Pde., Picnic Point, 2213.
- VK3KI—M. J. Owen, 27 Crown St., Syndal, 3149.
- VK3JD—S. L. Skinner, Station: Reserve Rd., Allambee; Postal: 40 Aurum Cres., Ringwood, 3134.
- VK3AIQ—J. Glenn, 1 Plunkett Ave., Ormond, 3204.
- VK3ARR—R. K. Robbins (Rev. Bro.), St. Paul's School, Altona North, 3027.
- VK3AXG—P. D. Holdenson, 338 Shannon Ave., Newtown, 3220.
- VK5ZNM—G. Norman (Dr.), 1 Finlayson St., Netherby, 5062.
- VK6TG—E. G. Gabriel, C/o. Bechtel Pacific Corp. Ltd., Port Hedland, 6721.
- VK6ZCF—B. M. Chester, 37 Norman St., Bentley, 6102.
- VK7HJ—F. C. Beadle, 42 Manning Ave., Sandy Bay, 7005.
- VK7KT—C. Lindsay, 10 Windsor Crt., Harrington St., Hobart, 7000.
- VK9ZCQ—J. C. McLachlan, Station: C/o. Commonwealth Dept. of Works, 4 Mile Hostel, Boroko, Port Moresby, P.; Postal: C/o. P.M.G. Dept., Box 1684, Boroko, Port Moresby, P.

CANCELLATIONS

- VK1DL—D. L. Stevens. Now VK2BDL.
- VK1ZCW—E. Westerman. Transferred to Vic.
- VK1ZDZ/T—J. F. Ingham. Transferred to S.A.
- VK2DJ—D. I. Johnson. Ceased Operation.
- VK2IE—P. D. Cox. Ceased Operation.
- VK2LB—F. M. Basden. Not Renewed.
- VK2NA—Narrandera Radio Club. Not Renewed.
- VK2OB—L. W. Mashman. Deceased.
- VK2AGK—A. B. Girling. Deceased.
- VK2AGY—F. C. Meyer. Not Renewed.
- VK2ALJ—N. G. Beard. Ceased Operation.
- VK2ASN—N. M. Scorse. Not Renewed.
- VK2BCU—R. D. Coleman. Transferred to W.A.
- VK2CIN—M. C. Cain. Not Renewed.
- VK2BST—S. J. Lloyd. Transferred to Vic.
- VK2BWP—P. V. Inglis. Ceased Operation.
- VK2ZDJ—C. J. Jirsa. Not Renewed.
- VK2ZLR—R. L. Rutherford. Deceased.
- VK2ZPJ/T—P. B. Jackson. Now VK2BPJ/T.
- VK2ZSQ/T—J. Potts. Now VK2BBG/T.
- VK2ZWG—G. D. Wilson. Not Renewed.
- VK3TI—C. A. Godden. Deceased.
- VK3UV—A. J. Turner. Not Renewed.
- VK3AFL—S. L. Skinner. Now VK3VD.
- VK3AYO—M. T. Webster. Now VK2BAK.
- VK3ZEE—J. Sapir. Not Renewed.
- VK3ZEO—M. J. Owen. Now VK3KI.
- VK5OB—L. A. C. Baker. Ceased Operation.
- VK5ZGS—J. F. P. Gibson. Ceased Operation.
- VK5ZIP—J. J. Champion. Ceased Operation.
- VK6JR—J. R. Wood. Not Renewed.
- VK6ME—M. A. Elliott. Ceased Operation.
- VK7ZRT—R. D. Summers. Not Renewed.
- VK9UK—G. E. Denny. Not Renewed.
- VK9JD—J. F. Dalstead. Transferred to Vic.
- VK0CR—R. D. Champness. Cancelled.
- VK0TO—T. Olog. Cancelled.
- VK0GP—G. N. Payne. Cancelled.
- VK0CS—C. R. Simpson. Cancelled.

ERRATA

In the May 1968 issue of "A.R." under New Calls for January, 1968, VK3ZYK appeared twice with different names. Here are the correct details:—

- VK3ZYF—G. H. Gaspars, 22 Hudson St., Caulfield North, 3161.
- VK3ZYK—K. G. Malcolm, 40 Saniky St., North Clayton, 3168.

Publications Committee Reports

At the June meeting correspondence from the following was considered: VKs 2ASI, 3ASI, 3AMK, 3ZYK, 5ZIE, 5ZWW, 6ZAA, L3042. Other correspondence regarding reduction of size of "A.R." is listed elsewhere.

Technical material was received from VKs 1AU and 2ABQ.

The loss made on "A.R." for the first three months of this financial year was considered, and the possible improvement in the position now Divisions have ratified a 2 cent price increase debated. The Victorian Divisional Council has agreed that every effort be made to continue publication and will support us financially until the report to Federal Council is completed. This does not mean we have freedom to re-instate the notes, but that we will not have to cease publication with the June issue as was feared. A preliminary analysis of our costs has shown that apart from reducing the size, there is very little we can do to effect economies.

Our advertising rates are under review with the object of bringing them into line with the increase in circulation and increased production costs. Hamads will also cost more as from the August issue.

Several members have offered their services to the Committee and it was agreed that these offers be accepted.

One offer was for drawing assistance, and with this extra staff, a system of checking drawings before publication was arranged and it is anticipated that we will avoid some of the errors that have crept through recently. Examination of original sketches shows that many errors are due to omissions and incorrect figures supplied to "A.R.," and we request all authors to check their work before submission.

It was decided to retain the modified arrangement of advertising matter as only favourable comments had been received.

Production of the 1968-69 Call Book is on

schedule and by now all Divisions will have received a letter on this subject. The material to be finally included has not yet been decided as this will depend on the costs incurred in the re-setting that has been done to include the post code numbers as required by the Department.

CONTEST CALENDAR

- Until 31st December: Concurso Mexico 1968 (L.M.R.E.).
- 6th/7th July: New Zealand Memorial Contest (3.5 Mc. only) (N.Z.A.R.T.).
- 17th/18th August: Remembrance Day Contest (W.I.A.).
- 5th/6th October: VK/ZL/Oceania DX Contest, Phone Section (N.Z.A.R.T.).
- 12th/13th October: VK/ZL/Oceania DX Contest, C.w. Section (N.Z.A.R.T.).
- 12th/13th October: 28 Mc. Phone Contest (R.S.G.B.).
- 28th/27th October: "CQ" w.w. DX Contest, Phone Section.
- 28th/27th October: 7 Mc. Phone Contest (R.S.G.B.).
- 7th Dec., 1968, to 12th Jan., 1969: Ross Hull V.h.f. Contest (W.I.A.).
- 1st/2nd February, 1969: National Field Day (W.I.A.).

FEEDBACK

In the hurry to include the statement from the Region III Conference in May issue, incorrect call signs were given for three of the delegates. They should read:

- President J.A.R.L.—Kenichi Kajii, JA1FG.
- President N.Z.A.R.T.—Harry Burton, ZL2AFC.
- Foreign Liaison Officer—Tom Clarkson, ZL2AZ.

HAMADS

Minimum \$1 for forty words.
Extra words, 3 cents each.

HAMADS WILL NOT BE PUBLISHED UNLESS ACCOMPANIED BY REMITTANCE.

Advertisements under this heading will be accepted only from Amateurs and S.w.'s. The Publishers reserve the right to reject any advertising which, in their opinion, is of a commercial nature. Copy must be received at P.O. 36, East Melbourne, Vic., 3002, by 5th of the month and remittance must accompany the advertisement.

COLLINS complete s.s.b. station: 75S2, 32S1, 312S4 control unit, SM1 mike, and power supply, as new, \$1350 O.N.O. Also A.M. Transmitter, tabletop, 813 final, \$70. Phone 57-1107 Melb.

CONTROL Console comprising 50 watt modulator (EL34s), power supply and metering; unit also incorporates 100 Kc. Crystal Calibrator, Rx Pre-selector for 10, 15 and 20 mc and many extras; less cabinet, snap, \$75. H.V. Solid State Power Supply, suitable 400 watt linear, 1600v, 250 mA., \$40. 100 watt Multimatch Modulation Transformer, \$10. VK3TD, Phone Melbourne 787-1407.

FOR SALE: Eddystone 940 Receiver, s.s.b./c.w. and a.m., 500 Kc. to 30 Mc., perfect condition, with a spare set of tubes, \$400. T. Harding, 35 Waratah Rd., Berowra, N.S.W., 2081. Telephone 610-1124.

FOR SALE: Four 866As with filament transformer and filter choke. Best offer or swap for high voltage filter condensers. VK3WW, phone 465-2991.

FOR SALE: Geloaso G209 Receiver in good condition, \$175. Also Viceroy Mk. 3 Transmitter in good condition, \$300. V. Macey, Community Hotel, Irymple, Vic., 3498. Phone 23 Irymple.

FOR SALE: Professionally built s.s.b. exciter rig, 80-10 mx. 9 Mc. McCoy filter, 7350 bal. mod., 200 w. p.a.p. 8236 p.a. c/w. h.d. power supply, xtal mike. Cost \$350 for parts, highest offer takes the lot. VK3ZX, H. M. Everett, 69 Moore St., Traralgon, Vic.

FOR SALE: 50w. Tx, 80, 40, 20, 15, Geloaso V.F.O., excl. cond., \$75. Type 3 Mk. 2 Trans., mod. for xtal mic., \$40. 25w. Tx Mobile, 160, 80, 40, V.F.O. case, etc., \$55. VK3AOD, 1 Speed St., Ararat, Vic.

FOR SALE: Swan SW240 with a.c. supply, \$300. Swan d.c. 12v. supply for mobile, \$50. Three Newtropic Whips, 80, 40, 20 and car mount, \$60. YA33 Jr. Beam, \$60. Standing wave indicator, \$8. Grundig G.D.O., 1.7 to 250 Mc., \$40. Prop. Pitch Motor, \$25. Two Selsyns, \$15. G209 Geloaso Rcvr., \$150. Sundry valves and transformers, cheap. Write Owen Bested, P.O. Box 446, Griffith, N.S.W.

PRICE down to \$120 on Johnson Courier Linear 500 watts, internal power supply. Original Hamad in May issue. Price will drop each Hamad until sold. Shipping extra. Make offer. VK9GN.

SELL: DC-DC Translator Converters, H.B., 60w. uses four 2N301s, \$10. Pye 30w. uses two OC2Bs, \$10. VK3TX, phone 544-7778.

SELL: Eddystone S888A double conversion Ham Band Receiver, 160-10 mx, original condition, in good working order with handbook, \$200. R. F. Lloyd, VK3AUN, 171 Cheddar Rd., Keon Park, Vic., 3073. Phone 46-4200 (Melbourne).

SELL: FT100B Yaesu Musen transistorised Transceiver, vox, xtl. cal. plus/minus 5 Kc. R.F.A., 230 volt a.c. and 12v. d.c., \$520. Perfect condition. Sell Swan 500 complete with 230XC power supply. Faultless, little use, \$600. John Dalstead, VK3QO, 8 Joame St., Cheltenham, Vic. Phone 93-1522.

SELL: Labcraft 605L Turntable, with all balance arm, pick-up lift, and A.D.C. magnetic cartridge, \$115, offer. Phone Howard Anders, VK3ZVH, 277-1207 (Melb.) after 6 p.m.

WANTED: High Band F.M. Base, also TR1987, new or used or equivalent. Handbook on TR1987 or equivalents. S. E. Widgery, 181 Victoria St., Ballarat, Vic., 3350.

WANTED: Manuals for Type 3 Mk. 2, SX28, AT21, VK2ASJ, 98 Dunbar St., Stockton, N.S.W., 2285. Phone 28-1532.

WANTED: Prop. Pitch Motor in good condition. G. A. van der Harst, VK5XV, 21 Dudley Crescent, Marino, S.A., 5049. Phone 96-3136.

WANTED: 14AVO or 18AVO Vert. Ant. Also late model gen. cov. or Amateur band Receiver to about \$250. Also T.C.S. Receiver. Write to VK3OM or phone 560-9215 (Melb.).

WEBSTER Band Span wanted. A. G. Pither, VK-3VX, Phone 81-1853 (Melb.).

SSB EQUIPMENT

Yaesu Type "F" Generator Boards, basis for SSB transmitter. Not a kit, but a completely wired and tested crystal filter SSB assembly. Includes mic. amp., B.M., carrier osc., I.F. amp., valves and circuit. \$39 each plus postage (wt. 2 lbs.).

TH6DX Hy-Gain Tri-band Beam. \$199 each.

K-100 50/75 ohm Kyoritsu SWR Meters, uses amphenol type PL-259 connectors. \$20 each.

FF30 DX 3-section Low Pass Filters takes PL-259 plugs. \$18.50.

P.T.T. Microphones (crystal, dynamic and ceramic). Mic. "curly" cords.

Amphenol type co-ax. plugs, sockets, angle adaptors, cable junctions, etc.

Bail Electronic Services

60 SHANNON STREET,
BOX HILL NORTH, VIC., 3129
Phone 89-2213

Repairs to Receivers, Transmitters; constructing and testing; xtal conv., any frequency; Q5-ers, R9-ers, and transistorised equipment.

ECCLESTON ELECTRONICS

146a Cotham Rd., Kew, Vic. Ph. 80-3777



Stockists of Radio and Electronic Components for the Amateur Constructor and Hobbyist

First Ring, Write or Call on

WILLIAM WILLIS & Co. Pty. Ltd.

430 Elizabeth St., Melbourne. Ph. 34-6539

Wireless Institute of Australia

Victorian Division

A.O.C.P. CLASS

commences

MONDAY, AUG. 19, 1968

Theory is held on Monday evenings, and Morse and Regulations on Thursday evenings from 8 to 10 p.m.

Persons desirous of being enrolled should communicate with—

Secretary W.I.A., Victorian Division, P.O. Box 36, East Melbourne, Vic., 3002 (Phone 41-3535, 10 a.m. to 3 p.m.), or the Class Manager on either of the above evenings.

WIRELESS INSTITUTE OF AUSTRALIA

FEDERAL EXECUTIVE

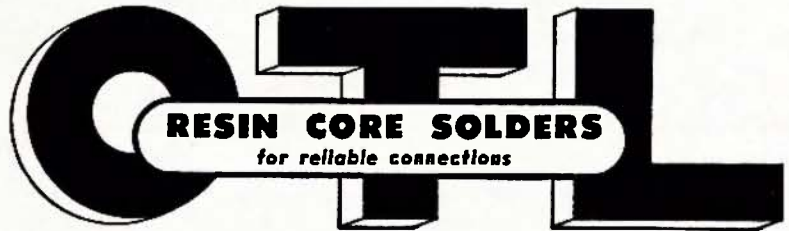
The Institute can now offer annual subscriptions to the following Amateur Journals:—

- ★ "QST"—Associate membership and renewals, \$6.40.
- ★ R.S.G.B. "Radio Communication" (ex "The Bulletin") is only sent with membership of the Society. Send for application form and FREE sample copy of the R.S.G.B. "Radio Communication," \$5.50.
- ★ "CQ" Magazine, \$6.20.
- ★ "73" Magazine, \$4.50.

R.S.G.B. Publications and A.R.R.L. Publications available.

Send remittance to Federal Executive, C/o. P.O. Box 36, East Melbourne, Vic., 3002.

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O. T. LEMPRIERE & CO. LTD. Head Office: 31-41 Bowden St., Alexandria, N.S.W., 2015 and at Melbourne — Brisbane — Adelaide — Perth — Newcastle

DURALUMIN, ALUMINIUM ALLOY TUBING

IDEAL FOR BEAM AERIALS AND T.V.

★ LIGHT ★ STRONG ★ NON-CORROSIVE

STOCKS NOW AVAILABLE FOR IMMEDIATE DELIVERY

ALL DIAMETERS— $\frac{1}{4}$ " TO 3"

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SALMON STREET,
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Phone: 64-3351 (10 lines)
Telegrams: "Metals," Melb.



HANSON ROAD,
WINGFIELD, S.A.

Phone: 45-6021 (4 lines)
Telegrams: "Metals," Adel.

BRIGHT STAR CRYSTALS

FOR ACCURACY, STABILITY, ACTIVITY
AND OUTPUT



Our Crystals cover all types and frequencies in common use and include overtone, plated and vacuum mounted. Holders include the following: DC11, FT243, HC-6U, CRA, B7G, Octal, HC-18U.

THE FOLLOWING FISHING-BOAT FREQUENCIES ARE AVAILABLE IN FT243 HOLDERS:

6280, 4095, 4535, 2760, 2524 Kc.

5,500 Kc. T.V. Sweep Generator Crystals, \$7.25;
100 Kc. and 1000 Kc. Frequency Standard, \$17;
plus Sales Tax.

Immediate delivery on all above types.

AUDIO AND ULTRASONIC CRYSTALS—Prices on application.

455 Kc. Filter Crystals, vacuum mounted, \$13 each plus Sales Tax.

ALSO AMATEUR TYPE CRYSTALS—3.5 Mc. AND 7 Mc. BAND.

Commercial—0.02% \$7.25, 0.01% \$7.55, plus Sales Tax.

Amateur—from \$6 each, plus Sales Tax.

Regrinds—Amateur \$3, Commercial \$3.75.

CRYSTALS FOR TAXI AND BUSH FIRE SETS ALSO AVAILABLE.

We would be happy to advise and quote you.

New Zealand Representatives: Messrs. Carrel & Carell, Box 2102, Auckland.
Contractors to Federal and State Government Departments.

BRIGHT STAR RADIO

LOT 6, EILEEN ROAD, CLAYTON, VIC.

Phone 546-5076

With the co-operation of our overseas associates our crystal manufacturing methods are the latest.



W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE

VK5MS	317/338	VK5AB	300/314
VK3AHO	314/326	VK4FJ	279/296
VK6RU	307/330	VK3TL	271/275
VK6MK	304/321	VK2APK	264/287
VK2JZ	301/316	VK2AAK	263/287
VK4HR	300/316	VK4TY	256/257

Amendments:

VK3AMK	133/133	VK4PX	162/163
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C.W.

VK2QL	295/315	VK3NC	286/286
VK3AHQ	294/306	VK3ARX	286/274
VK3CX	291/312	VK3YL	285/282
VK4FJ	291/313	VK6RU	284/285
VK2AGH	281/294	VK2APK	281/288
VK4HR	279/295	VK3XB	259/272

OPEN

VK2AGH	310/328	VK4TY	295/307
VK6RU	309/322	VK2EO	293/314
VK4HR	307/329	VK3TL	287/291
VK2VN	306/321	VK3ARX	287/295
VK6MK	305/322	VK2APK	284/282
VK4FJ	295/318	VK2ACX	276/300

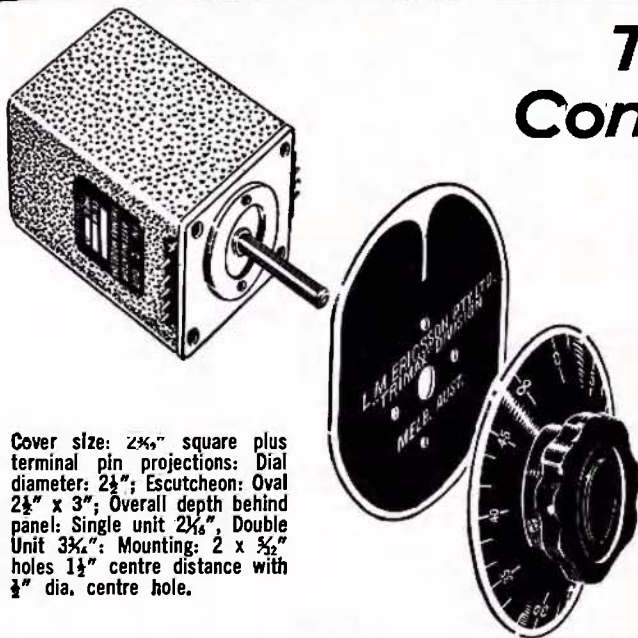
New Member:

VK3ABA 112/115

Amendment:

VK4PX 185/190

Note: The call VK4QM was inadvertently shown in the May and June listing. This should have been shown as a cancellation of VK2ADE.



Cover size: 2 3/8" square plus terminal pin projections: Dial diameter: 2 1/2"; Escutcheon: Oval 2 1/2" x 3"; Overall depth behind panel: Single unit 2 3/8", Double Unit 3 3/8"; Mounting: 2 x 3/8" holes 1 1/2" centre distance with 3/8" dia. centre hole.

The Ultimate in Control Reliability!

ATTENUATORS AND FADERS by TRIMAX

The 'Trimax' Model G.45 Fader is a new design evolved from experience gained over twenty years of this type of manufacture, and features solid non-staining silver alloy contacts, floating rotor with three contact pressure points, optimum, permanently maintained contact pressure, rigid four pillar construction.

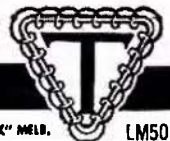
Porous bronze main bearing, stainless steel spindle, high quality phenolic resin stud plates with acetal resin rotor bosses, diamond lapped contact surfaces, positive knob stop in addition to individual rotor stop, high stability resistors.



L M ERICSSON PTY. LTD.

"TRIMAX" DIVISION

FACTORY: CHR. WILLIAMS RD. & CHARLES ST., NORTH COBURG, VICTORIA. PHONE: 35-1208 ... TELEGRAPHIC ADDRESS: "TRIMAX" MELB.



LM50



Yaesu SSB EQUIPMENT

Designed and manufactured in Japan, this equipment ranks with the best.
Check the range and write for further details.

FRDX-400 Receiver, successor to the famous FR-100B, has the additional features of 160 m. band, I.F. "T" notch filter, 100/25 kc. calibrator, selectable slow/fast A.G.C., new styling of cabinet and panel. Provision for internal installation of F.E.T. V.H.F. converters, F.M. with squelch, fixed channels, C.W. and F.M. mechanical filters, WWV, transceiving with FLDX-400, etc.

FLDX-400 Transmitter, matching design, electrically similar to the FL-200B. Mechanical filter, VOX, ALC, conservative 300 watts peak. Adaptable to FSK for RTTY.

FLDX-2000 Linear Amplifier, AB2 grounded grid, built-in power supply and SWR indicator. Forced air cooling. A real signal booster for any Amateur exciter or transceiver. Approved for VK use at 400w. p.e.p. output level.

FTDX-400 Transceiver, 80/10 m., 400-500w., built-in AC power supply, VOX ALC, off-set tuning, calibrator—the lot!

FTDX-100 New model of the well known, low current drain, transistorised transceiver AC/DC power supply built-in. Many additional features. Ideal for portable/mobile. 150w. peak input.

Also available: Transceiver FT-50, Transmitter FL-50, Receiver FR-50, Low Pass Filter FF-30DX, Type "F" SSB Generator assembly, SWR Meter K-109, Yaesu Valves and Spares, Co-ax. Connectors, Hy-Gain (U.S.A.) Beams.

Our Policy: 90-day manufacturer-backed warranty. All sets tested before despatch. After sales service & spares availability.

Obtainable from
Australian Agents: **BAIL ELECTRONIC SERVICES**
60 Shannon St., Box Hill North, Vic., 3129. Phone 89-2213

Rep. for N.E. N.S.W.:
MOSMAN RADIO SERVICES
P.O. Box 198, Tamworth, N.S.W., 2340
Phone 66-1010

FOSTER DYNAMIC MICROPHONES

SPECIFICATIONS:

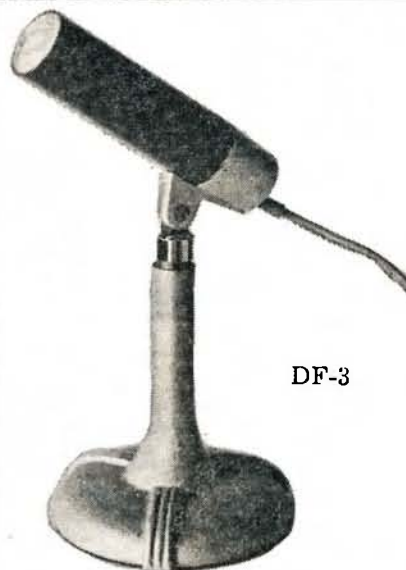
Output Impedance 50 ohms or 50K ohms
Effective output level —55 db. [0 db. == (one) 1V. Microbar]
Frequency response 50 to 15,000 c.p.s.

OMNI-DIRECTIONAL DYNAMIC:

Plastic Diaphragm. Swivel fits 5/8" 26 t.p.i. Stands.
Size: 4 1/2" long, 1 1/4" diameter. Colour: TWO-TONE GREY.
Cable: 12 ft. of P.V.C.

Retail Price 50K ohms: **\$9.60** + Sales Tax \$1
Retail Price 50 ohms: **\$9.40** + Sales Tax 98c

A QUALITY PRODUCT FOR TAPE RECORDERS & P.A. USERS



DF-3



Marketed by **ZEPHYR PRODUCTS PTY. LTD.**
70 BATESFORD ROAD, CHADSTONE, VIC., 3148 Phone 56-7231

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Agents: D. K. Northover & Co.; Neil Muller Ltd.; Homecrafts (Tas.) P/L.; Jacoby, Mitchell & Co. P/L.; T. H. Martin P/L.



TRIO

2 METRE TRANSCEIVER

TR-2E



FEATURES:

- SEPARATE V.F.O. FOR TRANSMITTER AND RECEIVER
- CRYSTAL CONTROL
- SQUELCH
- NUVISTOR FRONT END
- TRIPLE CONVERSION RECEIVER
- NOISE LIMITER
- A.C.-D.C. OPERATION
- INBUILT POWER SUPPLY

SPECIFICATIONS:

RECEIVER
 Frequency Range: 144-148 Mc AM
 Sensitivity: 1 microvolt for 10dB S/N at 145.5 Mc (0.05 W Audio Output)
 Image Ratio: 50 dB at 145.5 Mc
 IF Frequency: 1st IF 44-45 Mc
 2nd IF 10.7 Mc
 3rd IF 455 Kc
 Noise Limiting: Automatic
 Squelch: 1 microV-300 microV.
 Selectivity: 20 dB down at 10Kc
 Audio Output: 3W 8 ohms
 Input Impedance: 50 ohms (Unbalanced)

TRANSMITTER
 Frequency Range: 144-148 Mc AM
 Power Input to Final: 22 to 26 Watts
 RF Output Power: 10W 144-146 Mc
 AC 240V Operation 9W 144-146 Mc
 DC 12.8V Operation FT-243
 Crystal Type: FT-243
 Crystal Frequency: 8-8.222 Mc

VFO Frequency: 8-8.222 Mc
 Microphone Input: High Impedance w/Push to Talk
 Frequency Response: —3 dB at 300 and 3,000 c/s
 Output Impedance: 50-100 ohms w/Coaxial Connector
POWER SUPPLY
 AC Operation: 117/230V 60/50 c/s
 Receive Power Drain 106 VA
 Transmit Power Drain 146 VA
 DC Operation: DC 12.8V (12/14V)
 Receive Power Drain 90 VA
 Transmit Power Drain 120 VA

Tubes and Transistors used: 16 Tubes
 1 Nuvistor, 8 Diodes, 4 Power Transistors
 Dimensions: H: 6 5/8"; W: 11 7/8"; D: 12 3/4"
 Weight: 22.2 lb
 F.O.R./F.O.A. SYDNEY \$276.00

CONSULT YOUR LOCAL RADIO DEALER, OR

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Please forward free illustrated literature and specifications on Trio equipment.

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Address.....



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 376 EASTERN VALLEY WAY, ROSEVILLE, N.S.W.
 Cables and Telegraphic Address: 'WESTELEC'
 Sydney, Phone: 40 1212

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☆

1.6 Mc. to 10 Mc.,
0.005% Tolerance, \$5

☆

10 Mc. to 18 Mc.,
0.005% Tolerance, \$6

☆

Regrinds \$3

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with more writing space.

Price 75c each

plus 17 Cents Post and Wrapping

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Secretary, or W.I.A., P.O. Box 36,
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A LARGE RANGE OF TRANSMITTERS, RECEIVERS, TEST GEAR, AND DISPOSALS RADIO PARTS AVAILABLE

● CRYSTAL CALIBRATOR No. 10

Nominal Frequency Range: 550 Kc. to 30 Mc.
Internal 500 Kc. crystal. VFO frequency coverage: 250-500 Kc. 2 Kc. dial divisions.

Used (good condition): **\$10.50.**

New (sealed cartons): **\$13.00.**

Packing and freight: **\$1.50.**

● MILLER 8903B PRE-WIRED I.F. STRIPS

455 Kc. centre frequency, 55 db. gain. Employs two PNP transistors and diode detector.

Price **\$9.50.**

● EICO 753 TRI-BAND S.S.B. TRANSCEIVER

Full CW-AM-SSB coverage, 80-40-20 metres. 180w. PEP SSB-CW. VOX-PTT-ALC. 10 Kc. Receiver offset tuning.

Kit **\$328.78**, Wired **\$428.78.**

● TRANSISTORS

2SC73

2SD65

2T65

2T76

OC66

All at Bargain Price of **25 cents each.**

● STAR SR700 SSB AMATEUR BAND RECEIVER

Frequency coverage: 3.4-29.7 Mc. in 7 bands. Triple conversion, employs xtal locked 1st and 3rd conversion oscillators. Selectable USB or LSB. Selectivity variable, 0.5 Kc. to 4 Kc. 1 Kc. dial calibration. Three stages double locked geared dial mechanism, 30 Kc. per turn tuning rate. Vackar oscillator employed in VFO for maximum stability.

Price **\$461.50.**

● A111 9 Mc. SSB EXCITER

A fibre-glass printed circuit board, the finest German crystal filter, diode ring modulator, and solid state circuitry all contribute to make the A111 the finest SSB Exciter available. Specifications: Sideband suppression, 80 db.; carrier sup., 65 db.; audio freq. response, 350 to 3,000 cycles; mic. input, 1 mV. on 5K ohm load. Incorporates VOX amplifier and relay amplifier.

Price with KVG **XF9B** Filter, **\$120.**

● A112 5 Mc. VFO

Frequency coverage: 4950 to 5550 Kc. Frequency stability better than 100 c/s. over 12 hours long term; better than 8 c/s. over 10 minutes if enclosed in suitable box. Output: 350 mV. on 220 ohm load.

Price **\$22.**

WANTED TO BUY

Communication Receivers, Test Equipment, etc. Call, write or phone. Equipment inspected and picked up at your convenience any night or week-end.

● VALVE SPECIALS

807—70 cents ea.

815—70 cents ea.

6AC7—20 cents ea. or 12 for \$2.

6J6—30 cents ea. or 7 for \$2.

6CQ6—20 cents ea. or 6 for \$1.

VR150/30—75 cents ea. or 3 for \$2.

VR105/30—75 cents ea. or 3 for \$2.

QB2/250 (813)—\$7 ea.

TZ40—75 cents ea.

6H6 (Metal)—20 cents ea.

DM71 (Indicator Tube)—40c ea. or 6 for \$2.

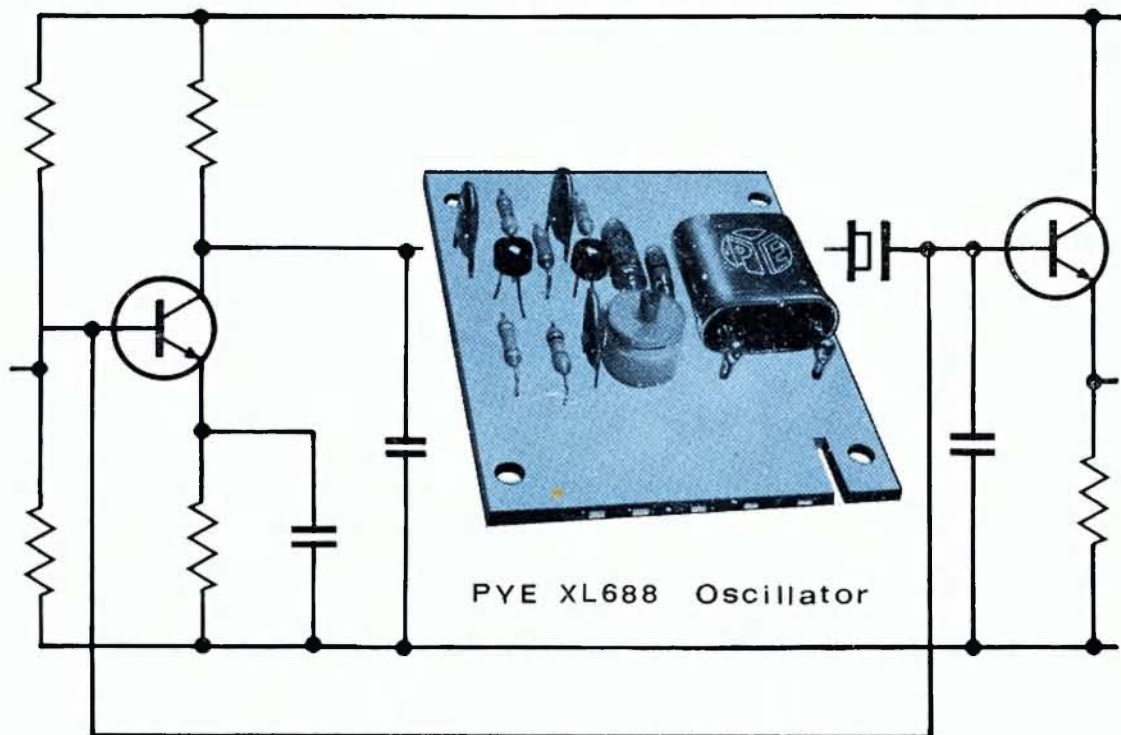
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UNITED TRADE SALES PTY. LTD.

280 LONSDALE ST., MELBOURNE, VIC. (Opp. Myers)

Phone 32-3815

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amateur radio

Vol. 36, No. 8
AUGUST
1968

30c

Registered at G.P.O., Melbourne, for
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POWER TRANSFORMERS

Type No. PF	H.T. Sec. Volts	Max. D.C. mA.	Rectifier Heater V. A.	Other Heaters V. A.	Price
2071	250-0-250	60	6.3	6.3CT 2	\$6.30
2072	285-0-285	60	6.3	6.3CT 2	\$8.40
2073	300-0-300	60	6.3	6.3CT 2	\$8.50
1882	325-0-325	60	6.3	6.3	\$7.20
1884	250-0-250	80	6.3	6.3	\$7.20
1885	285-0-285	80	6.3	6.3	\$7.50
1886	300-0-300	80	6.3	6.3	\$8.50
1889	285-0-285	100	6.3	6.3	\$8.40
1890	300-0-300	100	6.3	6.3	\$8.80
1892	385-0-385	100	5	6.3	\$11.30
1894	300-0-300	125	6.3	6.3	\$9.00
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"AMATEUR RADIO"

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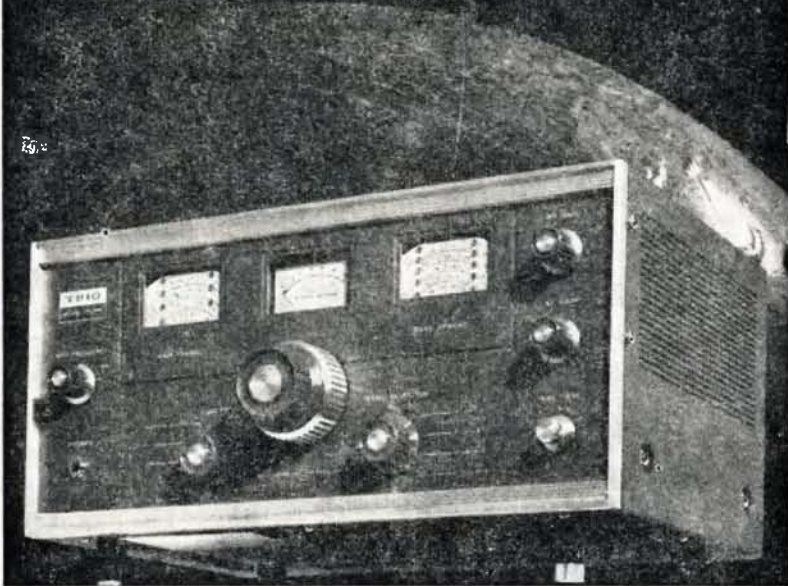
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The Remembrance Day Contest

The month of August has come around once again and with it comes the W.I.A. Remembrance Day Contest. Every Australian Radio Amateur should know that the reason for this contest is to perpetuate the memory of those Amateurs who lost their lives in World War II. To this end the contest date is taken as that week-end nearest the fifteenth of August—the day in 1945 that hostilities ceased in the Pacific.

The first R.D. Contest, or simply R.D. as it has become known, was held in 1948 and consequently it is the twentieth event being held this month. Over that twenty years the contest has proved most popular and perhaps not unexpectedly, has attracted a greater number of VK contestants than any other contest.

However, it has not been smooth going over the years and many hours have been spent by Federal Council in discussing the detailed rules of the contest. It costs the Institute a great deal of money to convene a Federal Convention and almost every year Council must spend a disproportionate amount of time discussing this detail which could and should be handled by the group co-opted for the purpose—the Federal Contest Committee. No doubt Council must lay down general policy and guide lines for the committee, but reference to minutes of recent Federal Conventions will show that this is not so.

The basic problem is that the rules as they have existed over the years with two exceptions have most definitely favoured the numerically smaller Divisions. No amount of protest from these Divisions can alter the facts as shown in the accompanying table. Cries of "if the larger Divisions organise themselves and their operators they can win" are not acceptable as the larger Divisions have shown themselves, for a number of reasons, unable to do this. New South Wales won in 1948 and Victoria won in 1967, but the rules were significantly different in those two years from the other eighteen.

Professional people, well qualified in the mathematical side of statistics, have been asked by Federal Executive and Federal Council to examine the situation and devise a mathematically

unbiased set of rules—rules that would allow any Division to win on its merits. The latest report arising from motions at the 1968 Convention appears elsewhere in this issue, but the result remains unchanged. **It is impossible under the present terms of reference to produce a set of R.D. Contest rules that are unbiased.**

Federal Council has recognised this situation and unanimously carried agenda item 6.1.1 as stated in Dr. Blackman's article. Despite the fact that earlier reports made this quite clear, Divisions have persisted in bringing up the agenda items that waste the time of Federal Council in trying to discover non-existent solutions.

FEDERAL COMMENT

If the situation as it exists is accepted then there are two alternatives:

- (1) Accept the fact that the rules will always have a bias and alter the bias periodically so that all Divisions will have a chance to hold the trophy. This approach is fraught with some difficulty as obviously the degree of bias could not be such as to allow only one Division to win. A consideration of past winners would allow the Contest Committee to determine in which direction the bias should be.
- (2) Alter the concept of the Contest as it now exists.

Dr. Blackman discusses the second alternative in some detail and his article is commended to all interested Amateurs. The first alternative is virtually the situation that now exists, but when the attempt to change the bias came in 1967 the smaller Divisions reacted to a larger Division winning (its first win ever) by immediately demanding a return to the old rules despite an agreement in 1967 that the new rules be given a three years' trial.

It would be of some interest to observe the reactions of the smaller Divisions if, say, the A.C.T. or the

Northern Territory were to become a seventh Division. This new Division would certainly then become the smallest and would have little difficulty in winning every contest under the present rules. No doubt some permanent changes would be introduced then and quickly too.

It is unfortunate that such short sighted views should have carried weight for so long. It is anticipated that members of the larger Divisions, seeing no chance of their side winning, will begin to lose interest and not bother to take part. As the numbers of contestants in the larger Divisions drop off, the others will find they have no one to work.

Let us remember, whilst considering the fate of this fine contest, the reason for its being and then let us ask if it were to be so bad that by suitable biasing, every Division would have a practical chance of holding the Remembrance Day Contest Trophy?

—D. H. RANKIN, VKQV,
Federal Activities Officer.

PAST R.D. CONTESTS

The first Remembrance Day Contest, or "R.D." as it is now familiarly called, was held in August 1948. Since then, the winning Division has been recorded on shields mounted on the base of the trophy. These shields give the following information:—

1948	New South Wales
1949	Tasmania
1950	Tasmania
1951	Tasmania
1952	Western Australia
1953	Western Australia
1954	South Australia
1955	South Australia
1956	Western Australia
1957	Western Australia
1958	Western Australia
1959	Tasmania
1960	Tasmania
1961	Western Australia
1962	Western Australia
1963	Queensland
1964	South Australia
1965	South Australia
1966	Western Australia
1967	Victoria
1968	???

Sidebanding—by a Greybeard, for Greybeards

W. J. MEAD,* VK4BM (Ex VK5JM)

THIS is not a technical article, but a description of my own attempts at s.s.b., hoping it may be of some assistance to others to get with "IT" (The Thing).

Last year, on a visit to some of my Amateur mates in Adelaide, I had the pleasure of seeing two home-brew copies of a Swan Tribander Transceiver (Jack VK5LN and Lee VK5BH), and another in the course of construction (Athol VK5LQ). A copy of the circuit was provided by Athol (plus advice, "Don't touch it, mate. It will drive you crackers"), a set of crystals and odds and ends promised by Jack.

A fortnight after my return to the land of Bent Bananas, a box arrived containing a set of crystals and band-change switch. And so, as soon as I finished my weekly VK5 sked, I started on The Thing.

The only test equipment used was a multimeter and a receiver for monitor-

ing the diode modulators but the easy way would be to provide for carrier insertion.

Within three weeks of the start of the project I was with "IT".

I apply enough negative bias to the final to hold the plate current to 40 mA., and set the audio gain control so that the meter kicks to 120 mA. on occasional peaks.

"IT" has been used on 80 metres, mainly 40 metres, and for the latter part of '67 on 20 metres. I don't claim to have worked the world for, quite frankly, I get most enjoyment from trying out different ideas. But I think I have learned more of the art by building than I ever did by just reading.

SOME HINTS

A few of the things I learned the hard way are:—

(1) Complete shielding of the three last stages of the transmitter is a must,

otherwise r.f. feedback will drive you up the wall!

(2) The final and, if you are not careful, the driver must be neutralised. I find it easier to neutralise the final by inserting some carrier and adjusting neutralising condenser until maximum output into antenna coincides with minimum plate current.

(3) Don't try to feed too much s.s.b. from the i.f. stage into the mixer. I use capacity coupling and the most that need be used is 10-15 pF., no more, otherwise you are well on the road towards excessive mixing distortion.

(4) the v.f.o. must be supplied from a regulated source. I use 105v. and find it ample for my needs.

TRANSCIVING

Having proved that a Greybeard could do what a s.w.l. could ("A.R." Jan. '67!), I relaxed and thought "IT" would keep me contented for quite a while. But, come Xmas Eve, of all times, it was on again! The project this time? Transceiving, no less!

Accordingly, Old Faithful rush box was stripped from mixer to product detector. Then 5 Mc. xtal filter and i.f. stage taken from transmitter chassis and built into receiver. A further i.f. stage was added and, after lining up on the filter frequency, the receiver performed as I have been led to believe it should! But I did find it necessary to change the a.v.c. over to audio derived before I was really happy with it on 20 metres.

Next the carrier osc., mic. amp., and balanced mod. was transferred to the receiver chassis and, after a few teething troubles, output was taken from the i.f. following the filter through a 10 pF. condenser, also from the v.f.o. through a 50 pF., and fed to the transmitter mixer. A relay was added to receiver chassis to break voltage to screens of receiver r.f., mixer and 2nd i.f., apply negative bias to a.v.c. line and voltage to mic. amp. in transmit position. A set of relay contacts was used to break the output from the bal. mods. to the filter on receive and another set to disable the S meter on transmit.

(Continued on Page 10)

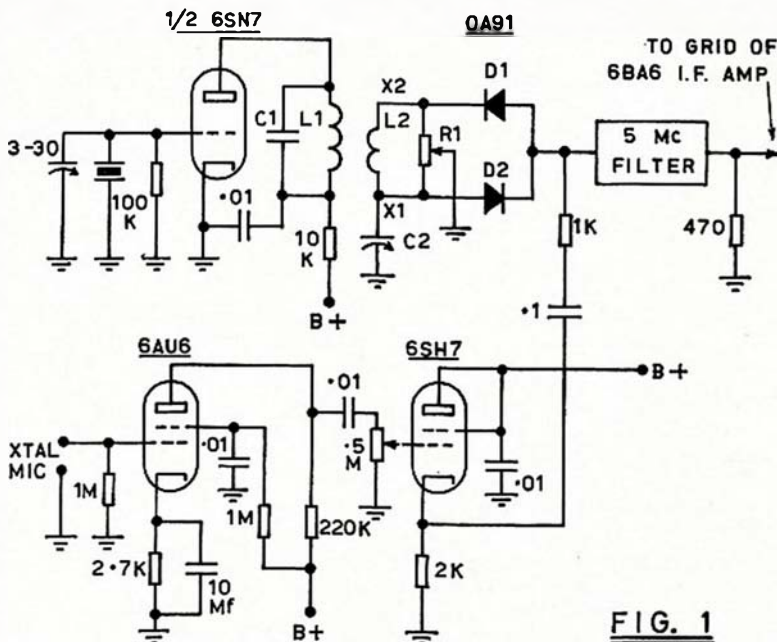


FIG. 1

L1-C1—Slug-tuned coil to suit the filter frequency. L2—5 turns wound over the cold end of L1.

R1—Wire wound pot., 500-1,000 ohms. C2—3-30 pF. Try it at either X1 or X2.

ing the filter frequency and setting the v.f.o. on frequency.

After a lot of trial and error (and stupidity), I finished up with the circuit in Fig. 1 (carrier osc., mic. amp. and balanced modulator).

The i.f. and other circuits are straight forward and can be found in any modern handbook. I use single conversion, with a Colpitts v.f.o., 6BA7 mixer, 12BY7 driver, and 6DQ5 final. The final has 500v. on the plate, 150v. on the screen, and I load it to 150 mA. when tuning up. I do this by unbalancing

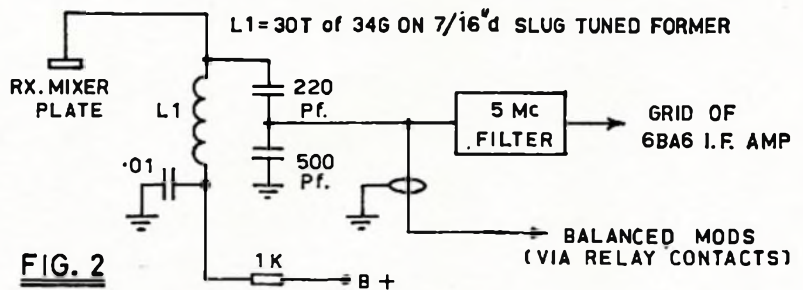


FIG. 2

C1—220 pF. C2—500 pF. L1—30 turns 34 g. on 7/18 inch slug-tuned former.

* 8 Cross Street, Mitchelton, Qld., 4053.

SIDAC—A POOR MAN'S VARIAC

COL HARVEY,* VK1AU

NORMAL Amateur practice is more towards methods of raising voltage, rather than reducing it. However, there are occasions on which a simple means of reducing mains voltage is required. In the past, this has been achieved by the use of a heavy, bulky and expensive variac. Now, a small pulse-activated diode can do the same job—and a kilowatt can be controlled by a 1 watt potentiometer!

The gadget to be described will handle up to 12 amps. sinewave and can swing the output from about 120 volts up to full mains voltage. It, therefore, can be used as an incandescent lamp "dimmer"; a speed controller for an electric drill; a "trimmer" for transformers supplying filament voltage; for smooth and continuous selection of desired h.t. or screen voltages for experiments; or for easy and safe transmitter final stage power adjustment.

Being bi-directional (full wave), one SIDAC[†] replaces two (half wave) silicon controller rectifiers. Also, SIDAC is inherently less susceptible to damage by voltage transients or current surges. Since SIDAC prices are substantially lower than SCRs of comparable ratings, the cost of replacement in the event of damage is relatively small.

The device is available in 1½ amp., 2½ amp., 5 amp. and even 60 amp. r.m.s. ratings, and as it is non-polarised, it is used in series with the mains and the load. However, no significant current will flow until a trigger pulse is applied to the SIDAC, instructing it to "turn-on". (Fig. 1a) (Keep reading—it's not as difficult as it seems.)

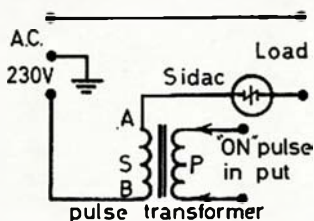


Fig. 1a. Basic series trigger control circuit

The trigger pulse comes from a simple CR integrating network charged by the mains, and in which the capacitor is discharged through the primary of a transformer when it reaches the break-over voltage of another SIDAC. The transformer secondary is in series with the controlling SIDAC and the mains, thus superimposing the trigger pulse on the mains voltage and activating the SIDAC. See Fig. 1b.

K5B type SIDACs are rated to control 5 amps. r.m.s. at 10 cycles and to accept a 3,000 volt 20 usec. pulse without failure.[‡] However, as an overseas

report[‡] suggests that in some circumstances some types of SIDAC may fail if the rate of change of voltage across the SIDAC exceeds 20 volts/usec., a simple RC suppressor is used across the control SIDAC to reduce this to a safe figure of about 2 volts/usec. (Fig. 2).

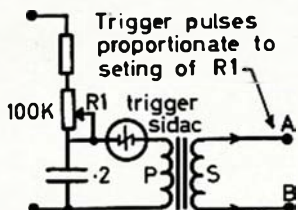


Fig 1b The Integrating, or voltage control circuit.

A possible problem in communication applications arises from the fact that the pulse used to turn-on the SIDAC will also appear on the line too and at the load unless simple precautions are taken, e.g. Fig. 3a. The value of C may need adjustment to ensure that the trigger pulse is not reduced so much that the SIDAC will not turn on. Note that the allowable value of C is affected slightly by the reactance of the mains. In my case, a value of 0.01 uF. is quite satisfactory for normal use with drills, transformers and incandescent lamps.

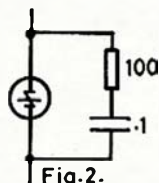


Fig. 2.—If SIDAC fails to turn-on with these values, increase the series resistance.

In more critical applications where, for example, it is desired to control items such as a t.v. receiver, a general coverage receiver, or perhaps a fluorescent lamp in the shack, radiated trigger pulse "noise" may be a problem. If so, it is necessary to use better r.f. filtering. (Fig. 3b) A suitable mains choke can be made with 5 amp. enamel wire on a nylon-insulated ferrite ring. Its inductance is not critical, but 70 uH. has been recommended.[‡]

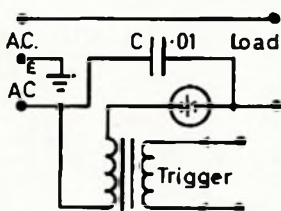


Fig. 3a. Basic RF filter

An Eddystone diecast box makes an ideal chassis. When earthed to the third pin of the mains plug, it acts as an r.f. shield, but more important, provides adequate safety. For safety reasons, do not attempt to install the potentiometer remotely unless it and its shaft and grub screw are fully isolated from physical contact. This is important because the resistance element and slider can be full at mains potential, and unless the case and control shaft is reliably earthed or isolated, could, in the event of internal insulation failure, present a lethal situation to an unsuspecting "earthy" operator! Just in case the earth connection is open when an insulation breakdown occurs, I prefer to insulate the entire potentiometer from the diecast box.

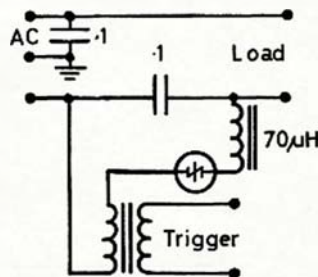


Fig. 3b.

Fig. 3b.—Capacitor values may need adjustment to provide optimum r.f. filtering, without affecting trigger reliability.

Commercial components which are pre-requisites for voltage control by SIDAC are a pulse transformer (mine is 1" x 1" x ¾", price about \$1.20); a trigger SIDAC type K2C, about 75c; and a 2½ or 5 amp. SIDAC type K4B20 or K5B20, price about \$3.50. I used stock items from the Standard Telephones and Cables range, with immediate success.

If you want to roll your own pulse transformer, try a two-turn primary about 26 gauge, and a 20-turn secondary of about 20 gauge enamel (i.e., heavy

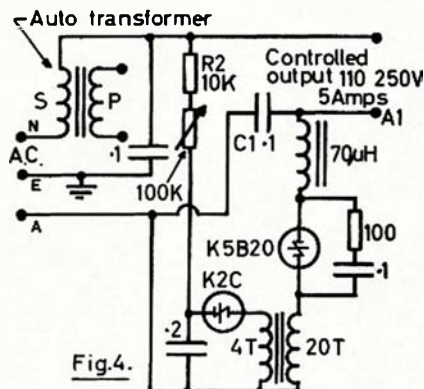


Fig. 4.

Fig. 4.—The auto transformer is not necessary if there is no requirement to compensate for low mains voltage. C1 may be more effective in some circumstances connected across the load.

* 16 Lenne St., Hughes, A.C.T., 2605.

† Silicon Symmetrical Diode Switch—a 5-layer device.

‡ S.T.C. Bulletin.

‡ I.E.E.E. Journal, August 1967.

enough to handle 5 amp.). A small iron core $\frac{3}{4}$ " diam. by $\frac{1}{4}$ " thick is used commercially, but providing it does not saturate badly under the firing pulse, a ferrite ring would probably do for non-critical applications. The full circuit is shown in Fig. 4.

If the firing pulse is non-oscillatory, it may be necessary to phase the pulse transformer connections so that the trigger pulse supplements rather than opposes the mains voltage.

In Fig. 4, R2 is selected to set the usable control range across the whole of the potentiometer scale, and to protect the potentiometer from damage. Without it, the control range is compressed into about half the potentiometer scale. Note also that the trigger transformer secondary and the r.f. filter choke carry the full load current, and are above earth. For applications where the few volts of IR insertion loss ($1\frac{1}{2}$ volts at 5 amps.) are critical, a switch can be installed to bridge mains terminal A to load terminal A1, thus allowing "full power" operation. Alternatively, and preferably, an auto-transformer arrangement can be used to increase the mains voltage and supply the controller with about 260 volts, thus giving true Variac capability.

I have not had the necessity to run the unit for long periods at maximum ratings. Under normal workshop conditions (such as drilling stainless steel) the SIDAC stays cold. However, a heat-sink which holds the temperature

near 40°C. may be needed for more rigorous applications. If checking for temperature rise of the SIDAC, remember to disconnect the mains input before prodding the diode with a finger. The SIDAC case may be at full mains potential and therefore be hotter than you expect!

Contrary to some published information, this type of device does not hold drill-speed constant regardless of mechanical load. However, if the pressure on the drill is reasonably constant, a control setting can be chosen which will produce the desired steady slow working speed under load.

For Amateur purposes, there is probably no better or safer way of precisely controlling the output of a final stage high voltage power supply. So far as VK1AU is concerned, henceforth, switching of high voltage transformer secondary windings is for the birds.

SIDEBANDING

(Continued from Page 8)

Fig. 2 shows how I fed receiver mixer and output from bal. mods. into the filter.

The v.f.o. used was the receiver h.f. osc. which had proved satisfactory on receive. It is a VK4BM modified Swan circuit! In other words, a Colpitts on 8 Mc. on 20 and 80; 12 Mc. for 40.

The valves used are a mixture of octal and miniature. A 6AC7 v.f.o., 6SN7 xtal osc., 6SN7 product detector, and 6SN7 mic. amp. and cathode coupled to bal. mods. do the job just as well as their modern versions.

In the transceiver I find I can do the same with 13 valves as I could with 11 valves in the receiver and 7 valves in the s.s.b. transmitter! With the added bonus of not having to net on to the other's frequency, because if the receiver is tuned properly that's just where the transmitter is!

That project took only a week! On New Year's Eve I was back on sked, much to the surprise of my VK5 mates!

Next project? V.f.o., probably transistorised, so that I can get on 10 and 15 metres as well. The present v.f.o. is quite good on 80, 40 and 20, but I doubt if I would be satisfied on the higher frequencies.

CONCLUSION

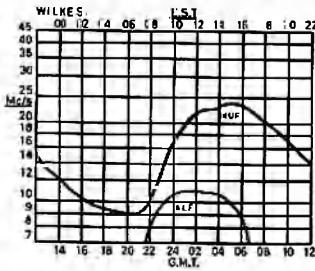
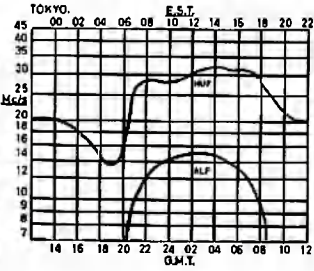
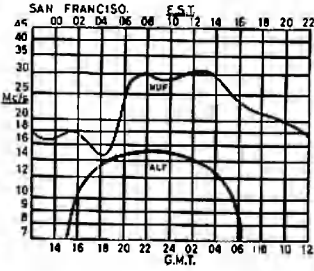
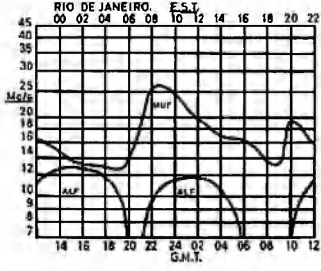
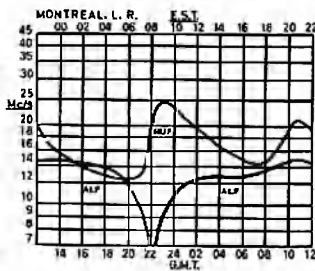
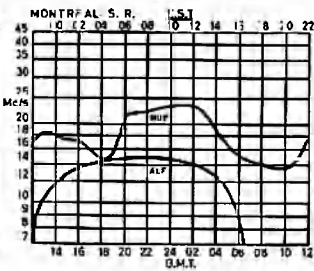
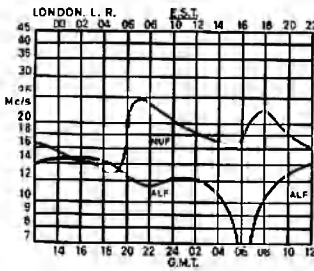
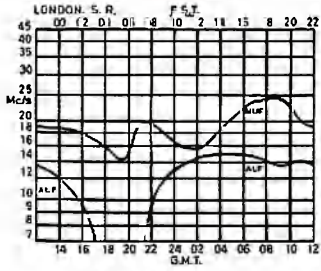
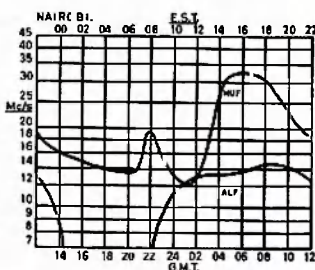
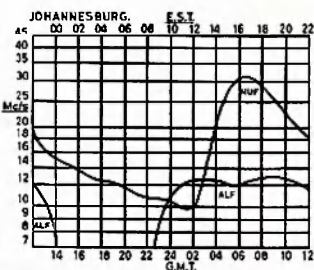
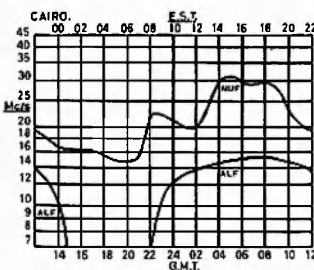
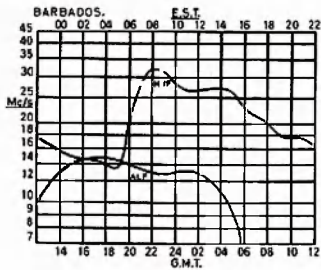
In conclusion, I am just a plain, ordinary Greybeard, 50 years plus a couple and certainly not the brainy type. If I can do "IT", surely anybody can!

Here's hoping to work you on s.s.b. in '68! For, if you don't get cracking now, who knows but that PanSy might beat you to "IT"!

**AMATEUR FREQUENCIES;
USE THEM OR LOSE THEM!**

PREDICTION CHARTS FOR AUGUST 1968

(Prediction Charts by courtesy of Ionospheric Prediction Service)



A FIELD EFFECT TRANSISTOR VOLTMETER*

M. ALLENDEN, G3LTZ

YOU can equate this meter to the old familiar valve voltmeter; it's got all the advantages that an 11 megohm input impedance can give, without the disadvantage of mains power supplies and consequent lack of mobility.

CIRCUIT DIAGRAM

A glance at Fig. 1 shows that the FETs have merely replaced the valves in a conventional circuit. Operation is on the basis of a balanced pair of amplifiers, the gates of which are biased by tapping the power supply to earth (chassis) and connecting TR2 gate to

to the input via the d.c. probe on any of the ranges and adjusting the d.c. cal. (RV1) until the meter reads the known voltage being applied. The author used a digital voltmeter to check the calibration voltages, but reasonable approximations can be obtained by using known Zener diodes or new dry batteries.

All ranges should be checked to ensure correct correlation. The use of 1 per cent. resistors (high stability carbon) will give an accuracy such that the meter itself will be the limiting factor. On the prototype no error could be detected on any range.

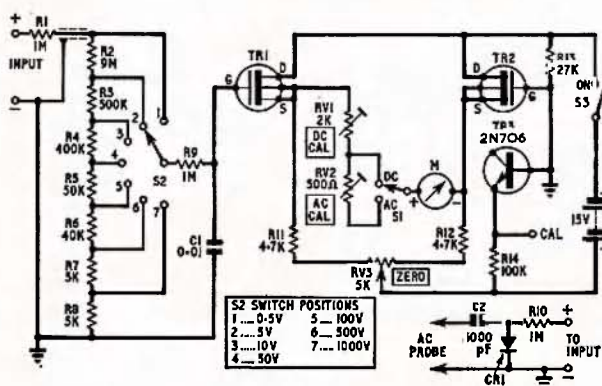
Using the a.c. probe, inject a known a.c. voltage (such as 6.3v. from a heater line) and adjust a.c. cal. (RV2) until the meter reads the voltage being injected. RV2 is in series with the d.c. cal. (RV1) and is small compared with RV1; this arrangement allows RV1 to be used as the main compensating calibration (to combat battery ageing) while not materially affecting the a.c. alibration.

ROBES

The d.c. and a.c. probes are made from ball point pen cases (see Fig. 2). The d.c. probe consists of a 1 megohm carbon resistor installed as near to the point as possible, then 24 inch of small diameter screened lead is used to connect to the meter. The a.c. probe is constructed with a 3,000 pF. ceramic capacitor, a high p.i.v. diode, and a 1 megohm resistor. The ratings of the capacitor (C2) and diode (CR1) are important, for if it is intended to use the meter on the 1,000v. a.c. range, the capacitor working voltage and peak inverse voltage of the diode must be of a similar rating. Diodes can be used in series to establish the rating, or use the meter restricted to the value obtainable.

The 3,000 pF. value for C2 can be exceeded of course, but anything much

Fig. 1.—Circuit diagram of the FET Voltmeter. R1 is a 1/2 watt carbon resistor, R2-R8 are 1 per cent. high stability, and R9-R14 are 1/4 watt carbon. C1 is a 50v. disc ceramic, and C2 is 1000v. working. CR1 is a 1000 p.i.v. silicon diode, or two lower voltage types in series. TR1 and TR2 are metal oxide silicon p-type FETs, and TR3 is a 2N706 used as a Zener diode.

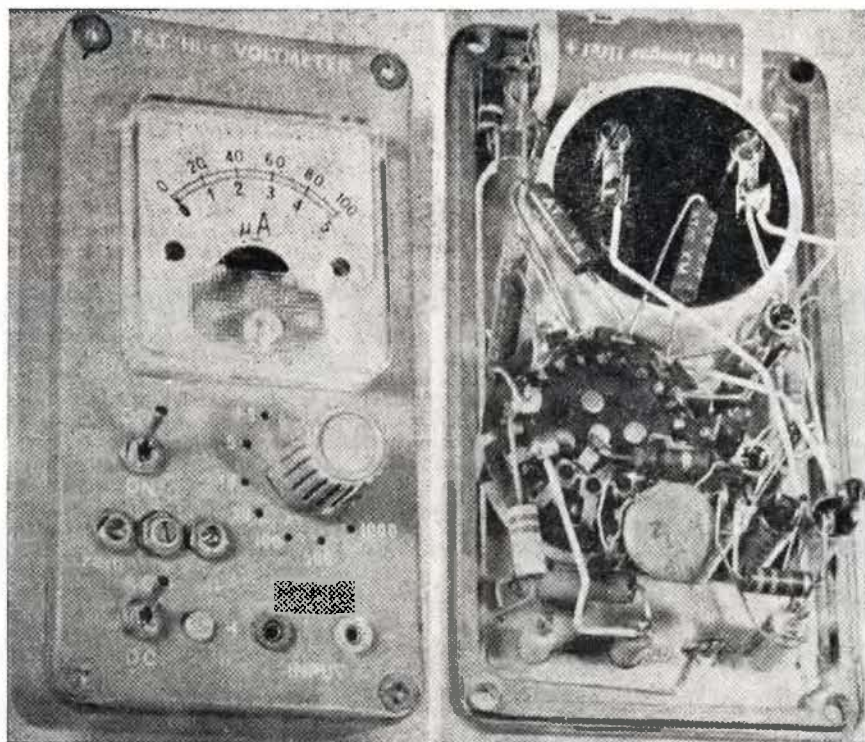


chassis. TR1 gate is similarly (d.c.) referred to chassis via the attenuator chain, and by adjusting the zero control, the voltage across the two 4.7K source resistors can be trimmed so that the meter reads zero with no input. Any voltage applied to TR1 upsets the balance, and the differential voltages on the sources cause the meter to deflect. The sensitivity of the meter is controlled by two series calibration resistors (RV1, RV2), one for a.c., the other for d.c. In practice, the input resistance attenuator chain always allows a direct input of 0.5 volt, and full scale deflection can be set by adjusting RV1 and RV2. The a.c./d.c. switch and calibration resistors are arranged so that an input via the a.c. probe reads the r.m.s. value.

As battery voltage falls, the sensitivity of the circuit can vary, and so it was therefore considered essential that a reference source be added. This was conveniently done by introducing a Zener diode (in fact the emitter/base junction of a 2N706); its actual voltage does not matter, so long as it is a known quantity. A quick prod onto the cal. point and the d.c. cal. pot (RV1) can be adjusted to compensate for any changes.

CALIBRATION

The instrument is simply calibrated on d.c. by applying a known voltage



G3LTZ's FET Voltmeter. Illustrating the compactness which can be achieved by using miniature components and controls. On the panel, the Cal. 6.0v. terminal is a socket-type feed-through terminal. The rear view shows the two FETs centre-right, and the 2N706 top left.

* Reprinted from "Radio Communication," January 1968. This article originally appeared in "Wiltshire Hams," the Swindon and District Amateur Radio Club's magazine.

less than 3,000 pF. will give low output on 50 cycles.

FETs

The FETs used were of unknown origin but were p-channel metal-oxide silicon types and differed from the more usual types in that the bias applied to the gate was negative as was the drain potential (enhancement mode). There is no reason why other types cannot be used, such as the 2N3819, provided the correct polarity and biasing are used; this means either reversing the battery polarity (and also the Zener diode if you do) and/or transposing R13 and R14.

CONSTRUCTION

To be useful, it was decided that it had to be portable, and therefore the unit was built in the smallest Eddystone diecast box. The meter, of Japanese manufacture, just fitted nicely and left enough room for the rest of the components and the battery.

The a.c./d.c. switch and the on/off switch were of a miniature toggle variety, but miniature slide switches could also be used. The cal. controls and zero were miniature wire wound trimmer pots, but here again other types could be used.

The photographs give a clear idea of the layout, but it is in no sense critical

and several versions have been built by club members using entirely different configurations, and meters from 2" to 6" have been used.

OTHER RANGES

The ranges chosen for the original were such that by using a small meter, most voltages could be read well on scale. The resistors with the ranges chosen work out to easily obtained values, but to design for different ranges the chain can still be kept to 10 megohms overall, with the tapping points altered.

For example, input chain of 10 megohms and 0.5 volt for f.s.d. means a total value of resistors from chassis end of input chain

$$= \frac{10 \text{ megohm}}{\text{Ratio of required range to 0.5v.}}$$

Taking the 500v. range, the ratio of 500v. to 0.5v. = 1000:1, therefore

$$\text{Resistance of lower leg of chain} = 10 \text{ megohms} \div 1000 = 10\text{K ohms.}$$

$$\text{Resistance of upper leg of chain} = 10 \text{ megohms} - 10\text{K ohms} = 9.99 \text{ megohms.}$$

CONCLUSION

It has proved to be a most useful tool, simple to build, and for me, at any rate, it supercedes the valve voltmeter.

isn't legally permitted anyway. The p.a. will glow very slightly at the 150 watts level if the key is held down for about 30 seconds or so.

The medium voltage h.t. need only be about 250 volts on load and does not have to be particularly well regulated. If you are going to run an adaptation of this transmitter with a simpler Geloso v.f.o., I would recommend a voltage regulator for the oscillator and that the medium h.t. have reasonable regulation or you will get more f.m. effect on your signal than is desirable.

Well that is about it fellows, maybe there is some food for thought in this article. The grid drive I forgot to mention should be between 2.5 and 3.5 mA. Good luck with the 6DQ5 in this circuit, other valves which could easily be used as well are the 6HF5, 6JS6-A, 8236 which have characteristics something similar. 6DQ6 valves might also be used providing voltage and current are reduced.

DX NOTES

After many years of service to the magazine, Al VK4SS has had to retire from the job through ill health. The committee extends to Al its appreciation for his efforts and wish him a speedie recovery.

As from now the DX Editor is Peter Nesbit, VK3APN, to whom all notes and information should be sent. Peter's address is 32 The Grange, East Malvern, Vic., 3145.

Publications Committee Reports

The committee met on Monday, 8th July, when correspondence was received from VKs 1VK, 2QL, 3QV, 3RN, 3AOT, 3ASI, 4CR, 4SS, 5QX and 9TB. Technical material was received from VK5RG and VK5ZDX who submitted a joint effort.

A review of technical articles in hand shows we are still in need of the shorter type of article, preferably with few or no drawings.

Financial figures for the July issue were not available, but up to June a deficit was reported. This deficit was due largely to the size of the May issue which incorporated the annual Federal reports and Balance Sheet. As the slight price increase granted at Easter is now in operation, we expect to gradually reduce this loss. The Victorian Division has agreed to support the magazine to the extent of advancing the money to pay for a further supply of wrappers.

The 1968-69 issue of the Call Book was discussed. It was decided to reduce the quality of paper used in this publication, and provided we get the same support from advertisers and buyers as we had last year, we will "cut square" without increasing the price. As at the 8th, we were holding orders for less than half the number of books as we had last year, and only a quarter of the advertising space has been sold. The proofs are almost ready for submission to the Department for checking, and the final listings will include additions and amendments up to and including the P.M.G. list for May 1968.

150W. AM-CW TX

(Continued from Page 7)

—100 to about 0 volt. The 12AU7 will cut off when its grid is about 30 volts negative in relation to its cathode. On c.w. the grid of triode 6-7-8 is slightly positive in relation to the cathode and draws grid current when the key is up. The grid is therefore negative in relation to earth, considering that the cathode is negative by virtue of its tapping on VR3. This voltage is say 30 volts negative, so the capacitor is negatively charged to about 30 volts.

When the transmitter is keyed the grid of the p.a. is immediately placed at about 100 volts negative due to grid current being drawn as soon as drive appears. The 0.01 uF. capacitor will charge in one time constant to —30 volts plus 88% of the remaining 70 volts of the —100 volts, which works out to —30 plus + —47 = —77 volts in one time constant, and by which time the 12AU7 is cut off, so to obtain a time constant of about 5 milliseconds the capacitor could be increased to about 0.047 uF. This is up to you and how you like your keying characteristics. It is also possible to grid block key the final if so desired.

No voltage above 360 volts has been switched in this transmitter for safety

reasons, insulation and so forth. It is most advisable to put the p.a. final in a cage for safety reasons and also from the t.v.i. angle. Since it is "be kind to p.a. tubes week" it will be observed from the circuit diagram that the transmitter cannot be left switched on with carrier being radiated in either the c.w. or a.m. positions, a press to talk switch being used for a.m. and a key for c.w. The switch to bring the transmitter on for c.w. is disconnected for a.m. Relay contacts Rel. 1/2 are used to short the h.t. voltage on the modulator and driver sections to earth when changing over to receive, so preventing acoustic feedback on a.m.

A few voltage and currents that can be expected with this transmitter. The following 6DQ5 screen voltages are fairly typical: a.m. receive, —75 volts; a.m. transmit, no modulation, 5 volts positive; a.m. transmit, full modulation, 80 volts positive approximately. On c.w. receive: —55 volts, key up —9 to —10 volts, and key down +125 volts.

With normal full loading of the transmitter, the h.t. should be between 750 volts and 800 volts, and the h.t. current drain should be about 200 milliamps. at resonance, but if you really want to flog the p.a. valve you could probably load up as high as 250 mA., which is near enough to 200 watts input, which

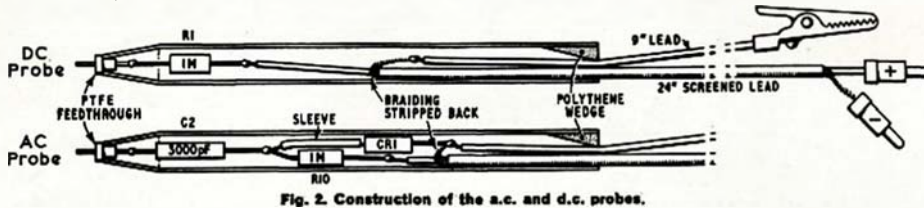


Fig. 2. Construction of the a.c. and d.c. probes.

W.I.A. DX.C.C. (S.W.L.)

Listed below are details relating to those Australian Short Wave Listeners to whom this Certificate has been awarded:—

Cert. No.	Call	Name	Date Awarded
1.	L3042	Eric Trebilcock	1/11/65
2.	L2022	Don Grantley	29/12/65
3.	L3211	Warwick Smith	31/5/66
4.	L4018	Chas. Thorpe	11/7/66
5.	L5080	Ernie Luff	25/1/67
6.	L3229	Bob Halligan	18/11/67
7.	L6021	Peter Drew	31/1/68

VK-ZL-OCEANIA DX CONTEST, 1968

N.Z.A.R.T. and W.I.A., the National Amateur Radio Associations in New Zealand and Australia, invite worldwide participation in this year's VK-ZL-Oceania DX Contest.

Objects: For the world to contact VK-ZL-Oceania stations and vice versa. **Note:** VK and ZL stations, irrespective of their location do not contact each other for contest purposes.

When? Phone: 24 hours from 1000 GMT, Saturday, 5th October, to 1000 GMT, Sunday, 6th October.

C.w.: 24 hours from 1000 GMT, Saturday, 12th October, to 1000 GMT, Sunday, 13th October.

RULES

1. There shall be three main sections to the contest:—

- Transmitting phone.
- Transmitting c.w.
- Receiving—phone and c.w. combined.

2. The contest is open to all licensed Amateur transmitting stations in any part of the world. No prior entry need be made. Mobile marine or other non land based stations are not permitted to enter.

3. All Amateur frequency bands may be used but no crossband operation is permitted.

4. Phone will be used during the first week-end and c.w. during the second week-end. Stations entering both sections must submit separate logs.

5. Only one contact on c.w. and one contact on phone per band is permitted with any one station for scoring purposes.

6. Only one licensed Amateur is permitted to operate any one station under the owner's call sign. Should two or more operate any particular station, each will be considered a competitor and must submit a separate log under his own call sign. (This is not applicable to overseas competitors.)

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 (telephony) or RST (c.w.) 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. Example, if the number chosen for the first contact is 021, then the second must be 022 followed by 023, 024, etc. After reaching 999, start again 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; 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; 1 point for each contact on a

specific band with Oceania stations other than VK-ZL.

(c) For VK-ZL stations. 5 points for each contact on a specific band and, in addition, for each new country worked on that band, bonus points on the following scale will be added:

1st contact	.....	50 points
2nd "	.....	40 "
3rd "	.....	30 "
4th "	.....	20 "
5th "	.....	10 "

For this purpose the A.R.R.L. countries list will be used with the exception that each call area of W/K, JA, SM, UA will count as "countries" for scoring purposes as indicated above.

10. Logs:

(i) Overseas Stations:

(a) Logs to show in this order—date, time in GMT, call sign of station contacted, band, serial number sent, serial number received, points, underline each new VK-ZL call area contacted. Separate log for each band.

(b) **Summary Sheet** to show call sign, name and address (block letters), details of station, and, for each band, QSO points for that band, VK-ZL call areas worked on that band.

"All-band" score will be total QSO points multiplied by sum of VK-ZL call areas on all bands, while "single band" scores will be that band QSO points multiplied by VK-ZL call areas worked on that band.

(ii) VK-ZL Stations:

(a) Logs must show in this order—date, time in GMT, call sign of station worked, band, serial number sent, serial number received, contact points, bonus points. Use a separate log for each band.

(b) **Summary** to show—name and address in block letters, call sign, score for each band by adding contact and bonus points for that band, and "all band" score by adding the band scores together, details of station and power, 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 N.Z.A.R.T. Executive Council will be final.

13. **Awards.** VK-ZL stations: The N.Z.A.R.T. will award certificates to the top scorer on each band and the top scorer in each VK-ZL district and silver mounted plaques to the top ZL scorers in both the phone and c.w. sections.

Overseas Stations: Certificates will be awarded to each country (call area in W/K, JA, SM, UA) on the following basis:—

- Top scorer using "all bands".
- Top scorer on individual bands.
- Other certificates may be awarded, to be determined by conditions and authority.

14. Entries from VK-ZL stations should be posted direct to:

N.Z.A.R.T. Contest Manager,
152 Lytton Rd., Gisborne, N.Z.,
to arrive not later than 31st Dec., 1968.

Entries from Overseas stations should be posted to above address or:

N.Z.A.R.T.,
Box 489, Wellington, New Zealand,
to arrive not later than 21st Jan., 1969.

RECEIVING SECTION

1. The rules are the same as for the transmitting section but it is open to all members of any S.w.I. 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 week-end are as for the transmitting section except that the same station may be lodged twice on any one band—once on phone and once on c.w.

3. To count for points, logs will take the same form as for transmitting, as follows: 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. Scoring is on the same basis as for transmitting section and the summary should be similarly set out.

4. 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.

5. Certificates will be awarded to the top scorer in each overseas scoring area and in each VK-ZL call area.

OCEANIA WINNERS, 8th ALL ASIAN DX CONTEST 1967

(J.A.R.L.)			
HAWAII:			
KH6J	.....	Multi.	5884 points
KH6EBQ	.....	"	2718 "
AUSTRALIA:			
VK3AXK	.....	Multi.	4725 points
VK8UC	.....	"	2704 "
VK3ABR	.....	"	80 "
VK4SS	.....	28 Mc.	68 "
VK3RJ	.....	"	46 "
VK3ABA	.....	21 Mc.	32 "
VK2APK	.....	14 Mc.	2112 "
T.N.G.:			
VK8GN	.....	Multi.	3836 points

9th ALL ASIAN DX CONTEST 1968

PRECIS OF RULES
Time: 1000z, 24th August to 1600z, 25th August.
Bands: 1.8 through 29.7 Mc. on c.w. only.
Call: Non Asians "CQ AA"; Asians will call "CQ TEST".
Aim: The world to work Asian countries.
Entry: (a) Single-band single-operator. (b) multi-band, single-operator.
Serial Numbers: Send RST plus two figures denoting age for OM; RST plus 00 (zero zero) for YL.
Scoring: One point per Asian contact and a multiplier of one for each Asian country on each band. Total score is total contact points by total countries worked for single-band op. and total contact points by sum of total countries all bands for multi-band op.
Log deadline: J.A.R.L. Contest Committee, P.O. Box 377, Tokyo Central, Japan, by 30th November, 1968.

NEW CALL SIGNS

APRIL, 1968

- VK1PM—R. E. W. May, 76 Monaro Cres., Red Hill, 2603.
 VK2JP—S. B. Mason, Box 187, Walker St., Cowra, 2794.
 VK2NW/T—D. W. Bridge, C/o. New Tribes Mission, Plumpton, 2761.
 VK2BAQ—A. G. Svensen (Sqd. Ldr.), C/o Officers' Mess, R.A.A.F. Base, Richmond, 2755.
 VK2BBQ—G. C. Page, 20 Marshall Ave., Warrawee.
 VK2BED—A. H. Bennett, 8 Blaxland St., Matraville, 2036.
 VK2BFJ—F. S. A. Jenkins, 14A Thorn St., Pennant Hills, 2120.
 VK2BLN—L. L. Neaverson, 23 Vernon St., Strathfield, 2135.
 VK2BRC—Taree O.K. Youth Radio Club, 34 Albert St., Taree, 2430.
 VK2ZTF—W. R. Clark, 58 Mooramie Ave., Kensington, 2033.
 VK3AST—S. J. Lloyd (Surg. Cmdr.), 100 Winbourne Ave., Mt. Eliza, 3880.
 VK3ZAZ—S. R. Gregory, 1006 Malvern Rd., Armadale, 3143.
 VK3ZVE—P. A. Sweetser, Flat 2, 395 Dandenong Rd., Armadale, 3143.
 VK3ZYQ—R. C. Morgan, Gapsted, via Wangaratta, 3617.
 VK4IX—J. E. W. Dahl, 51 Lansdowne St., Wilston Heights, 4051.
 VK4KH—K. F. Hoffmann, 10 Druce St., Too-womba, 4350.
 VK4PN—P. Lyons (Rev.), Station: Catholic Presbytery, Alpha, 4724; Postal: P.O. Box 16, Alpha, 4724.
 VK4VF—A. H. Willmore, 6 Alfred St., Maryborough, 4650.
 VK4XV—F. R. Campbell, 5 Coolah St., Aspley, 4034.
 VK4ZOL—M. G. Foster, M.Q. 26, Borneo Barracks, Cabarlah, 4350.
 VK4ZRJ—R. C. Harris, 127 Haig Rd., Torwood, 4066.
 VK5ZDZ/T—J. F. Ingham, 122 Esmond Rd., Port Pirie, 5540.
 VK5ZEK—M. R. Kuss, Lot 30, Wren St., O'Halloran Hill, 5158.
 VK5ZGE—R. D. Averay, 1 Belgrave Tce., Plympton, 5038.
 VK5ZOO/T—D. E. Stacpoole, 6 Gardiner St., Mt. Gambler, 5290.
 VK6CU—R. D. Coleman, Onslow, 6710.
 VK6FN—M. L. Faulkner, Giblett St., Bridge-ton, 6255.
 VK7CM—C. H. Miller, 13 Grange Ave., Tarooma, 7006.

CANCELLATIONS

- VK1AS—A. G. Svensen. Now VK2BAQ.
 VK1FB—J. B. White. Transferred to Vic.
 VK2PV—J. F. Vesper. Deceased.
 VK2RA—R. A. Fiddle. Not Renewed.
 VK2SX—F. S. A. Jenkins. Now VK2BFJ.
 VK2AJE—B. L. Mills. Not Renewed.
 VK2AWE—B. J. Foster. Not Renewed.
 VK2BDR—A. M. Brighton. Not Renewed.
 VK2BTR—T. Roberts. Transferred to S.A.
 VK2ZAW—D. G. Allen (Bro.). Not Renewed.
 VK2ZGX/T—D. W. Bridge. Now VK2NW/T.
 VK2ZJJ—J. A. M. Brady. Not Renewed.
 VK3AMQ—G. C. Page. Now VK2BBQ.
 VK3ZWG—S. R. Gregory. Now VK3ZAZ.
 VK4YY—G. R. Crusier. Ceased Operation.
 VK4ZDJ—J. E. W. Dahl. Now VK4IX.
 VK4ZKH—K. F. Hoffmann. Now VK4KH.
 VK4ZRC—F. R. Campbell. Now VK4XV.
 VK4ZRK—R. J. Wyeth. Not Renewed.
 VK6BA—W. S. Moore. Deceased.
 VK6TN—T. S. Long (Portable). Ceased Operation.
 VK6ZFM—M. L. Faulkner. Now VK6FN.

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

ROSS HULL CONTEST

Editor "A.R." Dear Sir,
 With reference to the letter by W. J. Howse, VK6ZAA, in the July issue (p. 15), Mr. Howse should get his facts straight.
 The Ross Hull Contest rules stated three sections: (a) Transmitting Open, (b) Transmitting Phone, and (c) Receiving Open.
 There is no mention of a "Transmitting Closed" section. This seems to be a figment of Mr. Howse's (dare I suggest "prejudiced") imagination. Section (a) is precisely what it says—an "open" section where the use of more

than one basic form of transmission is mandatory. Section (b) is also what it says—for entrants using only phone methods of communication. A3, A3(a) and F3 can only be considered as falling in this phone group.
 As Mr. Howse comments "Why c.w. . . Why not select r.t.t.y.?" Why not indeed Mr. Howse. Make one or more contacts on r.t.t.y. and submit your log in the "open" section. But on the other hand if you choose to not use c.w. or r.t.t.y. or some other form of non-phone communication then you do indeed handicap yourself—by being ineligible for the open. It is your choice though.
 —D. H. Rankin, VK3QV.

"S.W.R. INDICATORS—FACT OR FICTION"

Editor "A.R." Dear Sir,
 After reading the article of Mr. J. G. Reed, VK2JR, entitled "S.W.R. Indicators—Fact or Fiction," one could be excused for throwing that s.w.r. bridge into the "junk box". There are, however, a few factors which have escaped consideration. These may be readily verified by experiment if mathematical argument does not convince.

(1) A non-reactive load presented to the transmitter allows loading by variation of coupling to be adjusted without significant detuning of the final.

(2) A non-reactive load equal to the transmission line characteristic impedance presented to the line by the antenna results in the impedance at the transmitter end of the line being independent of line length, and for constant antenna resistance, of frequency. If the s.w.r. at the antenna is not zero, changes of frequency can cause considerable detuning of the final, particularly if the line length is long relative to the operating wavelength, as at v.h.f.

(3) For a given transmitted power, maximum line voltages and currents are up to double those for a flat line. Since power equals V^2/R , power dissipated in the line conductance is increased. A similar argument based on current applies for series line resistance. Again, this factor is most significant at v.h.f. when line losses may be a major consideration.

Let us begin at VK2JR's conclusion that unity s.w.r. as measured by the s.w.r. indicator will indicate a resistive load looking into the antenna coupler equal to the design impedance of the bridge. When this case is considered in view of the above factors, it can be seen that the only advantage to be gained by unity s.w.r. is that discussed in (1). Effects due to standing waves on the transmission line beyond the coupler still exist. It is concluded, therefore, that this method of feeding is not desirable.

What is required at the coupler is a resistive impedance presented by the line, independent of frequency and line length. This can be achieved only by matching at the antenna end of the line, using perhaps an s.w.r. indicator if you dare, and some form of antenna tuning such as gamma match or stubs. For normal line impedances the coupler at the transmitter end of the line is unnecessary, and the line can be connected directly to the output coupling circuit of the transmitter. I have assumed that a non-radiating feeder is required.

One final thought is that the s.w.r. indicator makes a jolly fine tune-up indicator for improperly neutralised finals.

—Robert Halligan, VK3AOT.

N.F.D. CONTEST

Editor "A.R." Dear Sir,
 I was disappointed not to see, together with the results of the 1968 John Moyle Memorial N.F.D., the usual comments provided by competitors, as I always find it very interesting to read what others thought about it.
 I would imagine that many commented on the fact that the A.R.R.L. Contest was run during the same week-end. For myself, I think this was a mistake, as I found many stations, VKs included, more interested in A.R.R.L. contacts than contacts with a Field Day station. QRM was a slight problem and perhaps precluded some contacts with overseas stations for the less elaborate or lower powered N.F.D. station.

However, one aspect of the week-end rather concerned me. This was the matter of stations operating in the Field Day Contest handing out numbers to A.R.R.L. Contest stations and accepting such numbers exchanged. This was particularly so naturally with contacts with the U.S.A. I did myself contact some U.S.A. and VE stations, but in each case exchanged two sets of numbers, one for the N.F.D. Contest and one for the A.R.R.L. Contest. I feel that this was the correct procedure, and that dual participation should not be allowed without two sets of numbers being exchanged. After all, you don't normally run a horse in two races simultaneously, and if operating in two contests should do so fully.

This is probably a matter for the Contest Committee to rule on, however it may be interesting to hear the subject discussed generally before that committee makes a decision. So, what do others have to say on the subject?

Once again I really enjoyed every minute of the Contest and hope to be in the next one too.

—Ian J. Hunt, VK5QX/P.

P.S.—Appended is a table of the top two scores for portable phone and portable multi-op for the years 1965 to 1968 inclusive. Is the big jump in scores, co-incidence, better conditions, or A.R.R.L. Contest contacts?

Year	Portable Phone	Portable Multi-op.
1965	225	1648
1966	583	1438
1967	301	3865
1968	752	2649
	518	3786
	523	2621
	493	6400
		2140

PROPOSED IDENTIKIT CODE

Editor "A.R." Dear Sir,
 I suppose most Amateurs who join in repeated rag chews tend to form a mental picture of what the other chap looks like.

When one eventually meets this friend of the air at a convention or other meeting place he may find that the other Amateur is more or less the opposite of what he had mentally (perhaps subconsciously) pictured.

I would suggest that an identikit type of code be developed for possible use to describe one's general appearance to fellow Amateurs, say a code of five or six letters.
 The first letter could represent a height group, e.g. say A represents 4 ft. 9 in. to 5 ft. 0 in.; B between 5 ft. 0 in. and 5 ft. 3 in., etc. (Could of course have closer limits if desired.)

The second letter of the code word could represent general build, such as A for slim, B medium build, C stout, etc.

The third letter could refer to complexion.
 The fourth say whether clean shaven, moustache, beard, moustache plus beard, etc.

The fifth letter of code say colour of hair or lack of same.

The sixth say type of nose.
 This of course is only rough idea for further discussion if considered worthwhile.

—Cyril VK4CR.
 [Mr. Renton has answered his own question. Reverse the phase 180 degrees and you have the answer.—Ed.]

GB3NEW AT THE NATIONAL EISTEDDFOD OF WALES

College of Further Education, Colcot Rd., Barry, Wales, U.K.
 Editor "A.R." Dear Sir,
 From 5th to 10th August, 1968, inclusive, the Barry College of Further Education Radio Society will operate an Amateur Radio station (call sign GB3NEW) at the National Eisteddfod of Wales at Barry. The National Eisteddfod is a Festival of Arts held annually at a different location in Wales, and this is the first time that an Amateur Radio station will operate from the Eisteddfod. To commemorate this event we will be issuing a special QSL Certificate to each station which contacts us during the week.

We will be operating on 3.5, 7, 14, 21, and 28 Mc. between 0800 hours and 2000 hours GMT each day on s.s.b. and c.w. Our equipment will include a Hallcrafters SR400 Transceiver, a KW2000A Transceiver and an Eddy-stone EA12 Receiver. The main antenna will be a Mosley TR33 Jr. beam at a height of 60 ft.

Will you please publicise this event in your official journal? We will be pleased to arrange skeds if requested to do so. We are of course particularly anxious to contact Amateurs who have ties with Wales, the Eisteddfod, and Barry.

Finally, this event will never be repeated by our Society and possibly will never be established at the Eisteddfod again.

73 and good DX.
 D. H. Adams, GW3VBP, Secretary.

VHF NOTES

From the few reports received it is very apparent that the winter is taking its toll of v.h.f. operators. Activities in VK3 seem to be limited to fox hunts, scrambles and group meetings. No reports have been received from Interstate correspondents.

Hoping for an improvement in activity and in the quantity of copy, and last, but not least, more space in "Amateur Radio." 73, Cyril VK3ZCK.

THE REMEMBRANCE DAY FORMULA

DR. D. R. BLACKMAN,* VK3TX

The Remembrance Day Contest, as we all know, is an annual event in the Amateur's calendar conceived with the object of reminding all of the price some had to pay that we today might enjoy, amongst other things, this hobby of ours. It has been used in the past, and by a few still is, to talk to wartime comrades, but it would appear that the primary purpose of the contest was not thought of in these terms. Whilst there is an apparent contradiction in associating a contest with such a solemn topic as Remembrance Day, we are aware of the particular enthusiasm which a radio contest engenders amongst Amateurs; a contest is perhaps the only distinctive memorial Amateurs as a body can raise.

It is, however, a contest; like all other contests it is subject to certain rules with regard to how the winner is to be determined, and therein lies the basis of the present controversy. The status of the R.D. as a memorial, and the opportunity it offers for Amateurs to meet people in a friendly QSO, as they always have done, are not in question. Quite the reverse, in fact. Strong in the minds of most people searching for new formulae is the hope, not just of improving the contest, but attracting more operators on to the air on this day. A formula which is patently unjust will not do this.

I classify competitions roughly into two sorts. There are "cut-throat" types, such as foot races, and point score types such as cricket. A little reflection will show that the rules surrounding the latter type must be much more rigid than the cut-throat variety. It does not matter in a foot race how long it takes the runner to reach the post or how many enter—the first man over the line wins. On the other hand, one cannot bat 12 men in an innings (or play extra men at football, etc.) for the obvious reason that the opportunity for scoring more runs (goals, points, etc.) becomes available. And yet in the R.D. we have had a competition between States in which the number of entrants is the variable and arbitrary number who care to join in, and only a fraction of these care to submit logs. From the point of view of the R.D. this arbitrary entry is, of course, an excellent thing, but from the point of view of running a contest it is making life very difficult indeed.

Considering just the contest part of the business, then, what is wanted is a formula which gives an unbiased result allowing for (at least) the following facts:

- The number of participants between States varies widely.
- The proportion of licensees entering also varies widely between States. As a matter of observation from past years, this proportion is much lower in VK2 and VK3 than in the other Divisions typically by a factor of up to 5.

- The formula is to encourage maximum participation.
- The formula is to give weighting to the contribution from all entrants.
- It is to establish a winning Division for the purpose of awarding the trophy.

I am not the first person with mathematical training to have looked at this problem; over the years the Federal Council has had the advice of several people, mostly more competent than I am. I take comfort from the fact that I arrived independently at the same conclusion as they did—there is NO formula which will satisfy these conditions and remain workable in the sense that it is incapable of manipulation. Having all this in mind, the 1968 Federal Convention passed the following resolution:

"That it is considered that it is impossible to arrive at an equitable and workable formula to determine the winning State in the R.D. Contest under the present terms of reference, therefore it is recommended that all Divisions consider the entire concept of the Contest and submit to the 1969 Convention their suggestions for re-casting the R.D. Contest and as an interim measure, it is resolved that the rules for 1968 be as suggested by the VK6 Division, i.e. that the rules be similar to 1966 except that v.h.f. participants be on the same basis as for the 1967 rules."

In order to proceed, we must waive one or more of the conditions of (a) to (e). The logical way of implementing the resolution of Federal Council is to agree on what conditions are to be maintained, and which are to be relaxed. The following are some examples of possible bases for the contest, with comments on what I see as their deficiencies. These are given purely for the sake of illustration. It should be added that a number of other aspects such as the scoring table and the retention of the three mode sections (c.w., phone, open) are separate considerations again.

SOME POSSIBLE CONTESTS

(1) **Outright Contest:** The winner is an individual who scores the highest number of points.

This is the traditional contest arrangement, and assessment is easy. In the minds of some, it violates condition (c), and in particular, it would make it hard for "Z" calls to win. It also revokes vigorously the past history of the R.D. as a Divisional contest.

(2) **Best N Logs:** The State whose aggregate of the top N logs is highest wins. N can be selected in a number of ways. It should be noted that the principle invoked in selecting the best N is that of equalising the basis of comparison between Divisions, whatever the value of N. This method is,

therefore, by definition in conflict with (d), but avoids altogether the difficulties of (a) and (b). Some values of N are:

- N = 1. Best individual score alone determines winning Division. Clean and easy administration.
- N = somewhere between 10 and 30. On past records, this would include most of the significant logs submitted, and omit only low scoring ones. Violation of (d) is not so severe, and Divisions might hand out a certificate to those whose logs qualified for inclusion, a process analogous perhaps to elimination heats.
- N = smallest number of logs submitted by any one Division for that year. Thus, if VK7 submitted the smallest number of logs, 50, all VK7 scores would count but only the best 50 of all other States' scores. This scheme, I fear, is susceptible to manipulation by failure to submit logs, and might tend towards (i) in the extreme. At least under (ii), if a Division cannot raise the specified number of logs it is losing itself points.

(3) **Averaging Methods:** Mathematically, the obvious solution to this problem is to compute an average points/contact figure. Given an equitable scoring table, then the most efficient group of operators will win. Removal of a lot of other superfluous stuff, this is the basis of the 1967 formula. (The 1967 formula had other inclusions not relevant here.) However, it is true that a State average of 180 can only arise because some people get more than 180 and some less. If none realised before, there is no doubt everyone realises now that one does one's State a service by not submitting a log if it is going to be less than about 170. In a short space of time, I suggest, the continued application of the 1967 formula would lead to progressively higher averages (as a greater number of low scoring logs were voluntarily omitted), and perhaps ultimately a (1) type situation in the extreme.

(4) **Participation Formulae:** Some people feel strongly that the number of participants should somehow contribute towards the assessment of a winner. This is a legitimate and indeed interesting view, emphasising conditions (c) and (d) very strongly. However, the only contest I can see available along these lines is to award the trophy to the Division submitting the greatest number of logs. A scoring table, etc., would have to be used to evaluate other performance which would be separate altogether from the trophy.

If encouragement to participate and submit a log (perhaps with a small minimum score like 10 to keep the

(Continued on Page 16)

THE R.D. FORMULA

(Continued from Page 15)

thing rational) is what is wanted, then this contest would certainly be doing that. However, it is potentially biased in favour of the larger States, in spite of the fact that VK2 and VK3 would not have won uncommonly often in the past.

(5) **Composite Formulae:** This leads to the concept of formulae which allow not only points scored and number of entrants, but a variable which has not been mentioned thus far, the available number of licensees in the Division.

The formulae in the past have been of this latter type, and the impossibility of achieving an unbiased rule is explicit in the Federal motion. The basic deficiency, I suspect, is that these three variables (number of points, number of entrants, number of licensees) all have independent relationships between themselves which are in no way connected with the problem of a contest.

The most obvious example of such a connection is between number of State entrants and number of State licensees. It is irrelevant whether one believes the particular mathematical formula relating these two, which was given in "A.R.," December 1965, but related they certainly are.

Without some knowledge of what the relationship is, to use a formula involving State licensees and entrants is to build a bias into the formula the nature of which one has not attempted to predict.

The procedure in the past, it would appear, has been to go ahead anyway and then decide afterwards from the results that the formula is biased. Not a very rational procedure. But then is one not trying to compare incomparables? One does not put a feather weight and a heavy weight boxer together and subsequently try to establish from the wreckage whether, considering the disadvantages, the feather weight really won.

If we are going to use the word "contest" with the R.D., let's make it a contest and not an annual exercise with an end result which, even if unknown to its instigators, is largely predetermined by the mathematical formulation.

YOUR THOUGHTS?

Some time in the next few months Divisional Councils are going to have to consider this whole matter of the R.D., since it is due to be discussed at the 1969 Federal Convention. As you reflect on your participation in the R.D. for 1968, reflect also on how you view the contest, and convey your thoughts to your Council. The present difficulties in formulating contest rules has, I am sure, not decreased the pleasure of operating in the R.D.; let us see if it can be made a good contest also.

FEDERAL QSL BUREAU

Am grateful for all who supplied information on disposal instructions for QSLs for VK9RJ, R. J. Wirth, O.T.C. Radio Station, Nauru. It transpires his QSL manager is K6UJW, but owing to the cost factor, all QSLs on hand have been mailed to VK9RJ at Nauru. He can take it from there.

All VK3 Amateurs were dismayed to learn of the sudden indisposition of Eric Trebilcock, BERS195, the Inward QSL Manager for VK3. We are happy to report that Eric has made a reasonable recovery and with care and not too much football excitement, should soon be back to his old form.

The Russians have declined to forward VK QSLs direct to the Divisional Bureaux. It is a pity they have to be odd man out. Further representations are being made which it is hoped will impress them with the necessity for co-operation.

Tubby Vale, VK5NO, ex VK8NO, reports in from the old QTH in Gawler. Tubby states that since leaving the N.T. and with a little moderate living, the B.P. has returned to reasonable levels. Tubby has found himself a quiet workaday niche.

Sue Ward has done a good job on VK8UG QSLs since the departure south of Tubby Vale. However, Sue is also due to depart from Gove in August.

Willis Island will be activated again from June to December 1968 by the call sign VK4EV. It is understood that the operator is Gavin Brain, VK3AEJ, and the QSL instructions stipulate via the VK3 Bureau ONLY.

The D.A.R.C. is strongly publicising the 14th European DX Contest 1968 which will be held as follows: C.w., zero GMT August 10 to 24z August 11; Phone, zero GMT Sept. 14 to 24z Sept. 15. A maximum period of 38 hours operation is allowable in either contest. Full information from this Bureau.

The S.R.J., Yugoslavia, have simplified their award requirements by waiving the necessity to forward QSLs. Henceforth a certified list (two Amateurs or Awards Manager) will suffice. The stated number of I.R.C. is still required.

The L.M.R.E. (Mexico), to celebrate the staging of the 1968 Olympics in their country, have announced an international contest running from March 21 to December 31, 1968. The object is to contact as many Mexican stations as possible in the period. All bands, all modes but no crossband or crossmode. Efforts are being made to activate all Mexican districts and special prefixes—4A1, etc.—may be issued. The main awards are a gold medal, silver medal, and a diploma to the leading stations

in each continent. Full details from this Bureau.

A special station was operating on the contest site during the staging of the 13th World Ploughing Contest held in Rhodesia on 28th and 27th April. Unfortunately information on the operation was not received until after the event was concluded. However, other stations in the area continued the operation for eight days after the conclusion of the contest. Any station who contacted ZE1WPC during the above-mentioned 10 days will receive a special multi-coloured QSL as a memento.

Al Scarlett, K1CC, ex W2CC, well known to VK stations for 40 years, has resumed his schedules with Australian stations after an eight-month lay off. The lay off was occasioned by Al's retirement, sale of his Scarsdale property, purchase of a mobile home in Florida and another home in Wilton, Conn. A change in call sign and the erection of an antenna at Wilton also caused delays. Al is again running schedules with VKs 3XB, 3HL, 5BO and yours truly.

—Ray Jones, VK3RJ, Manager.

N.S.W. INTRUDER WATCH CO-ORDINATOR

VK2 intruder watch volunteers should contact Ross Treloar, VK2BFPZ, 23/8 Fullerton Street, Woolahara, N.S.W.

HAMADS

Minimum \$1 for forty words.
Extra words, 3 cents each.

HAMADS WILL NOT BE PUBLISHED UNLESS ACCOMPANIED BY REMITTANCE.

Advertisements under this heading will be accepted only from Amateurs and S.w.'s. The Publishers reserve the right to reject any advertising which, in their opinion, is of a commercial nature. Copy must be received at P.O. 36, East Melbourne, Vic., 3002, by 5th of the month and remittance must accompany the advertisement.

BENDIX LM10 Frequency Meter with power supply and calibration book, excellent modulated signal generator, \$45. National RC-102s Tape Recorder, AC or battery portable, as new, \$50. Loop Antenna for 80 metre transmitter hunting, solidly built with mounting brackets, also transistor snoop loop, \$10 the lot. Apply Alf Chandler, VK3LC, 1536 High St., Glen Iris, Vic., or phone 50-2556 after 7th August.

COMMAND Receiver (OS-er), 200-500 Kc., original condition, \$16. Transmitter-Receiver ATH2C, 3.5-7.5 Mc., manual but no power supply, \$20. Bev. Davey, VK4BL, 140 Goodwin St., Currajong, 4812.

FOR SALE: FL100B SSB Transmitter and Drake 2B Receiver, \$250 each. Both in excellent order. R. J. Whyte, Willow Point, Wentworth, N.S.W. (VK2AHM).

FOR SALE: New Transceivers, TR10 TS500 with power supply and extra VFO, 3.5-30 Mc., 200w. p.e.p., I.C.E. 700 Series solid state, 3.5-30 Mc., 120w. p.e.p., \$505. I.C.E. 6 metre AM-FM, \$147.50. S. T. Clark, VK3ASC, Phone 45-3002.

FOR SALE: Type 122 Transceiver in very nice condition. Complete with power supply, case of spare valves, spare fmrs., etc., and manual, \$30 lot. H. Michael, VK3ASI, Phone Geelong 9-9966 (business hours).

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SELL: Eddystone 640 Communications Rx, Ham bands only, 1.8-30 Mc. This unit has been completely overhauled and is in A1 condition and is complete with instruction book and spare valves for \$65. Contact VK7ZJV, 7 Rufus St., Gowrie Park, Tas., 7306.

SELL: Eddystone 888A Communications Receiver, unmarked, absolutely as new, has product detector for s.s.b.; six Amateur bands, 1800 Kc. to 30,000 Kc., \$185. Ring Stawell 51338 or write VK3UZ, Box 64, Stawell, Victoria, 3380.

WANTED: SX117, FR100B, SR700A, SX100. Particulars to P. Rodukoff, 21 Derby St., Hawthorne, Old., 4171. Phone 95-4765. Sell AR7, SX28, HE30.

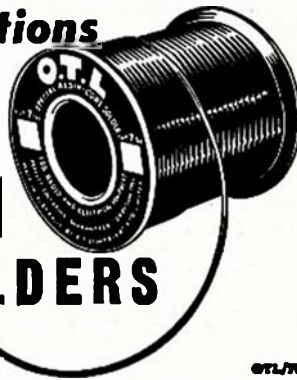
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SIDEBAND ELECTRONICS ENGINEERING

It is good to be back home again after a long absence overseas. I have taken over from Alex Outtrim, who, during my absence, did an excellent job for you all and for me. I missed last month's deadline for an advertisement about a stock clearance sale, all brand new equipment, now going on since closing off at the end of the last financial year. The sale is still on for most items, so there will still be some real bargains to be had.

While returning on the "Marconi," sailing between Dakar and Cape Town, I heard several good VK 20 metre transmissions from stations in contact with Canadians and Americans. That is the area of West Africa where we all have doubts about getting into, but it is just a lack of activity there at the right time, around 0600 GMT.

While overseas I laid contacts with suppliers of Amateur gear in the U.K., Germany and Japan. More about the results of that businesswise in future advertisements in "A.R." or write me about a "news-sheet" that will give up to date information without the usual delays in publication.

During my absence something happened here with **HY-GAIN** Antennas, sufficient to state that I am still their Amateur Antennas distributor for Australia, appointed by them and by their export office back in 1965.

In Germany I had the privilege to see the manufacture of crystal filters, starting from 6" long raw, but artificially grown, quartz crystals. They can now safely claim shape factors better than those of mechanical filters and off-frequency suppressions of more than 100 db. Their filters, with now eight crystals in them, are only $\frac{3}{4}$ " x 1" x $1\frac{1}{2}$ " in size.

Japanese Amateur products are improving, they are catching up with the Americans also in our field. I have seen and heard and tested Yaesu-Musen, Star and Trio sets and shall soon market the brand of my choice, the best of the lot as I see it.

Equipment made in the U.K. is still of the old solid style with good performance. In the U.S.A. a slightly larger 30w. plate dissipation TV line output valve is now being used in transceivers, allowing a bit more peak input and output, but . . . unless changes are made in power supplies and their design to handle these peak demands without a serious drop in supply voltages, the linearity will suffer. I continue to recommend local products that are made for 50 cycles and 240v., have separate 300 and 800 volt sections instead of getting both from one transformer secondary with bad regulation as a result.

Speaking about linearity; read my June 1968 advertisement again. Grounded grid amplifiers, "after-burners," without tuned input circuits, may be amplifiers all right but they are not quite as linear as those with tuned input circuits. Personally I will not sell them and in this respect I may repeat my "credo," my function here in the Amateur world. To supply the best gear at the lowest possible cost and not to market equipment that does not come up to my standards.

As to fully transistorised gear that I have seen during my trip, there is neat and interesting stuff being made, but not for the power levels that most Amateurs demand or take for granted. Even for 100w. PEP we still need valves in the output stages, the high power transistors are still too dear and delicate. Unless weight, space and power consumption savings are really important, I shall still stick to valves, particularly when a power socket is available within 30 feet distance.

Here is what I have to offer in my Clearance Sale as long as the stock will last:

SWAN SW250 6 metre SSB Transceiver ..	\$400	HEATH HA-14 Linear Amplifier Kit	\$150
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Galaxy V. Mk. 2 All-Band Transceiver	\$500	Crystal Filters, 5165 Kc., own production ..	\$10
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Hy-Gain TH6DXX with BN-86 Balun	\$200	Co-ax Baluns for G5RV Antennas	\$10
Newtronics 4BTV 10-80M Vertical	\$65	Galaxy V. Mk. 2 Transceiver, demonstration	
HEATH HW32A Transceiver Kit	\$165	set, under new warranty	\$450
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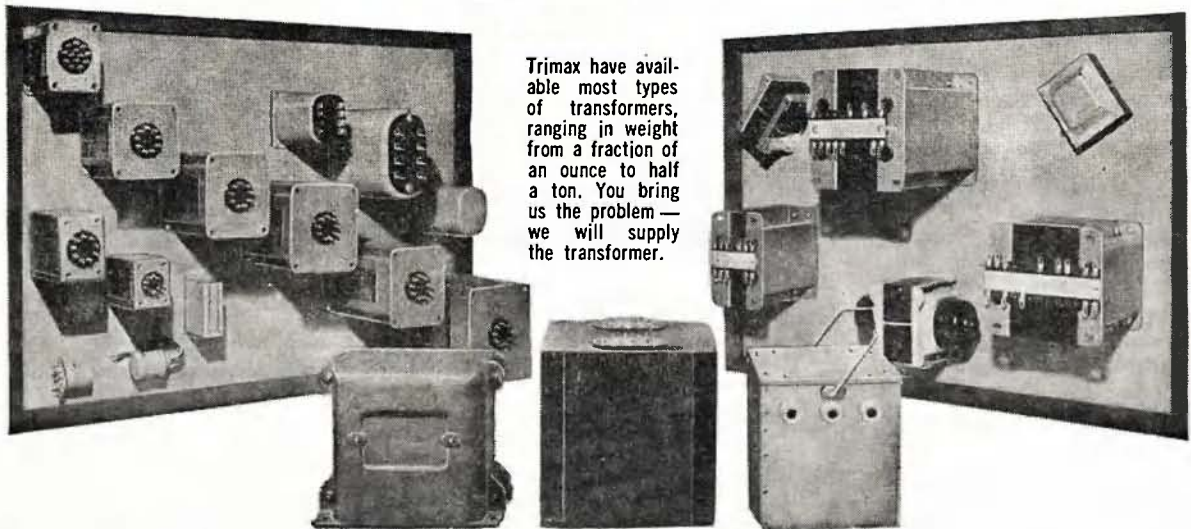
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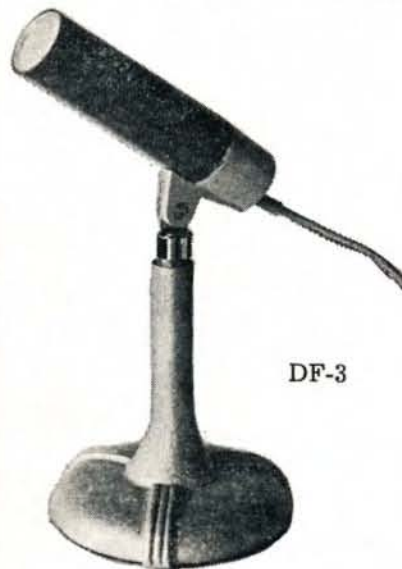
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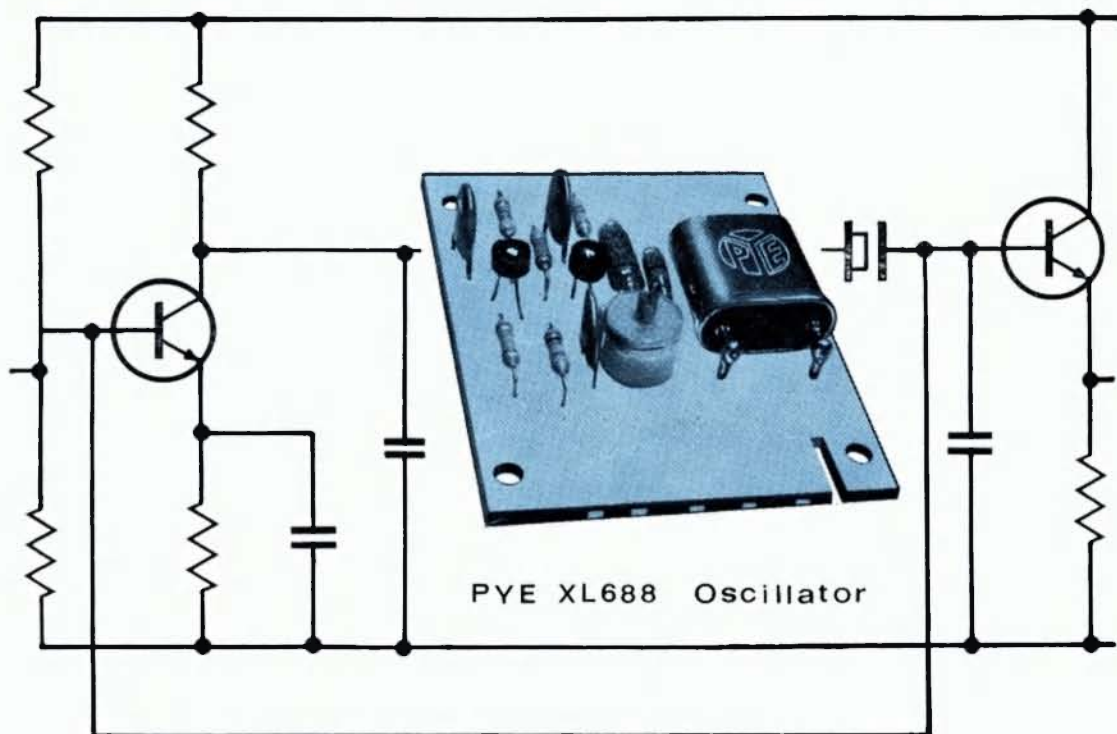
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SEE STORY ON PAGE 9



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Vol. 36, No. 9
SEPTEMBER
1968

30c

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"AMATEUR RADIO"

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SEPTEMBER 1968

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	3600 Kc. s.s.b.		7.080 Mc. a.m. 52.4 Mc. a.m.
	7146 Kc. a.m.		14.100 Mc. s.s.b. 144.36 Mc. a.m.
	53.032 Mc. a.m.		
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VK4WI, Sundays, at 0900 hours E.A.S.T.	3590 Kc.	VK7WI, Sundays, at 1000 hours E.A.S.T.	3672 Kc., and re-transmitted by
	7146 Kc.		representative stations on—
	14.342 Mc.		7146 Kc. 144.1 Mc.
			53.032 Mc. 432.6 Mc.

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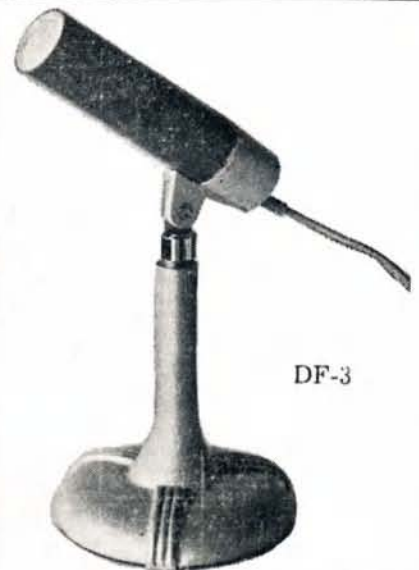
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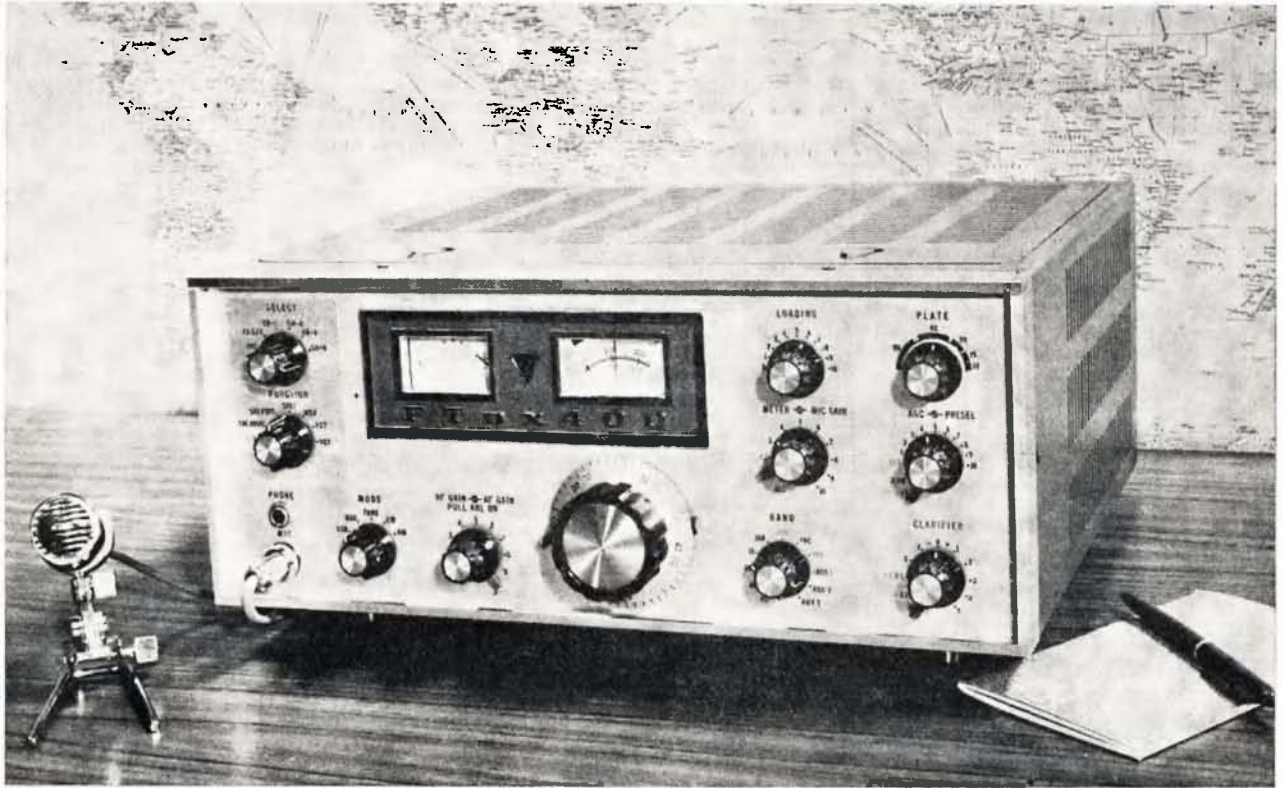
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- ★ Carrier input adjustable for safe tune up.
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- ★ VOX is included, as well as PTT and panel control.
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- ★ VFO dial readout of 1 kc.
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- ★ Provision for external VFO for split frequency operation, plus built-in four crystal locked channel facility.
- ★ Adjustable VFO tuning knob tension.
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- ★ All plugs, circuit and instruction manual provided.
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A Table Top S.S.B. Transceiver for Six Metres

A. S. LUNDY,* VK2ASI

HAVING built a much transistorised copy of the Swan 240 for use as a mobile rig and found it an ideal layout to "home brew," it was decided to try a 6 metre version along the same lines. As the unit would be used almost exclusively for working sporadic E openings, high power and performance was not really necessary, hence the use of a 2E26 final and a valve receiver front end. The performance nevertheless is quite adequate, with at least 30 watts p.e.p. output and a receiver that will hear 0.2 microvolt above the noise. The output level is ideal for driving an "afterburner" and a FET pre-amplifier would no doubt improve the receiver to match.

CHASSIS CONSTRUCTION

The chassis was formed from 16g. half hard aluminium sheet (Fig. 1). Pop rivets were used wherever possible and self tapping screws elsewhere. Some form of chassis bender is needed, if only a large vyce and some pieces of angle iron. All bends are made in the same direction. A matt finish can

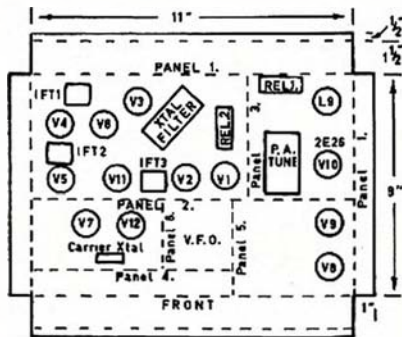


FIG. 1. CHASSIS LAYOUT.

be obtained on the chassis by etching in 5% sodium hydroxide for about 5 minutes. This also removes most of the marks and scratches that invariably appear after the cutting and bending work. Ventilation holes are drilled around each valve socket, 6 holes round the 7-pin and 8 holes around the 9-pin with a double row around the 2E26 socket.

The tuning drive mechanism is a copy of the Swan 350 arrangement and consists of two 6 to 1 Jackson verniers, 1 brass spacer and the spun aluminium course tuning knob and the outer bakelite fine tuning knob. This assembly is available from Ham Radio Suppliers of Melbourne. The first vernier is attached to the v.f.o. box wall and the second vernier to the front panel with the brass spacer between it and the panel.

The bottom cover has a pattern of 3/16" holes drilled in it at 1" centres to provide ventilation, while the top

cover has a similar pattern at 3/8" centres over the p.a. box. There is also a gap of 1/4" between the top of the front panel and the underside of the top cover, also for ventilation purposes.

RECEIVER CIRCUIT

The receiver front end consists of a pair of 6AK5s as r.f. stage and mixer. Output from the mixer is coupled through IFT3 into the 6.4 Mc. crystal filter. The 250 pF. and 470 pF. capacitive dividers provide low impedance into the filter. The filter was constructed from FT243 surplus crystals using the sweep unit described in December 1967 "A.R." page 10. The filter crystals are mounted on a piece of matrix board, three holes wide by seven holes long, and the whole unit then supported on two 3/8" bolts.

6.4 Mc. was the highest frequency that a quantity of surplus crystals were available in and this, combined with the fact of no harmonics in the 6 metre band and a reasonable conversion ratio to 6 metres, led to the choice of this frequency. The author can supply a

incoming 52.0 to 52.5 Mc. signals, produces the 6.4 Mc. i.f. frequency.

Crystals on 34.5 Mc. and 36.0 Mc. can also be switched in so as to give a tuning range from 51.5 to 53.5 Mc. in segments of 500 Kc. This arrangement gives a constant tuning rate per segment and adequate stability.

Output from the v.f.o. mixer is passed through three tuned circuits to the grid of the 12BA6 v.f.o. amplifier. The four tuned circuits (L16, L17, L18 and L19) are adjusted so as to provide a bandpass between 45 Mc. and 47 Mc. This adjustment is easily done by disabling the v.f.o. oscillator by removing the 33 pF. coupling capacitor to the tuned circuit, coupling a signal generator to the base of the emitter follower with a 100 pF. capacitor, and detecting output in the 12BA6 v.f.o. amplifier plate circuit by means of a 2-turn link, a OA91 diode and a 50 or 100 microampere meter.

Remove the overtone crystals so as to disable the overtone oscillator, then slowly tune the signal generator across the 45-47 Mc. range. Adjust the four tuned circuits to get a suitable bandpass, which should come out with quite steep sides and only a 3 db. hole in the middle. It is surprising just how effective this simple arrangement is.

The complete v.f.o., overtone oscillator and mixer are mounted on matrix board, 7 holes wide and 5 inches long. L17 and L18 mount on a small additional plate attached to the front side with Araldite.

The v.f.o. coils, L13 and L14, are mounted in the v.f.o. box alongside the tuning capacitor.

The former for L13 is a threaded bakelite one from the crystal oscillator section in the SCR522 units. The variable inductance, L14, is used for band-setting and is wound on a 7 mm. slug tuned former with 3/8" square base. The same formers are used in the three i.f. transformers also, and are available from the W.I.A. N.S.W. Division, as are the 0.5-8 pF. v.h.f. trimmers used throughout the transceiver and the 25 pF. polar tuning capacitors.

As crystal locked transmitters seem to still be in the majority on 6 metres, it was necessary to include a function which allowed one to call CQ, then tune the band, so a crystal oscillator was incorporated which could, if desired, be used to lock the transmit frequency, while the v.f.o. was used to tune the receiver. This function is controlled by a front panel switch SW2 and relay No. 2.

When the switch is on "transceive" position, operation is on the one frequency. When on "crystal" position the transmitter is crystal locked while one tunes the receiver with the v.f.o. The frequency of the crystal lies between 10.6 Mc. and 11.1 Mc., the same as the v.f.o. it replaces. It would be possible to use an overtone crystal between 45.6 Mc. and 47.1 Mc. instead

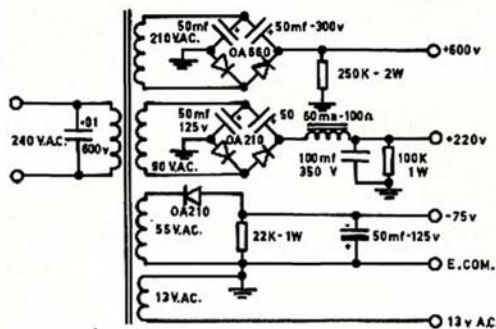


FIG. 3. POWER SUPPLY

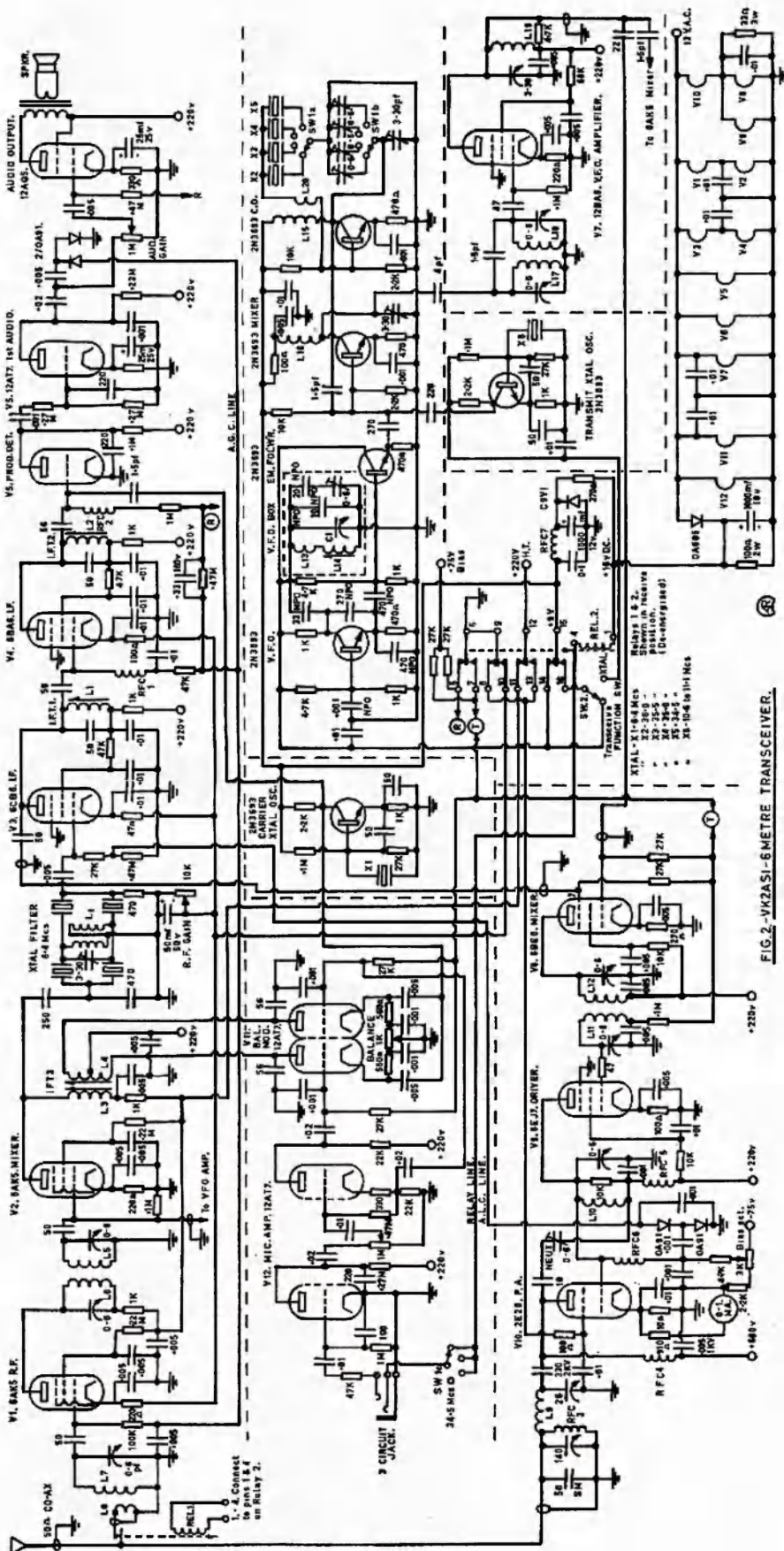
limited number of filter units, aligned and mounted at \$7 each for those who do not wish to construct their own.

Output from the filter goes to the 1st i.f. amp., then is capacitively coupled out of IFT1 to the second i.f. stage. The cathodes of these two stages and the 6AK5 r.f. stage are tied together through the r.f. gain control. A.g.c. is applied to the r.f. stage and second i.f. stage. One half of a 12AT7 is the product detector, the other half serves as the first audio. A pair of OA91 diodes as a voltage doubler provide the audio-derived a.g.c. voltage. The audio output is provided by a 12AQ5 which is only coasting along but still provides all the audio required.

HETERODYNE V.F.O.

The v.f.o. runs at 10.6 to 11.1 Mc. and after passing through an emitter follower isolation stage is mixed with 35 Mc. energy from an overtone crystal oscillator to give an output of 45.6 to 46.1 Mc. which, when mixed with the

* 36 Otho Street, Inverell, N.S.W., 2360.



of the whole v.f.o. assembly, but the use of the lower crystal has some advantages, namely:

- (1) A cheaper crystal.
- (2) An overtone crystal would require a tuned circuit and feedback link.
- (3) Three crystal locked positions are available from one crystal, i.e. if one used a crystal on 10.7 Mc. then one could operate on 52.1, 52.6 or 53.1 Mc., depending on which 500 Kc. segment was selected.

Inadvertant transmitter operation in the 51.5 to 52.0 Mc. range is avoided by means of switch 1C which disables the push to talk circuit when this segment is selected.

The 0.5 to 6 pF. trimmer and the 20 pF. N750 capacitor provide negative temperature co-efficient to enable drift in the v.f.o., due to temperature rise, to be compensated for. The prototype unit required the full amount and now has less "driftitis" than a lot of the crystal locked transmitters on this band.

Front panel controls are from the left: 1, audio gain; 2, r.f. gain; 3, band selector Sw.1; 4, microphone socket; 5, microphone gain; 6, balanced modulator control; 7, p.a. bias; 8, crystal-transceiver function switch. The p.a. tune and load controls are alongside the cathode current meter, which is a MR2P type. The black pointer knobs are available from the W.I.A. N.S.W. Division Equipment Store.

All components were mounted on miniature tag strips around the relative valve sockets, the coils were also mounted in this manner, while the 0.5-6 pF. v.h.f. trimmers were mounted through 1/4" holes with a self tapping screw so that they could be adjusted from the top side of the chassis.

The v.f.o. tuning capacitor is a Polar single gang type C18-02 of 25 pF. Plates are removed from it so that only four stator and four rotor plates are left.

TRANSMITTER

Audio from a high impedance microphone goes to one half of a 12AT7, then to the other half which is a phase-splitter and provides push-pull audio to the grids of a second 12AT7 which serves as a balanced modulator. Originally a 7360 beam deflector valve was contemplated here but as they are \$5 and VK2AS1 has plenty of five for \$2 12AT7s around, the latter were tried and found to be completely satisfactory. R.f. in parallel from the carrier crystal oscillator is applied to the 12AT7 cathodes and balance achieved by means of a variable cathode resistor.

The double sideband output is coupled into the crystal filter through IFT3 and is amplified by the 6CB6 first i.f. stage. The second i.f. stage, product detector and audio output stages are disabled by the application of -75 volts to their control grids. S.s.b. output from the first i.f. stage goes to the injection grid of the 6BE6 mixer, while output from the heterodyne v.f.o. goes to the control grid.

Some doubt was entertained as to the effectiveness of a 6BE6 at 52 Mc., so

a 6AG5 was tried instead at one stage, but was soon changed back to the 6BE6.

Inductive coupling between L11 and L12 transfers the energy to a 6EJ7, which does an adequate job as a driver and does not need to be neutralised, although the small value resistor in the grid circuit is a necessary item.

The signal is then capacitively coupled into the 2E26 grid, which should have approximately -30 volts bias on it, to produce a standing current of 10 mA. on the cathode current meter with the plate and screen voltages shown. Output is into a pi-coupler, the tuning capacitor is the same type as used in the v.f.o., and the 140 pF. load capacitor is from a BC611 WW2 walkie-talkie. Another 25 pF. capacitor could be used here with 150 pF. or so of fixed mica capacitor, instead of the BC611 unit.

Cathode current kicks up from 10 mA. to 40-50 mA. with speech and a steady whistle should give 70-80 mA. cathode current and about 15 watts into a wattmeter. Plate efficiency is then close to 50%. A fraction of a milliamp. of grid current may also be drawn under these conditions.

A.l.c. is provided by means of a pair of OA91 diodes as a voltage doubler and applied to the 6CB6 first i.f. stage. Neutralisation of the 2E26 is provided for, although the author has found that very little, if any, was needed. The main requirement being that the final is heavily loaded. A lightly loaded final cannot be successfully tamed (not mine anyway). The loading and tuning is always adjusted, with the aid of a s.w.r. meter, so that one is getting maximum r.f. output.

COILS AND SPECIAL COMPONENTS

L1 and L2: 40 turns of 28 B. & S. enamelled copper wire on a 7 mm. slug tuned former. L3: 20 turns as above. L4: 2 by 20 turns bifilar wound 33 B. & S. spaced $\frac{1}{8}$ " from L3. The formers used for the above coils are 1" long with a $\frac{3}{4}$ " base and are enclosed in a can. Available from the W.I.A. N.S.W. Div.

The following coils are all close-wound with 20 B. & S. enamelled wire and are $\frac{3}{4}$ " inside diameter. L5: 12 turns, L6 12t., L7 12t., L8 2t., L10 6t., L11 9t., L12 8t., L15 12t., L16 10t., L17 14t., L18 9t., L19 7t., L20 2t.

P.a. coil L9 is 5 turns of 10g. copper wire or $\frac{1}{8}$ " copper tubing with $\frac{1}{8}$ " spacing between turns and a $\frac{1}{2}$ " leg at each end. $\frac{3}{4}$ " inside diameter.

L13 is the coil and threaded former from the SCR522 crystal oscillator and is 9 turns spaced one turn on $\frac{3}{4}$ " diameter. The winding was given a coat of Araldite.

L14 is 8 turns of 20 B. & S. on a 7 mm. slug tuned former. It is also given a coat of Araldite. Make sure the slug is being firmly held in place with rubber strip as a loose slug here will really ruin the v.f.o.'s mechanical stability.

RFC1, 2, 5, 6 and 7 are 560 uH. video peaking chokes available from Ham Radio Suppliers. RFC3 and 4 are 24 B. & S. close wound on a $\frac{1}{4}$ " former, 1" long.

Relay 1 is a small single change-over type, ex disposals.

Relay 2 is a miniature plug-in type available from S.T.C. at a reasonable price. Its type number is 250AKO.

The power supply transformer was rewound from a discarded one that had a shorted-turns secondary. All windings except the primary were removed and new secondaries were wound

on at 3 turns per volt. The use of voltage doubling circuits reduced the amount of rewinding necessary. The power supply was constructed on a 5" x 7" chassis of the same design as the transceiver.

Switch 1 is a miniature 3-pole, 4-position M.S.P. type 73625 A1.

Switch 2 is a miniature 6-pole, 2-position M.S.P. type 73652 A1.

A 40 Metre D.F. Rod with Transistor Pre-amplifier

The direction finding rod to be described here was built as an easy way into hidden transmitter hunts at conventions. The direction finding abilities of the rod are quite good, but its signal pick-up is virtually nil compared with the mobile whip. To help overcome this, a single stage transistor r.f. amplifier was added as an outboard unit and this improved the performance remarkably.

Signals that were inaudible without the pre-amplifier became S5 to S6 with the pre-amplifier. It would appear that the 30 db. plus gain of the SE1001 is being obtained, while the increase in background noise is just noticeable.

The d.f. rod is built from a piece of $\frac{1}{2}$ inch ferrite rod at least 6 inches long, mounted on a U shaped piece of perspex with a handle underneath. The winding is "dipped" to frequency with a g.d.o. coupled with a 2-turn link to the co-ax. lead.

The pre-amplifier is constructed on a piece of matrix board 2 inches square. A shield runs across the centre of the board. Coils L3, L4 and L5 are wound on 7 mm. slug tuned formers with $\frac{1}{4}$ inch square bases, obtained from the VK2 Division Store. The SE1001 draws approximately 2 mA. and a small 9 volt battery is used as the supply.

L5 and the 0-12 pF. v.h.f. trimmer provide for neutralisation of the SE1001 which is necessary. With the trimmer at minimum, the SE1001 will probably oscillate, this being obvious by the infinite number of whistles and squeaks

in the 40 metre receiver. Start winding the trimmer in and the oscillation should stop, although the background "hiss" will be high, but will decrease until a point of least noise is reached at about 6 pF. Further capacitance will cause an increase in the noise till the stage oscillates again at full capacitance. The setting that gives the least noise is the correct point. This adjustment is done with the d.f. rod connected to the pre-amplifier and L3 and L4 set near frequency with the g.d.o. Now peak L3 and L4 on a signal near 7050 Kc. and finally re-touch the neutralising capacitor.

The rod is hand-held by means of the short handle, and satisfactory results are obtained even with the rod held just outside the car window. The signal nulls off the ends of the rod are quite sharp and can be missed if the rod is turned too rapidly. Being hand-held, it is easy to sight along the rod and get a visual heading from it.

No difficulty has been experienced in determining whether the signal is coming from "that a way" or from 180 degrees back the other way, as this can be determined by taking a second heading about a quarter of a mile away from and at right angles to the first one so as to get a cross reference. In some cases a knowledge of the area will eliminate one direction due to the terrain or available access. A sensing whip can be added if desired, but may be more of a physical hinderance than anything else.

—A. S. Lundy, VK2ASI

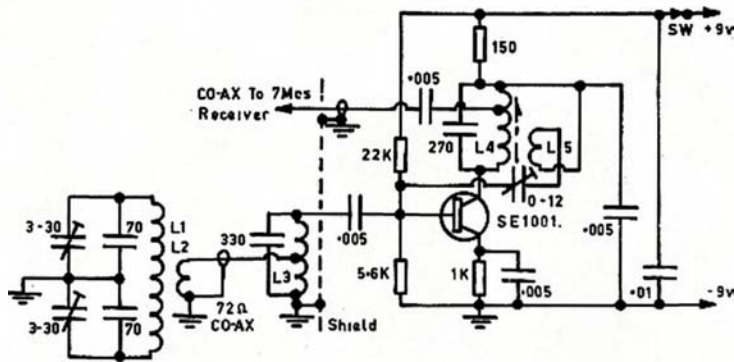


FIG. 1. FORTY METRE D.F. ROD & PRE-AMPLIFIER. (R)

COIL DATA

L1—14 turns on $\frac{1}{2}$ inch ferrite rod spread over 5 inches, 20 B. & S.
L2—4 turns over centre of L1.

L3—15 turns tapped 5 turns from earth end, 20 B. & S. on 7 mm. slug tuned former.
L4—20 turns tapped 4 turns from "cold" end. 20 B. & S. on 7 mm. former.
L5—7 turns of 26 B. & S. wound over L4.

A SIMPLE MULTIPURPOSE SQUARE WAVE GENERATOR

JIM JONES,* VK2ZEE'T (Ex VK3ZEW)

ON building an oscilloscope and associated probes, I discovered I would require a square wave generator to help me align my low capacitance attenuator probe.

The oscilloscope only incorporated one internal calibration voltage, as this was only a one volt peak to peak 50 cycle sine wave, it was quite useless for the purpose I required.

As the probe had a small variable frequency compensation capacitor (which had to be adjusted), it was nearly essential to use a waveform that would give a wide range of frequencies in one signal—so a square wave was chosen.

The capacitor had to be adjusted so that it gave an equal attenuation over the required spectrum of frequencies (for which the probe was intended).

So once again, I dug deep into my little junk box and dug out several transistors, a couple of resistors and capacitors plus several diodes.

After surveying my components I decided the frequency of the unit was relatively unimportant except the output was to be as square as possible (with a relatively short rise time).

running the system for several hours and monitoring the output, it was found to be quite ample for my requirements.

The circuit is basically an actable multivibrator whose frequency depends on the time constant of the capacitors and resistors used in the base and collector circuit. This circuit will work with nearly any type of small signal audio or switching transistors. I checked the circuit with both PNP and NPN transistors, the only change necessary was to reverse the leads on the battery.

THEORY OF OPERATION

Due to variation in the components, one transistor conducts before, or a little more heavily, than the other.

In our case let us assume that transistor Q2 is conducting more than Q1, more current flows in the base circuit of Q2, resulting in a rapidly increasing collector current. The increasing voltage at the collector of Q2 is coupled through C2 to the base of Q1, decreasing the base and collector current in Q1. The collector voltage on Q1 suddenly becomes more positive, coupling a positive voltage to the base of Q2. This action drives Q2 into saturation and

The limiter is basically two silicon diodes placed in the opposite direction, each diode will conduct when its forward biasing point is reached. This, in silicon diodes, is approximately 0.6 of a volt, hence the output is now a square wave with a maximum swing of 1.2 volts peak to peak. If germanium diodes were used the output would only be 0.4 volt peak to peak.

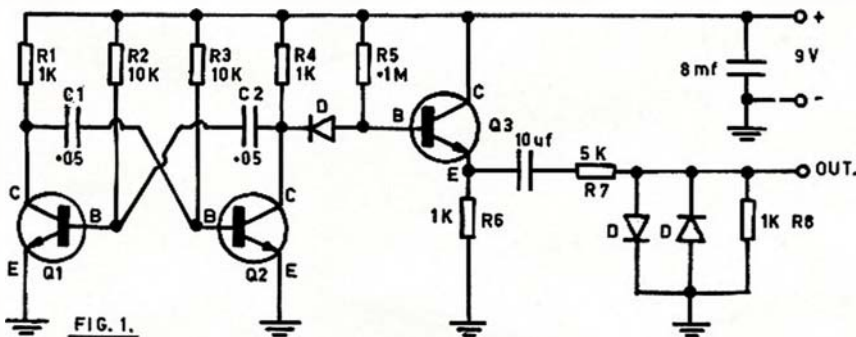


FIG. 1.

All resistors 1/2 watt, 10% tolerance.
All capacitors 20 volt working.
Diodes: Three 1N758 or any silicon signal diodes.

Transistors: Three 2N2102 NPN, or any audio or switching; or three 2N404 PNP or any audio or switching, but reverse battery connections.

CIRCUIT DESCRIPTION

The simplest circuit I could think of at the time with a square wave output was an actable multivibrator.

The output of this circuit, as shown by the waveform diagram, was relatively poor although it was ample to trigger the next stage which was an emitter follower.

The emitter follower served two purposes: (1) isolation between the multivibrator and the output, and (2) it gave a power gain to the signal, although the voltage gain of the stage was less than unity.

The output was coupled from the emitter follower through an integrating circuit to the limiting circuit.

The limiter basically consists of two silicon diodes placed in the opposite direction.

The output was now both square and a constant 1.2 volts peak to peak. After

Q1 into cut-off. The action happens so quickly that capacitor C2 does not discharge, and the entire voltage increase of the collector of Q2 appears across R4 and at the base of Q1. Capacitor C2 then discharges until Q1 conducts, and the cycle is completed. The resulting output from the collector of Q1 is a square wave whose amplitude is dependent on the supply voltage.

The output of the multivibrator is taken off the collector of Q2 and is coupled to the next stage via diode D1. This diode conducts when Q2 is conducting a saturation, also when this diode is conducting Q3 is cut off; secondly, when the diode is off Q3 will conduct and an output will be present.

The output from this stage is taken across the emitter resistor. It is then coupled through an integrating circuit which does not allow the d.c. level to pass (the output swings equal around a zero axis).

WAVEFORMS.

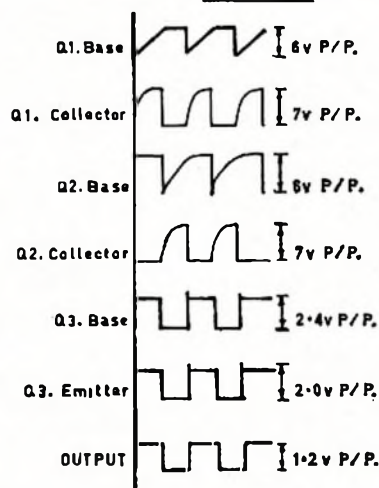


FIG. 2.

Waveforms taken with following settings: 1 volt/cm. plus internal sync. All waveforms are shown but as the c.r.o. had only an a.c. input, no reference to the d.c. was able to be shown.

The following waveforms are typical of those which will be obtained when testing an amplifier:—

- (A) Output of generator. Following are outputs of amp. with differing faults:
- (B) No defects.
- (C) Loss of low frequency gain with leading low frequency phase shift.
- (D) Excessive low frequency gain with lagging low frequency phase shift.
- (E) Poor middle and high frequency response.
- (F) Excessive high frequency response and ringing.

CONCLUSION

This circuit thus enabled me to set up my oscilloscope probes and the actual oscilloscope. I have also used this circuit for checking audio amplifiers and as a source for a Morse practice system. It can also be used for many other purposes such as signal injection for fault finding, both r.f. and a.f. circuits.

* 1 White Street, Darlington Point, N.S.W., 2708.

Further Data on the Single Loop Triband Cubical Quad

The original article appeared in "A.R." of April 1968, and the author has forwarded more details of these quad elements as a supplement for those interested in such antennas. Tuning seems far less critical compared with a Yagi beam using this system because the quad element has more wire (length).

DATA FOR FIGURE 1

- L1—7 turns, 37 mm. diam., 16 mm. long.
- L2—4 turns, 37 mm. diam., 18 mm. long.
- L3—4 turns, 37 mm. diam., 9 mm. long.

1 mm. copper wire was used for the coils.

Aerial Resonances	S.W.R.
14.15 Mc.	≈ 1 : 1
21.23 Mc.	1 : 1.3
28.6 Mc.	1 : 1.5

Select reflector and director frequencies as usual. Spacing for 21.3 Mc.

Capacitors: Ceramic 38 mm. diam., or pieces of co-ax. cable, 10 kva., NPO.

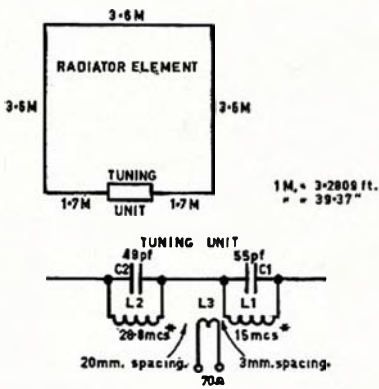


FIG. 1.

Fine tuning:

- 14 Mc.: Wire length or L1.
- 21 Mc.: C1 or L2.
- 28 Mc.: C2.

Asterisk: Resonances without wire loop.

DATA FOR FIGURE 2

Example: Indoor use.

- L1—7 turns, 37 mm. diam., 16 mm. long.

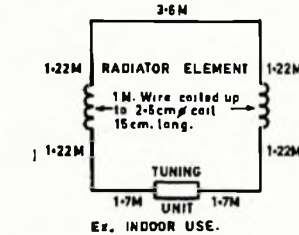


FIG. 2.

- L2—4 turns, 37 mm. diam., 16 mm. long.
- L3—4 turns, 37 mm. diam., 9 mm. long.

1 mm. copper wire was used for the coils.

Aerial Resonances	S.W.R.
14.15 Mc.	1 : 1
21.23 Mc.	1 : 1.1
28.72 Mc.	1 : 1.3

Select reflector and director frequencies as usual. Spacing as for 21.3 Mc.

Capacitors: Ceramic 38 mm. diam., or pieces of co-ax. cable, 10 kva., NPO.

Fine tuning:

- 14 Mc.: Wire length or L1.
- 21 Mc.: C1 or L2.
- 28 Mc.: C2.

Asterisk: Resonances without wire loop.

—H. F. Ruckert, VK2AOU



Integrated Circuit I.F. Strip

In the course of designing a transceiver I had occasion to build the i.f. strip as shown. It has certain features that may make it attractive for new projects or as an outboard addition to an older receiver.

It features high gain (37 db.), good stability, product detector or a.m. detector, operation from +12 volts, and limiting or a.g.c. if required.

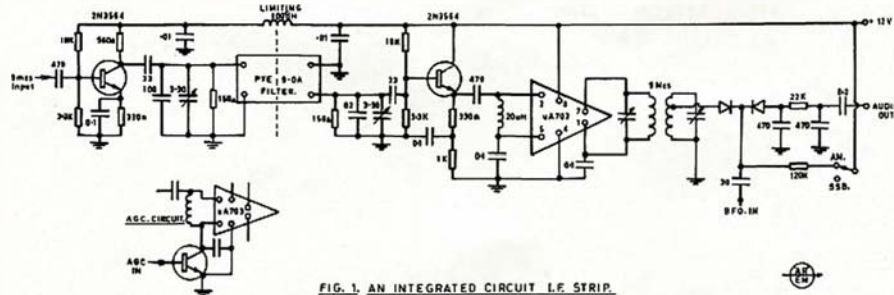


FIG. 1. AN INTEGRATED CIRCUIT I.F. STRIP.

WIRELESS INSTITUTE OF AUSTRALIA FEDERAL EXECUTIVE

The Institute can now offer annual subscriptions to the following Amateur Journals:—

- ★ "QST"—Associate membership and renewals, \$6.40.
- ★ R.S.G.B. "Radio Communication" (ex "The Bulletin") is only sent with membership of the Society. Send for application form and FREE sample copy of the R.S.G.B. "Radio Communication," \$5.50.
- ★ "CQ" Magazine, \$6.20.
- ★ "73" Magazine, \$4.50.

R.S.G.B. Publications and A.R.R.L. Publications available.

Send remittance to Federal Executive, C/o. P.O. Box 36, East Melbourne, Vic., 3002.

The filter circuitry is straightforward and uses the Pye 9-0A filter, which has a 4.5 db. insertion loss.

The main amplification takes place in the Fairchild's integrated circuit. This is an r.f./i.f. amplifier which is quite attractive in price. The coil is one of the ferrite slugs with a hexagonal hole through it, the wire being wound on toroidally, which results in a compact coil with high Q and little external field. A feature of the uA703 is that limiting is available if required, by merely arranging the turns ratio of the coil so that the effective load impedance is less than 3,300 ohms.

If a.g.c. is required current is bled from pin 5, using an external transistor as shown in the diagram.

The product detector is a simple one but quite effective if high back resistance diodes are used. In the a.m. position, varying the value of the 120K resistor may increase the efficiency of the detector, depending on the diodes used.

—I. Fyfe, VK2ZIF.

Analytical Work.—Presently the regular analytical work amounts to an average of 1,200 analytical results issued every week. This is about one-third of Central Laboratories' effort.

Research and Development.—This represents about two-thirds of the effort, although this proportion will increase. Research covers an exceptionally wide range of disciplines, physics, chemistry, geology, metallurgy and chemical engineering. It also embraces many technologies, fuel, glass, plastics, food, polymers, paper, refractories and surface coatings.

Facilities.—The Laboratories are very well equipped, with a whole range of scientific apparatus, including photographic and direct reading spectrographs, U.V.-visible, I.R. and A.A. spectrophotometers, flame photometer, gas chromatograph, tensile and compression testing apparatus (Instron to 10,000 Kg, Avery to 50 tons), x-ray diffraction and fluorescence equipment, radiographic and α -irradiation facilities, mass spectrometer, differential thermal analysis apparatus, metallurgical and metallographic testing equipment.

DEMONSTRATION OF EQUIPMENT

The demonstration opened at 4.00 p.m. when Dr. Draycott welcomed the visitors and introduced Mr. John Bays (VK2BLH), Senior Development Engineer, Process Control and Electronics Group, who briefly outlined the purpose of the demonstration. This was followed by an inspection of the Technical Centre, to enable the visitors to gain an appreciation of the extent of the work undertaken, finishing in the electronics section where the equipment was described and demonstrated.

A large amount of interest was shown by those present and many questions were asked by those present. Although the demonstration and discussion was scheduled to finish by 7.30, it was after 10 p.m. before the informal discussion groups broke up and departed.

Although the exercise at present is to decide the feasibility of producing sideband transceivers with input powers of 200 and 600 watts p.e.p., a linear with 600 watts p.e.p. input, power supplies to match, and an s.w.r. meter, many other items of equipment, orientated towards the Amateur market were discussed.

Space does not permit us to publish full details of all items being developed, but the following details and block diagram will give some idea of the scope of the work so far done. These details cover the ACITRON 200W, which unit is considered most likely to find a ready market. The price indication is \$478 including sales tax, which compares favourably with imported equipment.

PROPOSED ACITRON 200W

This transceiver has been specifically designed for the Australian market, being a low cost, mobile or fixed station, five-band s.s.b./c.w. transceiver.

The Acitron 200W embodies the following features:—

- ★ Solid state v.f.o.
- ★ 80 to 10 metre coverage.

- ★ S.s.b. 200 watts input p.e.p.
- ★ C.w. 180 watts input.
- ★ High frequency crystal filter (9 Mc.).
- ★ Full coverage of all bands with 500 Kc. band segments.
- ★ Calibration to 1 Kc.
- ★ Backlash-free vernier control of frequency with direct frequency readout.
- ★ Built-in 100 Kc. calibrator.
- ★ Automatic peak level control.
- ★ Vox control.
- ★ May be used as a fixed or mobile operation with the appropriate power supply unit.

The Acitron 101 is a 12v. d.c. mobile p.s.u. and weighs ten pounds. Price \$150 complete.

The Acitron 1001 is an a.c. power supply incorporating a loudspeaker, and weighs twenty pounds. Price \$100.

SPECIFICATIONS FOR THE ACITRON 200W

Receiver—

Sensitivity: Less than 0.5 mV. for 10 db. signal to noise ratio of s.s.b. operation.

Selectivity: 2.1 Kc. at 6 db down, and 4.5 Kc. at 60 db down (9 Mc. filter).

Input: Low impedance for unbalanced co-axial inputs between 50 and 100 ohms.

Output: Low impedance to drive 5 to 10 ohms speaker and high impedance phone output.

Audio power output: 3 watts with less than 10% distortion.

Spurious responses: Image and i.f. rejection better than 50 db and internal spurious signal below an equivalent antenna input of 1 microvolt.

Transmitter—

D.c. power input: S.s.b. (A3J emission), 200 watts p.e.p. for normal voice continuous duty cycle; c.w. (A1 emission), 180 watts, 50% duty, tone generator monitor.

R.f. power output: 120 watts p.e.p. on 80, 40, 20, 15 and 10 metres into 50 to 100 ohms.

Spurious output signal: 60 db below rated output.

Harmonic radiation: 45 db below rated output.

Transmit/Receive operation: S.s.b. manual or vox, c.w. (vox from keyed tone on c.w.). C.w. tone internally switched to receiver a.f. amplifier for monitoring purposes in both the c.w. and tune-up position.

Microphone input: High impedance dynamic type.

Carrier suppression: Minimum 45 db down from single tone input.

Unwanted sideband suppression: Minimum 45 db down from single tone input at 1,200 cycles.

Third order distortion: 30 db down from two-tone output.

Peak level control: 10 db or greater at 0.1 milliamp. final grid current.

Frequency coverage: 3.5 to 4 Mc., 7 to 7.5, 14 to 14.5, 21 to 21.5, 28 to 28.5, 28.5 to 29 Mc.

Frequency stability: Drift less than 100 cycles per hour after 30-minute warm up from normal ambient temper-

ature conditions. Less than 100 cycles for a $\pm 10\%$ line volt variation.

Modes of operation: Upper sideband 28, 21 and 14 Mc.; lower sideband 7 and 3.5 Mc.

Dial calibration: Every 1 Kc.

Dial mechanism: Backlash less than 20 cycles.

Calibrator: 100 Kc. crystal.

Audio response: 200 to 3,000 cycles per second within 6 db.

Front panel controls: Main tuning dial, driver tuning and pre-selector, final tuning, final loading, band switch, function switch, meter switch, gain control, audio gain control (on receive).

Side controls: Meter zero control, vox sensitivity, vox delay and anti-trip neutralisation, phone, and c.w. jack.

P.s.u. requirements: 12v. 9a., 240v. d.c. at 100 mA., 300v. d.c. at 30 mA., 800v. d.c. at 250 mA., 100v. d.c. at 20 mA.

Mobile Acitron 101 is designed for 12v. operation, positive or negative earth. Receive current 8 amps., transmit current 15 amps., continuous peaking to 35 amps.

The Acitron 1001 may be used for 110/230v. a.c. 50 to 60 cycles mains supply, incorporates a loudspeaker and a low impedance phone jack together with a manual transmit/receive switch.

It must be understood that the specification, as quoted, is only tentative and could be altered in the light of the discussions which followed the demonstration.

No attempt has been made to evaluate this equipment, as this would require much more time than was available at the demonstration, suffice to say that from what was seen and heard, a most favourable impression was obtained, and we hope to have the opportunity of making a more comprehensive examination and test at a later date.

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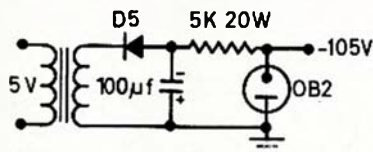
ERRATA

Some mistakes appeared in the circuit diagram of "A Simple Low Cost High Voltage Supply" (March 1968 "A.R."): They were:—

- (a) D5 was drawn in back to front.
- (b) The OB2 was also drawn in back to front.

As the circuit is shown, the output would be positive instead of negative. This could cause the 100 uF. capacitor to short circuit and in turn cause D5 to burn out.

The corrected circuit is shown below.



In the July issue of "A.R." (page 8) the article, "Adapting the Gelson G209 for S.s.b. Reception," was submitted by Ron Fisher, VK3OM. It is regretted that his name was omitted.

Join in the Victorian 160 Metre Contest

In order to promote activity on 160 metres, the Victorian Division of the W.I.A. has organised a contest, the rules being given below. The contest is open to all comers, and we hope to receive logs from all States. Note that cross-band operation is permitted, so you can join in the fun even if you have no transmitting equipment for 160.

RULES

Purpose: To encourage greater occupancy of the 160 metre band.

Dates and Times: 1200 E.A.S.T., Saturday, 5th October, 1968, to 1200 E.A.S.T., Sunday, 6th October, 1968.

Band: 160 metres—1.80 to 1.86 Mc. Cross-band operation is permitted.

Modes: All authorised modes may be employed, and cross-mode operation is permitted.

Logs as follows:

Date/Time E.A.S.T.	My Freq. Band	His Freq. Band	Call Sign Stat'n Work.	No. Sent	No. Rcvd.	Points Claim.

Exchanges: RS(T) followed by three digits, commencing at 001.

Scoring: Stations may be contacted once during each calendar day and scores claimed for each of those contacts.

Stations may count, for scoring purposes, pre-arranged cross-band contacts, but not pre-arranged 160 metre band contacts.

160 Metre/160 Metre contacts:

Fixed (5 pts.) to fixed (5 pts.).

Fixed (5 pts.) to Portable/Mobile (10 pts.).

Portable/Mobile (10 pts.) to Portable/Mobile (10 pts.).

160 Metre/Cross-band contacts:

160 mx fixed (5 pts.) to fixed (5 pts.).

160 mx portable (10 pts.) to fixed (5 pts.).

160 mx portable (10 pts.) to portable (5 pts.).

160 mx fixed (5 pts.) to portable (5 pts.).

A bonus of 20 points may be claimed for each interstate contact, and a bonus of 30 points may be claimed for each overseas (DX) contact.

A bonus of 20 points may also be claimed for contacts made from a Victorian National Park.

A multiplier of 1.5 may be applied to the score for the use of a power input of less than 10 watts to the final stage.

Listeners: 10 points per contact heard on 160 metres.

Entries: Logs must be returned to the Admin. Secretary, Victorian Division, P.O. Box 36, East Melbourne, Vic., 3002, by Friday, 1st November, 1968.

Awards: At the discretion of the Council of the Victorian Division of W.I.A., the following awards may be made:

VK3 Stations—

Highest score: (a) Fixed, (b) Portable/Mobile.

Second highest score: (a) Fixed, (b) Portable/Mobile.

Highest Listener's score.

Others Stations—

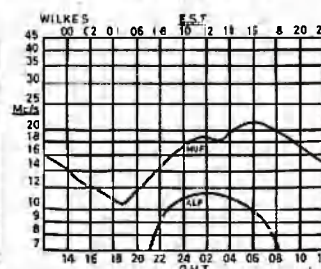
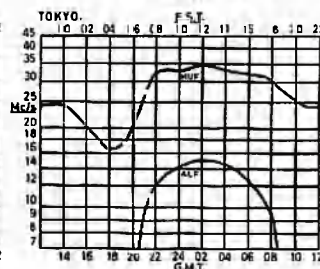
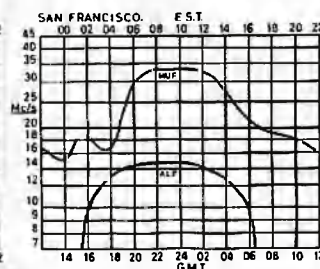
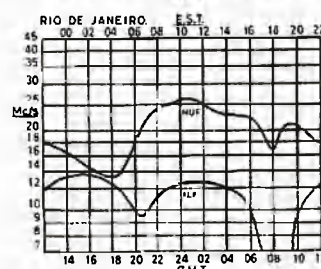
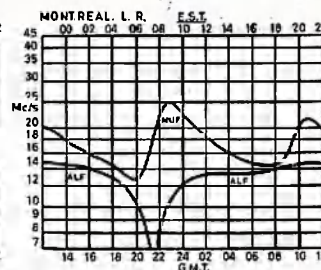
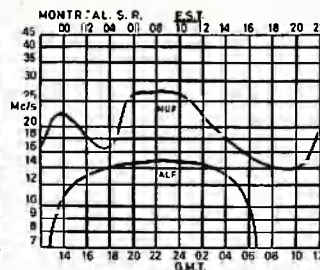
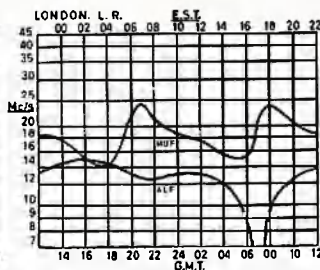
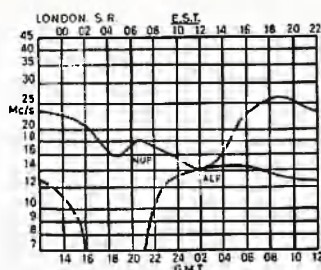
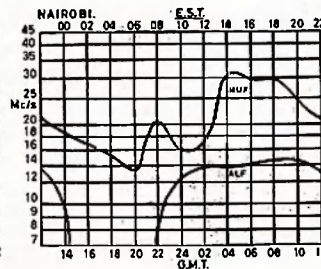
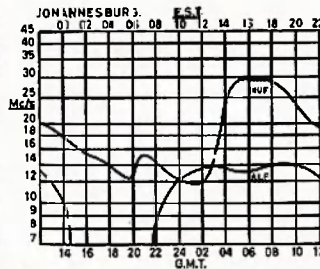
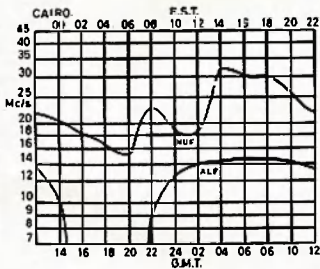
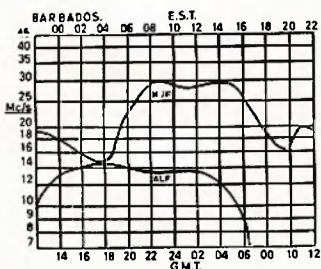
Highest score in contacts with VK3 stations.

AMATEUR FREQUENCIES:

ONLY THE STRONG GO ON—
SO SHOULD A LOT MORE
AMATEURS!

PREDICTION CHARTS FOR SEPTEMBER 1968

(Prediction Charts by courtesy of Ionospheric Prediction Service)



Field Day Fun—or—Heat, Flies and Donga

SITUATED approximately 130 miles north-west of Port Augusta is an area at times featureless, rock strewn and generally quite inhospitable. This is South Australia's far north, and usually considered only good for running a few sheep. Acres to the sheep incidentally, not sheep to the acre. Trees are few and far between and then only a form of stunted growth.

Into such an area my associate in the Field Day, Ron Thrum, a keen S.w.l., and myself set off to establish a portable station.

The first problem, having sorted out the matter of equipment, was to make it to the selected site. This was on the old road to the opal mining town of Andamooka on the south-east edge of a hill overlooking the Commonwealth Railways siding of Wirrapa.

A week or so previously the area had received an unexpected 2 inches or so of rain (annual average 7 inches) which really "does things" to the dirt roads. The top-soil has a high clay content and water will lie in pools for weeks after such a downpour. So, somewhat dubious as to how we'd go, we began our little trip.

WHERE'S THE ROAD?

Three choices of track were available with two entry points quite close. The first of these two looked quite promising for the first 800 yards, but then across the transcontinental railway line and onto a gluey surface. A continual slide for the next 500 yards, a bend negotiated and then "where is the 'road' (track)?" A path of sorts identified by saltbush edges and consisting of loose rocks was discernible, so "press on" was the order of the day.

Several hundred yards of this and it was deemed advisable to keep going, "It might improve!" However, the rain coming down the side of the hill had done a thorough job and the rocks gave way to boulders strewn everywhere and weighing anything up to 300 lbs. With the wheels coming up against these, it was often necessary to back a little and lever them out of the way.

With Ron selecting the most likely path, shouted instructions, loud and slightly naughty words (no one around for miles), more levering and with a sharp drop on one side, we continued seemingly ad infinitum, climbing all the while to make the top of a crest. This took about half an hour at a maximum speed of nearly 2 m.p.h. Then down the hill, turn left at the bottom, then climb for about three miles quite steeply.

But! Down the hill was the same and at the bottom the creek had flowed quite swiftly, allowing about two inches to spare each side of the wheels, still wet and slippery, with a two-foot drop one side and easy four feet the other. Bottom gear, eyes closed and

gun the motor, hit the brakes, fortunately power type, and a big sigh of relief. Up the hill in reasonable comfort as the water had run directly down, producing mere furrows. All of 15 m.p.h. now at times.

The spot was located next to a large concrete water tank about 30 feet high and 200 feet across with a ladder to the top. This is on the pipe line. Dipoles were strung from the top rail of the ladder with the other end anchored on the ground with, you've guessed it, rocks.

Our bottles of cool drink were attached to wires and lowered into the water tank to a depth of 20 feet or so. The radiator was also filled from this source at an opportune moment.

EQUIPMENT

This comprised a petrol generator set placed about 300 feet away to reduce interference problems, none encountered from this unit anyway, an FL100B transmitter and my much worked over AMR300 receiver. Suffice to say, this combination performed admirably for the duration of the contest.

While daylight lasted it was considered advisable to try the alternative route out. A sked with KX6FJ also necessitated a return to base where the beam was available, not to mention dinner awaiting us at home.

ANOTHER TRACK OUT

After disconnecting antennae and power feed, packing tx/rx, and a false start down a wrong track, we were away. All okay till we came over the crest. Here again the water had run down the steep slope but the furrows, up to three along the length of the road, had been gouged out to depths of about four feet in places and had to be straddled, with similar drops each side. However, just a matter of care and slow going.

Down on the flat all was well, as running in loose sand is a common experience. A still-running creek only inches deep forded and then, no, not more rocks, but a dry creek bed. The water had rushed down this so swiftly

it had thrown up a sandbank about four feet high on our side and also left a sandy bed. Digging wheel tracks through the sand bank and levelling it off provided an approach with merely two-foot banks to negotiate. Here the abundance of rocks saved the day, although we exhausted the supply of flat ones in that locality in building our bridge.

On to the main road and our evening sked made with minutes to spare.

With Ron busy for the evening, I returned to the site for several hours, using our latter route without further misadventure. The road never looks as bad at night. Back home again, and the soft bed felt luxurious.

COME THE CONTEST

Next morning back for the long stint, this time also equipped for the heat with more soft drink and a large vacuum flask filled with cordial and lovely big ice cubes. A mistake! The insides of such flasks are not designed to have ice blocks slammed against them. We managed to salvage the ice and didn't cut our mouths on any broken glass.

Into operations again, but with the station wagon closed up, we dripped perspiration, and with doors and windows opened we were besieged by the friendliest of flies! This was dealt with by alternating the two states of being and copious application of insect repellent and fly spray, of which we made sure we had an abundant supply.

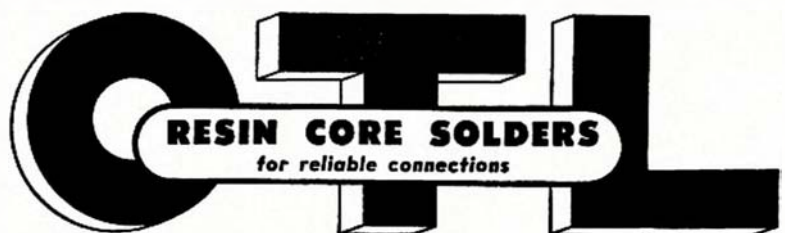
I might add that the temperature can climb to pretty high figures in this area, but swimming is not allowed in the water tanks!

But the contacts came along and we really enjoyed ourselves throughout the contest. Hope to see you in it again next year, 1969.

By the way, any requirements for rocks can be easily met on demand, F.O.R. to your nearest railway station, and if you're driving to Andamooka we'll forward snaps for the best route by air mail.

—Ian VK5QX/P.

CHOOSE THE BEST—IT COSTS NO MORE



O. T. LEMPRIERE & CO. LTD. Head Office: 31-41 Bowden St., Alexandria, N.S.W., 2015
and at Melbourne — Brisbane — Adelaide — Perth — Newcastle

DX

Sub-Editor: PETER NESBIT, VK3APN
32 The Grange, East Malvern, Vic., 3145

BAND NEWS (all times are in GMT)

24 Mc.: Conditions seem to have dropped off somewhat and there has been less activity lately. As far as U.S.A. is concerned, the band is opening and closing later in the day, with W6s being audible as late as 05z. Frequently little or no before 23z.

FG1XX, Guadeloupe, 28610 at 2300z.
4U1TU, Geneva, 28600 at 2130z.
F6ADY is on 28400 at 2030z.

The following stations are active between the hours of 05 and 07z: YJ8W, ZSSFF, ZS-5JM, ZSSLV, ZSSLB, ZS9H, ZE1JZ, 9J2s BC, IE and DT, OH2OI, CR7IC, ZS1XK.

Between the hours of 19 and 21z: 6Y5RM, 11BAT and PAODO.
HG2RI in Hungary on 28057 1230z.
VU2DKZ active on 28066 at 0745z.
XW8BS 28080 at 1050z.
YA1ZC is a good one, 28006 1234z.
ZDBZ is Ascension Isl., 28002 1220z.
ZE1WPC, Rhodesia, 28020 1220z.
HS3DR 28603/715 week-ends at 08 to 10z. QSL K7CBZ.

21 Mc.: ZDBHAL, Ascension Isl., is on 21283 at 1900z.

VP5CB 21350 2304z.
EA8EF "Angelo," Canary Isl., 21297 2110z.
CR4AE "Flavio" 21301 1907z.
9Q5HU 21283 1852z.
9Q5EP is also on 21283 at 2007z.
CO2DR 21271 2328z. QSL to Box 6996, Havana, Cuba.

MPADAT, Das Isl., is counted as Bahrain. 21015 1300z (but possibly QRT by now). QSL to G3USK.

KG4AM 21325 2020z.
5Z4LC 21285 at 1957z.
OD5FM "Bernie" 21321 at 0021. QSL OD5FM.
CR8AK on 21350. QSL goes to W1CBH.
9K3SP, 21317 0010z. QSL Box 419, Kigali, Rwanda.

6W8AL "Jean" 21298 at 0040z.
PZ1BW 21255 2040z.
5H3KJ 21263, 2215z.
601BG, 21370 2000z. QSL to W1YRC.
TA1QR, 21020 at 1910z.
TN8BG, 21060 at 0645z.
6W8DW on 21059 at 2007z.
9L1TL, 21047 1234z.
CR4AE, 21275 at 1520z.
PJ5MG, 21029 at 2214z. QSL via W8IGW.
5H3JR is on 21290 at 2305z.
9H1BD, 21342 at 0911z.

14 Mc.: ZL5AA 14040 at 00z, also 14196 at 11z. QSL to ZL2GX.

ZD8CC, 14208 at 2218z.
TJ1AL "Garry," is on 14191. QSL W2MES.
FB8WW, 14057 1155z. Says QSL to W4MYE.
KG6s ARF, AQY, ARK and K1FNA/KG6 scattered between 14015 and 14070, 0830-0930z.
OD5BZ, 14215 03z. QSL via OD5FM, Box 1824, Beirut, Lebanon.

VQ8s CC, CG and CS are on 14205, 171 and 211 respectively around 12 or 1230z. All are located at Mauritius.

9M2US, 14005 10z. QSL via K3JGG.
9N1MM on 14195 at 2330z, lists for replies on 14215-220.

AF5HQ is on almost daily on 14030-050 at 21z onwards.

FR7s ZD ZS 14195 at 04z. QSL via Box 130, St. Pierre, Reunion Isl.

9VIOC, OV, OW and OY spread between 14020 and 14040 around 0845 to 1015z.
ZD8Z on 14206 at 23z. says QSL via W6CUF.
JW2BM, Svalbard. 14165 at 1230z. QSL to LA5YJ.

From 00 to 03z the following are on: MP-4BBW, MP4BGE, JX7AR, CR4BB, CO2BB.

From 03 to 05z: SVICE, KG4DH, VP2LS, TR8AG, FP8CS, PJ5MG, VP2AC, VP2AW (QSL W9FIU), PY0BLR (Trinidad), VP2KM.

From 05 to 07z: 4U1TU, HV3SJ, FJ2CA, M1B, PZ1CQ, ZB2A, TJ1AL (QSL Box 1037, Douala), FS7RT, LX2FB.

From 07 to 09z: 5U7AN, 9Y4AT, KJ6BZ, CR4BC, OY4HQ, GL3OLJ (14072), 7X0AH 14161.

Not very much between 09 and 17 or 18z: LZ0WYF, FB8ZZ, 3A2CP, HZ1AB (14121), YB0ZZ. After this time, activity picks up until about 23-24z with the following pickings: YS1AG 14069, T1C8P 185, Z3AB 242, OY8YL 015, ZD8J 026, HC5RS 157, ZS3XQ 050, PZ1BW 120, 9G1GF 193, VP5AA 200, FY7AG 153, and TAMGP 075.

7 Mc.: After sleeping over the past few months, this band appears to be waking up at last. Odd countries and prefixes keep popping up from time to time.

TI2PZ "Jose" on 7020 at 1020z.
PZ1AH on about 7015 1030z.
TA2BK, 7015 145z.
8P6AG, new prefix for Barbados (VP6), 7025 0550z. QSL via VP8AM.

4A1EK, 7040 c.w. at 0725. QSL via XE1EK.
VO1AK on 7020 at 23z (long path).

HPC is a beacon station in Panama and uses FSK on 8979 Kc. It appears to be operating 24 hours a day, and provides a handy indication of when 40 mx is open to South America.

3.5 Mc.: Vic ZD5X is often on 3505 at 20-21z. He hopes to be on 160 mx around the Other stations QRV on 80 mx around the same time include 9J2BC and ZSSQU.

XW8BD, 3505 12z, during week-ends.
W6DDO can often be heard near the low end from 09z.

YJ8W is also reported active some nights around 10z.

1.8 Mc.: Although 160 has been disappointing this winter insofar as DX is concerned, it appears to be improving now and should carry the possibility of DX towards summer.

The following stations are reportedly active on 160: G13s FF, NZZ, OQR, SGR, WSS; GM3s OTF, OXX, UQL, VAR, WIG; GW3PFF, OK-1AWQ, ZC4RB. Operation is centred around 1820-30 and 1880 Kc., from 20 to 23z. (Whether we VKs can work them now is another story, but keep listening over the next few months as conditions improve.)

W4BGO is looking for VK contacts on 1805 Kc. Ben holds a weekly sited with VK3APN on this freq. at 1045z every Monday, so take a listen for him.

The following stations are good markers for indicating 160 mx openings: Europe, DHJ 1832 Kc.; U.S.A., WCC 2036 Kc., KPH 2045 Kc., and WNU 2048 Kc.

As you can see from the above, 160 mx news is rather scarce, so if you work any DX or hear any news about "top band" please let this column know.

ASSORTED
KD6AA is about 600 miles off Saipan, and is expected to be approved as a new country. Should be QRV soon, if not already.

VR5DY says QSL via Box 762, Kaunakakai, Molokai, Hawaii, 96748.

VK0IA's home call is VK3IA, but requests QSLs via VK7ZKJ.

KG6IG is now QRT and can be QSL'd Box 1351, Torrance, C.A., 90505.

HK0BKW, Box 219, San Andres Isl., Colombia.

A DX-pedition to San Marino is planned by 11J on or about Sept. 15. The call on s.s.b. will be 9A1A and on c.w. M1H. Operation 10-40 mx. QSL K4PVZ.

UZ0EA operates from Sakhalin Isl., and should please the WPK boys.

3V8AA, QSL via F5OJ. Include three I.R.C. but no s.a.e. for direct reply.

9E3USA and 9F3USA are contest call signs of ET3USA.

W8WNV: W0BN is now the QSL manager for all of Don's activities 1965-68. Send s.a.e. and IRCs for outstanding QSLs to Art Altemiller, 8713 Charlton In., Afton, Missouri, 63123.

SV0WFF and 7V0WVL, Crete's entire Amateur population, are both rumored as QRT. WFF is returning to the U.S.A.

ODD ONES
Doc ZF1DX reported as a pirate. The real ZF1DX was a DX-pedition specializing in 7 and 21 Mc. c.w.

XZ2AH is a pirate according to the real holder of the call, who says that no legitimate XZ2 activity has transpired since 1964.

HV0CN/PX—invalid call.
8X8AA "Cray Isl." (where???) is a pirate. Don't send cards via VE2DR. ITU states that it has never issued 8X to Amateurs, and furthermore, 8T to 8Y is reserved for India.

ZA7F, ZA1AB, YV0X: Their QSL "managers" (DJ9OR, YU4BJK and YV5BOA) are returning cards.

ACTIVITIES
David VK3QV proves that 10 mx is certainly still producing DX, as shown by his following s.s.b. contacts: DJ5BV, E19Q, JA3, JA4, KH-6QB, UA9CBW, UP2AD, VE3CDP/W9, ZC4FN, ZL1AFA, ZSSDG, 4A1AC, 7X0AH, 9G1FV, 9J2BC, 9Q5ME, 9V1MS and all W/K call areas except W1. He reports that Dave VK3DL/W5 is on 28564 most Sunday mornings about 01z looking for VK contacts. (Nice work Dave, please keep the news coming in.)

Ken VK3TL says that the coldness of the evenings has reduced the quantity of DX (Yes! Believe it or not, Melbourne isn't warm and sunny quite all the year round), but the quality of the DX remains; on 20 mx c.w./s.s.b.: JW2BH, FP8CS, VP1PV, CT2AA 0910z, and PK1JI 0725z. Ken also submits a list of the best QSLs he has received, containing such stations as CE0PK, YA1BW, 5L2KG, 7X0WVV,

9L1KG, FH8CD, etc., etc., totalling 36 i.b. calls. (It has been said that as far as the really rare DX is concerned, it is often much harder to get the QSL than the QSO. So, excellent work, Ken.)

Dud VK4MY has been grappling with the DX and recorded the following nice list:

10 mx s.s.b.—UA9CBW; 15 mx s.s.b.—KL7FOS (Kodiak), W1FZJ/KP4, 9U5CR, KV4EY; on 20 mx s.s.b.—SK6AB, Z6AA, CR6LF, TU2BD, 9G1DY, ON8XA, I0ART, LX1AJ, F8PCY, TU-2BQ, TJ1AL, CR6TV, CR5SF, 9G1GG, GWANZ, U0W0H, VO1DD. Times varied between approx. 06 and 10z. On 15 mx c.w., Dud worked U0V0K and on 20 mx c.w. he got GW6YQ, VP9FU, ZB2BO, UR2KAY, UP2KBA, EA5IC.

These contacts all took place around 07z. Dud also says, "The QSO with 9G1GG was rather interesting, as a fault in the tx prevented the use of s.s.b., so I called him on d.s.b. and he came back . . . it was my first QSO ever on d.s.b." (Very good Dud, thanks for the list. Interesting to hear about your adventure with the 9G1; there's not much of the d.s.b. type mode left on 20 these days, either with or without carrier!)

Barry VK5BS is now quite active on 160 mx, and says that DX on the higher bands has suffered as a result. (Don't worry about it, Barry, wait till the PYs and the Zs start thundering in on top band—then you can show them). Barry has still kept his fist in good shape as evidenced by the following 20 mx c.w. DX he has been working: YN1MO/W4, OK3CBN, VO1FB, 6Y5GS, JT2AB, HC1CG, VU2AYZ, G5WP, G3AIR and FG7XX. (Many thanks, Barry, please keep the news coming in—and keep us posted about your 160 mx activities, too.)

Don VK3AKN is another 10 mx man, as he has obviously been extracting the most out of the band with the following QSOs (all 28 Mc. c.w.): ZE1WPC, W8ZBM, WA2CFU, JA1AY, UT5GP, UC2CX, W6V, WIDA, W6-7AC, WA3FW, VE1VB, U6W6A, UA6ADZ, ZE4JS, G2DC, F9EA, UL7ANB, JA6CLO, W2ELW, ZL1OY, UA4RK, KG4DO, KH6GT, W8FVK and many other Ws and JAs. Don says that he has been hearing DM3IGY occasionally at 05z onwards, but no Amateur signals until later. (Nice list, Don, please send more.)

Finally, a letter from David VK3QV again has just arrived. (He says this column isn't up to the minute?) Dave says that 10 mx has been in the mid-winter doldrums and a local but very elusive power noise has been making life difficult. "Of course, it peaks at 28 Mc," he says with obvious indignation! Latest contacts on 28 s.s.b.: HL9KQ, JA23/6 and 0, KG6AAY, KS6CL, VE7AZO/W6, VK3DL/W5, 9J2NW 28605 0830z, and all U.S. call areas except 2 and 7. (Thanks again, Dave—Peter.)

SOME QTHs
ZC1CP—W4YKH. SV0WL—W2CTN.
9X5GG—W2GHK. 4S7PB—K6CAZ.
PX1KT—FIKT. 5W1AR—W4ZKI.
SU7AN—W4WHF. 81RC—WA4UOE.
HB0LL—DL7FT. ET3USA—VE3IG.
CE0AE—W4S5FUQ. ET3FMA—W7WLL.
18CLC—I1CLC. HK0BXX—WA6AHF.
19RB—W2GHK. HK0BKW—WA6AHF.
FB8XK—FR7ZD. TF2WXX—WA6JG.
F7Y7G—W2CTN. YA1DAN—K4P4L.
VS6FX—W2CTN. XW8CAL—VE6AO.

SUMMARY
Many thanks to the following for supplying material for this month's column: The Florida DX Club, The L.I. DXA, ZL2AFZ, VK3TL, VK4MY, VK5BS, VK3QV, VK3AKN and L8042.

Information is always needed to keep this column alive, so please keep sending anything of interest to the address at the top of the page. News on 40/80/160 mx is particularly needed. The deadline is at the end of each month. See you next month if I haven't perished at the hand of some irate Amateur by then, hi. 73, Peter VK3APN.

CONTEST CALENDAR

Until 31st December: Concorso Mexico 1968.
7th/8th Sept.: D.A.R.C. 3.5 to 28 Mc. (Phone)
7th/8th Sept.: VU/4S7 DX Contest (c.w.).
14th/15th Sept.: VU/457 DX Contest (phone).
21st/22nd Sept.: S.S.A. (Swedish) 3.5 to 28 Mc. Contest (c.w.).

28th/29th Sept.: S.S.A. 3.5 to 28 Mc. Contest (phone).
5th/6th Oct.: VK/ZL/Oceania DX Contest (phone section).

12th/13th Oct.: VK/ZL/Oceania DX Contest (c.w. section).
12th/13th Oct.: 28 Mc. Phone Contest.
26th/27th Oct.: "CQ" W.W. DX Contest (phone section).

7th Dec., 1968, to 12th Jan., 1969: Ross Hill V.B.F. Contest.
1st/2nd Feb.: John Moyle Memorial National Field Day.

NEW CALL SIGNS

MAY 1968

VK1RY—F. W. N. Ryan, Station: 47 Cockle St., O'Connor, 2601; Postal: P.O. Box 43, Canberra, 2600.
 VK1ZOO—A. J. Gardner, Reid Hostel, Allara St., Canberra City, 2601.
 VK2LH—W. E. Pearson, 8 Rawson Rd., Berowra, 2081.
 VK2RA—R. A. Priddle, 34 Cleveland St., Wahroonga, 2076.
 VK2ABS—B. S. Sullivan, 22 Chief St., Belmont, 2280.
 VK2AJE—B. L. Mills, 15-17 Coral Rd., Cronulla, 2230.
 VK2BDB—D. A. Bolton, 115 Terry St., South Hurstville, 2220.
 VK2BDK—D. Lee, 95 Seaforth Cres., Seaforth, 2092.
 VK2BGJ/T—J. Gray, 121 Cardiff Rd., South Wallsend, 2287.
 VK2BJB—B. J. Booth, 2 Ethel St., Burwood, 2134.
 VK2BKS—S. A. Knowles, 22 Rainbow Pde., Peakhurst, 2210.
 VK2BLH—J. Bays, 30 North East Cres., Lillil Hill, 2229.
 VK2BNA—A. Nutley, 32 Clarke St., West Ryde, 2114.
 VK2BOD—O. M. Duffy, 83 Viking St., Campsie, 2194.
 VK2BRP—P. Richardson, 37 Fourth St., Dapto, 2530.
 VK2BTN—N. R. Threlfo, Station: 105 Roxburgh St., Stockton, 2295; Postal: P.O. Box 86 Newcastle, 2300.
 VK2BUA—U. H. Aslbers, 667 Pemberton St., Albury, 2640.
 VK2ZCC/T—C. R. Coverdale, 18 Sorrell St., Parramatta, 2150.
 VK2ZDE—D. A. Clift, Station: 152 Rusden Rd., Blaxland, 2774; Postal: P.O. Box 10, Katoomba, 2780.
 VK2ZJG—J. Holt, 62 Mepunga St., Concord West, 2138.
 VK2ZMW—M. G. Penman, 39 Tobruk Cres., Orange, 2800.
 VK2ZPJ—R. F. Jackson, 26 Ada Ave., Wahroonga, 2076.
 VK2ZTJ—A. J. Thompson, 2 Gow Ave., Albion Park Rail, 2527.
 VK2ZYA—A. C. M. Anderson, 32 Oak Rd., Kirrawee, 2232.
 VK2ZYB—G. K. Chapman, 11 Bayswater Rd., Roseville, 2069.
 VK3CR—A. A. Andros, 502 High Street Rd., Mt. Waverley, 3149.
 VK3HB—B. H. Baker, 7 Kara St., Doncaster East, 3109.
 VK3QI—P. R. Forbes, 44 Hamel St., Box Hill South, 3128.
 VK3QW—P. N. Engelman, 26 Allmar Rd., Glen Waverley, 3150.
 VK3TX—D. R. Blackman (Dr.), 129 Clayton Rd., Clayton, 3168.
 VK3WA—M. A. Webb, 10 Fran Cres., Rosanna, 3084.
 VK3AAU—G. H. Gaspars, 22 Hudson St., North Caulfield, 3161.
 VK3AOT/T—R. J. Halligan, 41 Windsor Ave., Mt. Waverley, 3149.
 VK3AQH—A. M. Carman, Mortlake Rd., Warranambool, 3280.
 VK3AQJ—D. I. Ralph, Flat 4, 58 Chestnut St., Richmond, 3121.
 VK3AQR—D. R. St. John, 7 Coquette St., West Geelong, 3218.
 VK3AQV—W. T. Moffat, 83 Mathoura Rd., Toorak, 3142.
 VK3ASQ—M. R. Trickett, 8 Matlock St., Herve Hill, 3218.
 VK3AUF—J. H. Beadle, Flat 21, 41 Northcote Ave., Caulfield, 3162.
 VK3AVO—M. H. G. Evered, 13 Sage St., Oakleigh, 3168.
 VK3AWR—W. E. Knapp, 35 Alandale Rd., Blackburn, 3130.
 VK3AYY—C. J. D. Smith, 80 Beaver St., East Malvern, 3145.
 VK3AZE—A.P.I. Radio Club, Gillies St., Wendouree, 3325.
 VK3ZAP—E. C. Lawson, Station: Kelvin Gr., Cherry Tree, via Sebastopol; Postal: P.O. Box 1, Sebastopol, 3356.
 VK3ZDY—C. J. Lefel, 24 Chippewa Ave., Mitcham, 3132.
 VK3ZEO—G. N. Pattie, 7 Boyne St., Geelong East, 3218.
 VK3ZGG—R. G. Rowlands, 35 Cratloe Rd., Mt. Waverley, 3149.
 VK3ZGL—J. J. Kennedy, 15 Cook St., Newtown, 3220.
 VK3ZJB—D. A. Charles, 156 Melbourne Rd., Williamstown, 3016.
 VK3ZKT—R. A. Eldred, 59 Day St., Bairnsdale, 3875.
 VK3ZKY—R. G. O. Wilson, 45 Pleasant Rd., Hawthorn East, 3123.

VK3ZLZ—I. W. Cox, 20 Belford St., Ballarat East, 3350.
 VK3ZMU—J. H. Reynolds, 4 Balmoral Ave., Kew, 3101.
 VK3ZQG—M. J. Hayes, 68 Kerferd St., East Malvern, 3145.
 VK3ZQO—A. B. Bradley, 22 Langdon St., Forarlinton, 3223.
 VK3ZQW—J. L. Gras, 8 Stone St., East Brighton, 3187.
 VK3ZQY—M. G. Hepner, 43 Bellarine St., Geelong, 3220.
 VK3ZSW—G. D. Weymouth, 11 Kirkwood St., Eaglehawk, 3556.
 VK3ZTF—P. J. Fitzherbert, 9 Studley Ave., Kew, 3101.
 VK3ZUN—B. S. W. Churchill, Flat 9, 3 Barnaby Rd., South Yarra, 3141.
 VK3ZVQ—D. A. Evans, 6 Villa Crt., Oakleigh, 3188.
 VK3ZXU—D. K. Freeman, 64 Vicki St., Forest Hill, 3131.
 VK3ZYU—R. J. H. Clarke, 23 Glen Dr., Eaglemont, 3084.
 VK3ZZF—P. L. Bell, 11 Berkeley St., Hawthorn, 3122.
 VK3ZZI—G. J. Greenwood, 9 Grundy Gr., Pascoe Vale South, 3044.
 VK3ZZJ—E. Westerman, Flat 7, 19 Sydney St., Murrumbena, 3163.
 VK3ZZQ—T. P. Mitchell, 4 Grant St., Newtown, 3220.
 VK3ZZY—J. F. Fitzwater, 49 Claremont Ave., Malvern, 3144.
 VK4RT—R. H. Coat, 14 Jellicoe St., Coorparoo, 4151.
 VK4UA—D. R. Clark, 182 Hornbrook Esp., Clontarf, 4019.
 VK4ZET—E. T. Norris, 210 Hume St., Toowoomba, 4350.
 VK4ZNP—N. N. Potts, 19 Mayrene St., Carina, 4152.
 VK4ZRW—R. A. Wilson, 45 Atherton St., Edge Hill, 4870.
 VK4ZTA—G. T. Adamson, 3 Maker St., Toowoomba, 4350.
 VK4ZVN—V. G. Novotny, 78 Dorrigo St., Kedron, 4031.
 VK5DV—N. K. Kohler, 15 Jury Ave., Rostrevor, 5073.
 VK5SHU—K. L. Gillion (Dr.), 7 Ella St., Parkside, 5063.
 VK5NO—L. H. Vale, 29 Calton Rd., Gawler, 5118.
 VK5TP—T. Roberts, 10 West Beach Rd., West Beach, 5024.
 VK5ZAY—K. R. Bone, 23 Mackay Ave., Plympton, 5038.
 VK5ZGI—G. J. Thomas, 4 Staehr St., Nurt-coopa, 5355.
 VK5ZGN—D. L. Park, 1 Rosedale Ave., Morphettville, 5043.
 VK6AQ—G. R. Crews, Naval Communications Station, Exmouth, 6701.
 VK6JA—B. J. Arbon, Stone St., Borden, 6338.
 VK6TT—W. T. Taylor, 67 Central Rd., Rossmoyne, 6155.
 VK6ZBW—R. S. Savill, 65 Acton Ave., Riverdale, 6103.
 VK6ZBZ—B. Weir-Smith, 24 Knox Cres., Melville, 6158.
 VK6ZDQ—M. E. Zille, 187 Campbell St., Belmont, 6104.
 VK6ZEB—L. N. Brooks, 85 Shaftsbury Ave., Bedford, 6052.
 VK6ZEH—H. E. Christensen, 85 Federation St., Mt. Hawthorn, 6016.
 VK6ZLT—L. F. Toussaint, 19 Errinbee St., Riverton, 6155.
 VK7GH—G. L. Hall, 54 Clare St., New Town, 7008.
 VK7KK/T—R. K. Emmett, 6 Haig St., Lenah Valley, 7008.
 VK7ZLC—L. C. Dean, 47 O'Brien St., Glenorchy, 7010.
 VK9HR—R. Hester, Station: Tanga St., Kavleng, N.G.; Postal: C/O. Electricity Commission, Kavleng, N.G.
 VK9JS—J. B. Stacy, Ukurumpa, E.H.D., N.G.
 VK9UC—Ukarumpa Radio Club, Station: Ukurumpa, N.G.; Postal: P.O. Ukurumpa, E.H.D., N.G.

CANCELLATIONS

VK2GF/T—D. A. Page, Transferred to Vlc.
 VK2ADV—C. Mc. Hicks, Not Renewed.
 VK2BCI—G. Kempton, Not Renewed.
 VK2BCW—C. H. Wall, Transferred to N.T.
 VK2BJS—J. B. Stacy, Now VK9JS.
 VK2ZJG/T—J. Gray, Now VK2BGJ/T.
 VK2ZLD—L. W. Doolan, Not Renewed.
 VK2ZPQ—J. A. Gardner, Now VK1ZOO.
 VK3HY—H. L. Andrews, Deceased.
 VK3ADK—D. A. Connelly, Deceased.
 VK3AEJ—G. W. Brain, Transferred to Willis Island.
 VK3AJL—J. F. Long, Deceased.

VK3ZEP—P. N. Engelman, Now VK3QW.
 VK3ZGY—J. Monro, Not Renewed.
 VK3ZJB—B. H. Baker, Now VK3HB.
 VK3ZJV—J. H. Van Den Brenk, Not Renewed.
 VK3ZNC—D. R. St. John, Now VK3AQR.
 VK3ZNZ—M. R. Trickett, Now VK3ASQ.
 VK3ZOL—M. G. Foster, Transferred to Qld.
 VK3ZPS—D. R. Blackman (Dr.), Now VK3TX.
 VK3ZVV—R. J. Halligan, Now VK3AOT/T.
 VK3ZYF—G. H. Gaspars, Now VK3AAU.
 VK4CU—E. J. Coan, Returned U.S.A.
 VK4ZCO—R. H. Coat, Now VK4RT.
 VK4ZHB—F. H. Birkbeck, Transferred to Vic.
 VK4SJR—B. A. Endersbee, Transferred to Vic.
 VK6ZEL—B. J. Arbon, Now VK6JA.
 VK6ZV—D. V. Pryce, Ceased Operation.
 VK7ZAO/T—R. K. Emmett, Now VK7KK/T.
 VK8NO—L. H. Vale, Now VK5NO.
 VK9GC—A. Sandilands, Now VK7GC.

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE

VK5MS	317/338	VK5AB	300/314
VK3AHO	314/328	VK4FJ	284/301
VK6RU	307/330	VK4TY	277/278
VK6MK	304/321	VK3TL	271/275
VK2JZ	303/318	VK2APK	264/267
VK4HR	302/318	VK2AAK	263/267

New Members:

Cert. No.	Call	Total
85	VK5BB	116/119
86	VK4MY	172/172
87	VK4UC	106/106

Amendments:

VK4KS	257/271	VK4PY	153/153
VK3ZE	180/193	VK3AMK	137/137
VK3SM	161/164	VK2AGH	110/120

C.W.

VK2QL	302/322	VK3ARX	267/275
VK3AHQ	294/306	VK3NC	266/286
VK3CX	291/312	VK3YL	265/282
VK4FJ	281/313	VK6RU	284/285
VK2AGH	282/295	VK3XB	263/276
VK4HR	274/298	VK2APK	261/268

New Member:

Cert. No.	Call	Total
83	VK4MY	111/111

Amendments:

VK4TY	255/266	VK3KS	219/225
VK4UC	253/253	VK3AX	154/162
VK3RJ	242/255	VK4KS	131/136

OPEN

VK2AGH	311/329	VK4FJ	298/320
VK4HR	309/331	VK2EO	283/314
VK6RU	308/322	VK3ARX	290/288
VK2VN	306/321	VK3TT	287/281
VK6MK	305/322	VK2APK	284/282
VK4TY	303/315	VK2ACX	276/300

New Members:

Cert. No.	Call	Total
108	VK3ACS	97/101
109	VK1QL	101/101
110	VK4MY	199/199
111	VK3XB	274/287
112	VK4UC	203/203

Amendment:

VK4KS	267/284
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W.I.A. H.A.-VK-C.A. AWARD (S.W.L.)

Listed below are details relating to those Overseas Short Wave Listeners to whom this Certificate has been awarded.

Cert. No.	Call	Date Awarded
1	SM0-2088	9/11/66
2	UA0-29108	21/11/66
3	UA9-9849	11/2/67
4	W2-6893	27/2/67

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

MORSE PROFICIENCY

Editor "A.R." Dear Sir,
I refer to the article by Alan Shawsmith, VK4SS, in "A.R." for June, dealing with Morse proficiency.

The following are a couple of points which might further aid learners:—
Firstly, do not try to spend too much time at it at once.

In the course of his training of R.A.A.F. recruits during the war, the late Merv. Brown, VK5MB, found that at the end of half an hour his class could absorb no more and the balance of an hour's lesson was not productive. He evolved the idea of seven minutes Morse and a three-minute break. This was filled in with music, to change the train of thought perhaps. Suffice it to say that "authority frowned" until Merv. was able to show that by giving six periods of 7 minutes each, to equal 42 minutes, he was doing more good with the trainees than under the old method. It was then approved. My authority for this was Merv. himself, about 1951.

Secondly, when you start sending (and this is not recommended until you can recognise sounds as characters at about 10 w.p.m.) keep the bar of the key and forearm in a straight line. This avoids wrist strain and, having had it impressed on me in my youth, I find that my wrist is still okay after 50 years of it. It is all wrist work in my book.

I think it advisable that a learner should be fully aware of what good signals sound like before he attempts to make any; otherwise how will he know what to try and make.

Experience also shows that a good Morse operator is less likely to make phonetic errors when using telephony, but, despite comments otherwise, taking messages by telephony is slower than by Morse, given reasonably good operators.

—T. Laidler, VK5TL.

QSLs FOR W0QJN/MM

Editor "A.R." Dear Sir,
For the past several months I have been trying to get a message across to VK Amateurs and therefore trust you can find space to publish this letter.

For several years I have been a very close friend and shipmate of James Quirk, W0QJN/MM who was the radio officer on the S.S. African Star, and I was with him as Chief Officer and more or less the second Amateur operator. In the year and a half that the African Star was on the U.S. to Australia run, Jim made a lot of friends and I had the pleasure of meeting many of them also.

On 16th March, 1968, at 4 a.m., the African Star was proceeding down the Mississippi River on her way to Australia, and was involved in a collision with an oil barge. As fate would have it, I happened to be on my annual vacation. Jim and 21 other crew members were lost or missing, and 20 crew members hospitalised. Just about three months after the collision, Jim's body was found. I am pleased to say there were several of his Amateur friends able to attend his funeral, but I was on my way to Australia and therefore unable to be present. I have pledged myself that in deep respect to Jim and other shipmates lost in this collision, every time I am on a ship passing the spot where the collision happened, the American flag on the stern of my ship will be lowered half mast.

Jim had not been an Amateur very long, only about a year, and through the good graces of Jim VK4MW had some QSL cards made up, showing the S.S. African Star on her way out of New York Harbour.

At the time of Jim's death there was close to \$5,000 worth of Amateur and electronic gear, and his log book, on board. It is now my understanding that this gear and log book have fallen into the wrong hands, and we may never see the log book again.

If any VK Amateur will write to me, giving the date that he worked Jim, I can refer to my personal records and will be able to tell if the African Star was at sea on that date. At the present time that is the only way I have to verify a QSL with Jim, and I will be glad to send a QSL card of Jim's. However, I must warn them that it may be a matter of some months before they get a card as I will not be returning to the States to my QTH until the end of September, and I am liable to leave the States again at any time.

One other method of verification is if they can show where they were in QSO with Jim and Newt. W1BCR and Ralph K0YTM.

My home QTH is: Box 87, Upper Fairmount, Maryland 21867, U.S.A.

—Charlie Carroll, WNSKKG/MM.

TEMPORARY EMPLOYMENT IN NEW GUINEA

28A Alma Road,
Camberwell, Vic., 3124.
Telephone 82-4774.

Editor "A.R." Dear Sir,

A limited number of vacancies exist for temporary employment as Radio Technicians with the Posts and Telegraphs, Papua and New Guinea.

They should be qualified to take charge of a radio telephone station containing both h.f. and v.h.f. communication equipment.

Most of these stations are staffed by only one technician who is responsible for maintaining the services in operation as required.

Trunk and telegraph services are provided by a h.f. network but there are a few v.h.f. systems providing junction routes and exclusive subscriber services. The out-station network consists of a base station with h.f. transmitter and receiver while the out-stations operate on low powered transceivers.

The out-stations are grouped into zones. The Department also maintains broadcasting facilities for the Department of Information and Extension Services.

These small studio installations generally consist of communication transmitters used after hours for broadcasting services.

I am a retired P.M.G. engineer and have been requested to contact suitable technicians who would be prepared to spend a year or two in the Territories.

Applications from technical personnel from areas such as the private radio industry or the services would be considered.

Qualifications are completion of an approved course of training in radio telecommunications.

Pay will be at the rate of \$3,009-\$3,696 per annum. Salaries quoted are for single men and include allowances. Married men receive an additional allowance of \$360 per annum. Income tax is at present about half that payable in Australia.

The period of employment preferred is for a two-year term. Successful applicants would work for 21 months then would be entitled to three months' leave pay and return air ticket.

I would be pleased to hear from those interested so that we could discuss details including accommodation and local conditions.

—G. A. Wiffen.

Youth Radio Clubs Scheme of Australia

The first National Conference of the Youth Radio Clubs Scheme of Australia was held in Melbourne on Saturday, 1st June, 1968, at the rooms of the Victorian Division of the Wireless Institute of Australia.

A great deal of preliminary work had gone into the organisation of the Conference by the Youth Radio Clubs Scheme of Australia, Victorian Division, and the result was an outstandingly successful conference.

Visiting delegates were treated with generous hospitality and provided with a most interesting time from the moment they arrived until they regretfully left for their home States.

The purpose of the Conference was to organise the State groups on a national basis, to ensure uniformity of syllabuses, certificates and examinations throughout the VK call area.

The representatives were:

- Mr. J. Batrick, W.I.A. Federal President.
- Mr. R. Black, Past Federal Supervisor.
- Mr. R. Emmett, State Supervisor of Tas.
- Mr. J. Flynn, Sec. of N.S.W. Division.
- Mr. R. Guthberlet, State Supervisor of S.A.
- Mr. D. Jeanes, State Supervisor of N.S.W.
- Mr. M. Plummer, State Supervisor of Vic.
- Mr. D. Reid, Editor of "Zero Beat".
- Mr. H. Rider, Past State Supervisor of Vic.
- Mr. H. Smith, Exam. Officer for Vic.
- Mr. W. Tremawen, Supervisor of the Correspondence Section.
- Mr. J. Webster, Federal Co-ordinator to the W.I.A.

Apologies were received from both Queensland and Western Australian Divisions.

The meeting was opened at 14.22 hours with Mr. K. Pincott, W.I.A. representative, as chairman. State Supervisors had voting rights, the remaining members present acting in an advisory capacity in their own special departments.

Mr. Pincott welcomed all delegates to the conference on behalf of the W.I.A. and expressed the wish that most of the apparent differences existing between the various State groups would become settled to the complete satisfaction of all concerned.

Mr. Jeanes spoke of the N.S.W. Committee, regretting that all the committee members could not be present but would be eagerly looking forward to their delegate's reports. He expressed the opinion that the Conference would definitely achieve an important but unwritten object—that of understanding the views and problems of other Divisions.

Mr. Plummer explained how the agenda had been drawn up and how all Divisions had been approached for their views regarding the items to be included on that agenda.

The business of the Conference then began with a lively discussion of the present position of the Youth Radio Clubs Scheme. The Scheme had begun quietly some years before as a means of providing inducements in the form of certificates, for members of Radio Clubs in Schools and other youth organisations.

The Scheme was adopted by the Wireless Institute of Australia as part of its educational activities. By now, it had grown into a rather

large, if sometimes clumsy youth group, and it was felt that it might take a greater responsibility for its own affairs as an organisation affiliated with the W.I.A.

A motion moved by VK5 and seconded by VK3 that "the name of the organisation be the Youth Radio Clubs Scheme of Australia" was carried unanimously. With this motion, the Youth Radio Clubs Scheme of Australia was formed as a nationwide Scheme.

Some fifteen motions were passed during the rest of the Conference, all designed to place the new organisation on a sound basis. Briefly, they provided for the drafting of a constitution for the Youth Radio Clubs Scheme of Australia, the appointment of a Federal Co-ordinator, the formation and administration of a Correspondence Section, the formation of a Syllabus, Standards Committee, acceptance of syllabuses at present in use by the Victorian Division, recognition of "Zero Beat" as the official publication of the Youth Radio Scheme of Australia, that the notes for the Elementary, Junior and Intermediate Certificates be printed and distributed by the Victorian Division, and that a Federal Convention be held during 1969.

Included was a motion to create Mr. Rex Black a Life Member of the Youth Radio Clubs Scheme of Australia in recognition of his services to Y.R.S.

All motions were carried unanimously.

The Conference closed at 0012 hours on Sunday morning and later the same morning, much later, resumed at the home of Mr. Michael Plummer to prepare groundwork for the draft Constitution.

Do these changes affect the members of a Radio Club which is a member of the Scheme? No. The Syllabus Committee will make minor alterations in the present syllabuses. The Federal President of the W.I.A., Mr. J. Batrick, stated that the Institute would at all times continue to assist the Youth Radio Clubs Scheme of Australia by supplying certificates, meeting facilities, etc. The State Supervisor is the person in each State who will do the main job of organising as previously and a committee may be appointed to help him in the larger States.

Those who attended the Conference came away satisfied that the Youth Radio Clubs Scheme of Australia was at the start of a new and important phase.



FEDERAL

On the 31st July the Federal Vice-President finalised a series of discussions with Mr. C. Carroll, Controller Radio Branch. The points raised and resolved were as follows:

USE OF ENGLISH IN RELATION TO CALL SIGNS

The Post Office has requested that stations in the Amateur Service announce call signs in the English language. No objection is made to the announcement of call signs in a foreign language, so long as the announcement is also made in the English language. The appropriate amendment will be made to the Handbook, and the Institute is asked to give early publicity to this request.

V.H.F. REPEATER/TRANSLATORS

Agreement has been reached with the Department in relation to Repeater/Translators as follows:

(i) The Department will approve the use of repeater/translators in v.h.f. Amateur bands either on an experimental basis or on a permanent unattended installation basis.

(ii) Such repeater or translator may either re-transmit within the same band or to another band. It is anticipated that such equipment will not be operated on frequencies below 144 Mc., though consideration may be given to their use in the 6 metre Amateur band.

(iii) Any application (to be made to the Superintendent Radio in the State concerned) will be considered on its merits and the Department will have regard to the following points:

(1) The number of translators permitted will be restricted to avoid undue interference in Amateur bands.

(2) The Department will require to be satisfied that the design and construction of the particular equipment in respect of which permission to operate is sought is of a satisfactory technical standard though reasonable allowance will be made for experimental devices.

(3) The following additional technical points should be noted—

(a) The equipment should include arrangements for "fail safe" operation, i.e. failure of any component will not cause the transmitter to lock on.

(b) The equipment shall be adequately and regularly maintained. A record shall be kept of all essential meter readings obtained during each maintenance visit, the repairs, adjustments and other maintenance undertaken and the purpose of operation (i.e. the times of switching on and switching off the translator).

(c) Any form of modulation appropriate to the band in use may be employed. Where system design requirements apply, means should be provided to avoid modulation in excess of allowable limits as a function of received signal strength.

(d) No transmission shall take place in the absence of a received carrier, or if so desired, voice or other modulation intended to convey intelligence.

(iv) The Department will have to be satisfied that a permanent installation is desired by a reasonable number of Amateurs in the area concerned.

(v) Net frequencies or other normally frequented band areas shall be avoided for both input and output channels of repeaters/translators except where there is general agreement among Amateurs regarding such usage.

(vi) The Department will have to be satisfied that the equipment is safe from unauthorised operation and can be quickly turned off in case of malfunction.

(vii) The site chosen must be acceptable to the Department. Transmit and receive frequencies shall be as approved by the Department. As the Amateur Service is the secondary service in bands above 144 Mc., some restriction may be necessary in regard to the use of specific channels in these bands.

(viii) Permission to use such equipment will be granted on a basis somewhat similar to the licensing of a radio club—namely, one individual Amateur will be nominated as being responsible for the operation of the equipment.

(ix) To avoid the need for repeaters/translators to be fitted with equipment for identification purposes, stations communicating through them should include in their calling procedure an indication that they are operating through a particular repeater/translator.

It is anticipated that all State Superintendents Radio will be aware of these arrangements by 5th August. As the implementation of these arrangements may bring to light difficulties that have been overlooked, delays may occur.

The Department suggests that, wherever appropriate, the local W.I.A. organisation should co-ordinate applications. It is suggested that persons seeking the use of these facilities should not hesitate to make personal contact with the appropriate officer in their State, to ensure the fullest possible mutual co-operation.

Y.R.C.S. AND W.I.A.

Executive discussed at its recent meeting a letter from the VK2 Division requesting that F.E. take action to implement W.I.A. policy on the matter of the Youth Radio Scheme. Executive also examined in detail the minutes of a Y.R.C.S. Convention recently held in Melbourne, attended by Youth Radio Scheme Supervisors from VK2, VK3, VK5 and VK7. The presence of Mr. Pincott at that F.E. meeting was fortuitous, as the Chairman was able to ask some questions about this convention. Ken stated that visiting delegates from N.S.W. had complimented him on his chairmanship of the Y.R.C.S. Convention, and the impartiality shown to all delegates. Both he and Federal President VK3OR stated that they had conveyed the substance of the Institute's policy that the name of the organisation be the "W.I.A. Y.R.C.S." to the Convention. However, this was not the wish of the people concerned with conducting the Y.R.C.S., who wanted the Scheme called the "Youth Radio Clubs Scheme of Australia".

Following the discussion of VK2's letter and the Y.R.C.S. minutes, F.E. carried the following resolution:

"That F.E. having perused minutes of the Y.R.C.S. Convention, notes with interest that every motion was passed unanimously without dissent on any point recorded, even though Messrs. Rex Black, D. Jeanes and J. Flynn, from N.S.W., were present. F.E. has been informed that Institute policy was drawn to the attention of all those present at the Y.R.C.S. Convention. F.E. can see neither the need, nor the opportunity to take any action in regard to the matter."

INTRUDER WATCH

Federal I.W. Co-ordinator, David Wardlaw, VK3ADW, informs us that in addition to the State I.W. Co-ordinators mentioned in the last Federal Information Bulletin, the VK6 Division has appointed a Co-ordinator. The complete list to date is as follows:

N.S.W.—VK2BPZ, W. H. R. Treloar, 258 Fullerton St., Woollahra
Vic.—VK3ANG, M. P. Davis, 144 Tramway Parade, Beaumaris.
Tas.—VK7DK, D. H. Kelly, 56 Upper Brougham Street, Launceston.
W.A.—George Allen, 283 Amelia Street, Balga.

FEDERAL OSL BUREAU

The L.P.R.A. (Panama Republic) advises of an expedition to Colbita Island (Lat. 7°N, x 81°W) between September 9 and 14. All bands c.w./s.s.b. will be employed and the station will sign HP0A. It will count as Panama for DXCC but is a new prefix for WPX. QSLs via HP1AC, Box 9A-737 Panama 9A, Panama.

Pierre Galthier, SWL REF15906, advises that despite the inclusion of I.R.C. with his reports, the following VK stations have not replied: VK3UQ, VK6RU, VK4NN and VK9JW.

Despite several notifications, the U.A. people still will not observe the VK QSL Bureau set-up. They have now been informed (in Russian) that any despatches made after 1st August (other than for VK8, 9, 0) will not be handled by this Bureau.

—Ray Jones, VK3RJ, Manager.

HAMADS

Minimum \$1 for forty words.
Extra words, 3 cents each.

HAMADS WILL NOT BE PUBLISHED UNLESS ACCOMPANIED BY REMITTANCE.

Advertisements under this heading will be accepted only from Amateurs and S.W.I.s. The Publishers reserve the right to reject any advertising which, in their opinion, is of a commercial nature. Copy must be received at P.O. 36, East Melbourne, Vic., 3002, by 5th of the month and remittance must accompany the advertisement.

COLLINS 75S2, 32S1, 312B-4 Control Unit, SM1 Mic., and Power Supply; condition, indistinguishable from new, Price \$1300 (approx. \$1000 under list), or exchange, with cash adjustment, for Galaxy V, or similar, VK3AOK, 28 Orange St., South Oakleigh, Vic. Phone 57-1107 (Melb.).

COSSAR Double-Beam 5 inch Oscillograph with Cossar Model 343 Channel Oscillator Electronic Switch, \$75. Hallicrafter HA-14 2 metre Transverter new, \$175. Hy-Gain 14AVC, \$30. Linear Amplifier with Jennings vacuum tuning condenser, self-contained power supply, \$175. VK2EX, Alex Outtrim, 30 Boomerang Rd., Springwood, N.S.W. Tel. 511-528.

FL-100B 5-band SSB Transmitter; u.s.b., i.a.b. selectable, with P/B microphone and spare 6DQ5; in perfect condition, \$320, or \$450 including 80 ft. t.v. tower and 3 element 20m. beam. Collins 455 Kc. Mechanical Filter, \$22. 204 a.p.s.n., \$8. 300v. 300 mA., 500v. 270 mA., 6.3v. 8a., 5a., supply in perforated cabinet, \$15. VK3ACB, 1381 Malvern Rd., 3144. Phone 20-1405.

FOR SALE: Ex C.F.A. 40 ft. Fire Tower with ladder, ready for removal, best offer. R. Flanagan, L3155, 51 Valetta St., Carrum, Vic. Ph. 772-4039 evenings.

FOR SALE: Galaxy 3/300 Transceiver, complete with a.c. supply, ext. v.f.o., and microphone, excellent order, new p.a. tubes fitted, 80-40-20 metre bands, s.s.b. or c.w., \$300. Topaz Mobile Supply available extra cost. VK2APP, Stoneridge, Montague, N.S.W., 2692.

FOR SALE: Hallicrafter SX-100 general coverage receiver, a.m., c.w., selectable sideband, 14-tube dual conversion super het. tuner from 538 to 1580 Kc. and 1.72 to 34 Mc. Calibrated bandspread 50.5 Kc. second i.f. adjustable filter notch and rejection tuning, audio filter 500 cycle to 5 Kc., in-built 100 Kc. crystal calibration and noise limiter. Supply 105 to 125 volt 50/60 cycle or external d.c. power supply or batteries. Versatile receiver in very good condition, \$200. Alec Swinton, VK2AAK, Kulnura, N.S.W.

FOR SALE: Heathkit Model HO-13 Ham Scan Panoramic Adaptor, provides visual display of signal amplitude versus frequency, 30 Kc. to 100 Kc., centered on the receiver i.f. Useful for satellite observation. \$100. Alex Swinton, VK2AAK, Kulnura, N.S.W.

FOR SALE: Heathkit SB10 Sideband Adaptor, \$45 or reasonable offer. Trutmann, VK3HV, Phone Geelong 79111 (bus.).

FOR SALE: 20 and 40 metre Transistor Converters, printed circuit, with xtals, used with VK3APC Rx, \$14 each. Wanted: Circuit for MR10C. M. Batt, Rokewood Junction Post Office, Vic., 3351.

SELL: Geloze 222 Transmitter. 80-10 mx. original condition, manual, new spare tubes. Had from new, as heard from 3KV, \$125. Or will trade for sidebander. 6/72 Holyrood St., Hampton, Vic., 3188. Ph. 98-7604. bus. hrs. 95-0277.

SELL: Heathkit "Mohawk" Receiver, 180-10 metres, 100 Kc. calibrator. Matching "Apache" Transmitter, 80-10 metres, v.f.o. controlled, 150 watts a.m. and c.w., s.s.b. with external adaptor, 110 volt transformer. Handbooks \$260 o.n.o. the lot. Excellent condition. K. Hoffmann, 10 Druce St., Toowoomba, Qld. VK4KH.

TX APACHE, SB10 Adaptor, \$175. HW32 s.s.b. Transceiver (1 band, 20m.). 3-band conversion kit, 1 xtal missing, \$100. Pwr. supply for Transceiver, \$35. Monitor Scope, \$75. VK5OD, 2 Claring Bould Rd., Christies Beach, S.A.

WILL Exchange for a Webster Bandspanner complete with bumper bar mounting, a two element 20 metre Beam, rotor and Indicator. Wm. F. Sievers, VK3CB, 132 Orrong Rd., Toorak, Vic., 3142. Phone 24-4154.

WANTED: SX117, FR100B, SR700A, SX100. Particulars to P. Rodukoff, 21 Derby St., Hawthorne, Qld., 4171. Phone 95-4765. Sell AR7, SX28, HE30.

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BIRCHIP

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Excellent programmes to suit OMs, XYLs and YLs. See antenna farm. Hear moon-bounce signals, slides, films, etc.

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Yaesu Series:—

Receivers: FR-50, FRDX-400.
Transmitters: FL-50, FLDX-400.
Transceivers: FT-50, FTDX-100, FTDX-400.
Linear Amplifier: FLDX-2000.

TH6DX Hy Gain Tri-band Beam. \$199 each.
Mobile Whips (v.h.f.), from as low as \$5.
V.h.f. Beams from \$12. 2 mx Ground Planes \$10.
PL-259 and SO239 Type Connectors, 98c each.

K-109 50/75 ohm Kyoritsu SWR Meters, uses amphenol type PL-259 connectors. \$20 each.
FF30-DX 3-section Low Pass Filters. takes PL-259 plugs. \$18.50.

P.T.T. Microphones (crystal, dynamic and ceramic). Mic. "curly" cords.
Amphenol type co-ax. plugs, sockets, angle adaptors, cable junctions, etc.

All prices Amateur net, Inc. S.T.
Freight and postage extra.

Bail Electronic Services

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An Electronics Technician, experienced in the servicing of Solid State equipment, is required for the installation and maintenance of our Multitone Radio Paging systems.

The successful applicant would be provided with a vehicle, as some on-site servicing is required. A generous salary is envisaged for the right man and a superannuation scheme is available after a qualifying period.

Applications will be treated in confidence and should be made in writing to:

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Responsible

Electronic Technician

wanted for assembly of
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Must be experienced and preferably have qualifications equivalent to R.M.I.T. Technician's Certificate.

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FOR ACCURACY, STABILITY, ACTIVITY
AND OUTPUT



Our Crystals cover all types and frequencies in common use and include overtone, plated and vacuum mounted. Holders include the following: DC11, FT243, HC-6U, CRA, B7G, Octal, HC-18U.

THE FOLLOWING FISHING-BOAT FREQUENCIES ARE
AVAILABLE IN FT243 HOLDERS:

6280, 4095, 4535, 2760, 2524 Kc.

5,500 Kc. T.V. Sweep Generator Crystals, \$7.25;
100 Kc. and 1000 Kc. Frequency Standard, \$17;
plus Sales Tax.

Immediate delivery on all above types.

AUDIO AND ULTRASONIC CRYSTALS—Prices on application.

455 Kc. Filter Crystals, vacuum mounted, \$13 each plus Sales Tax.

ALSO AMATEUR TYPE CRYSTALS—3.5 Mc. AND 7 Mc. BAND.

Commercial—0.02% \$7.25, 0.01% \$7.55, plus Sales Tax.

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We would be happy to advise and quote you.

New Zealand Representatives: Messrs. Garrel & Carell, Box 2102, Auckland.
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Phone 546-5076

With the co-operation of our overseas associates our crystal
manufacturing methods are the latest.





TRIO

SSB transceiver

200 watts PEP—7 Bands—A M & C W
and
Power Supply and Speaker Unit



PS 500 AC

TS 500

SPECIFICATIONS:

Frequency: 80m Band 3.5-4.0 MHz
40m Band 7.0-7.5 MHz
20m Band 14.0-14.6 MHz
15m Band 21.0-21.6 MHz
10m A Band 28.0-28.6 MHz
10m B Band 28.5-29.1 MHz
10m C Band 29.1-29.7 MHz

Communication Method: SSB (A3)
AM (A 3H)
CW (A1)

Maximum Input Power: (Xmitter final stage)
200W (PEP)

Standard Input Power: (Xmitter final stage)
180W (PEP) 120W on 28 MHz band only

Antenna Input Impedance: 50-75 ohm

Carrier Suppression Ratio: More than 40 dB

Single Side Band Ratio: More than 40 dB

Mic. Input Impedance: High impedance
(dynamic or crystal mic. recommended)

Xmitter Audio Frequency Characteristics:
300-3,000 Hz (-6 dB)

Receiver Sensitivity: 1µV S/N 10 dB
(14 MHz)

Receiver Selectivity: 2.7 kHz (-6 dB)
5.0 kHz (-55 dB)

Spurious Rejection Ratio: More than 45 dB

Image Ratio: More than 60 dB

Undistorted Power Output: More than 1W

Receiver Output Impedance: SP 500 ohm
PHONE 8 ohm

Power Consumption (using PS-500AC):
450W (At maximum power output)
250W (Receiving Mode)

Tubes and Transistors used:
17 TUBES, 3 TRANSISTORS, 15 DIODES

Dimensions: W: 13½"; H: 8½"; D: 11½"

Weight: 17.6 lb

FOR/FOA SYDNEY: TS 500, \$480.00; PS 500 AC, \$96.00

CONSULT YOUR LOCAL RADIO DEALER, OR

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LOW DRIFT CRYSTALS

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1.6 Mc. to 10 Mc.,
0.005% Tolerance, \$5

☆
10 Mc. to 18 Mc.,
0.005% Tolerance, \$6

☆
Regrinds \$3

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- 18HT 50 ft. Hy-Tower for 80 through 10 metres.
- 14AVO 40 through 10 metres, and 18AVQ 80 through 10 metres Trap Verticals.
- 103BA, 153BA, 204BA Mono-band Beams for 10, 15 and 20 metres.
- TH6DXX, TH3MK3, TH3Jr Tri-band Beams.
- 2BDQ and 5BDQ Multi-band Trap Dipoles.
- 18TD Reel Tape Portable Dipole, 10 through 80 metres.
- C.I. Special Plastic Dipole, mil. spec., centre insulator, accepts $\frac{1}{4}$ " or $\frac{3}{8}$ " co-ax.
- E.I. Rugged 7" End Insulators for multi-band or single band dipoles.
- BN-86 all band H.F. Ferrite Baluns for Beams and Dipoles.
- Selection of spare parts for replacement purposes.

ALSO A LARGE RANGE OF V.H.F. ANTENNAS—

6 mx and 2 mx Ground Planes, V.H.F. Mobile Whips, 6 mx and 2 mx Halos. SJ2S4 4-element 2 mx stacked Vertical Jay-Pole. V.H.F. Beams, DB62 Duo-bander for 6 and 2 mx, LP62 Log Periodic for 6 and 2 mx, 215B 15-element 2 mx, 28B 8-element 2 mx, 23B 3-element 2 mx, 66B 6-element 6 mx.

Imported from U.S.A. by HY-GAIN ELECTRONIC PRODUCTS (AUST.) PTY. LTD.

Distributors: **BAIL ELECTRONIC SERVICES**

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Today, with the emphasis on smaller components our own lamination and heat-treatment section can cater for your special needs for small transformers. Consult us also for all small TRIMAX power or audio transformer requirements. The Transformer above is a typical example of a specially developed low-level TRIMAX unit in a Mu-metal case. Overall size is only $1\frac{1}{2}$ " diameter by $1\frac{1}{2}$ " deep.



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"TRIMAX" DIVISION

FACTORY: CHR. WALLANS RD. & CHARLES ST., NORTH COBURN, VICTORIA. PHONE: 35-1203... TELEGRAPHIC ADDRESS: "TRIMAX" MELB.



LM41

SIDEBAND ELECTRONICS ENGINEERING

Check my August "A.R." issue advertisement for some of the Clearance Sales Bargains of brand new equipment. There may still be a few units left.

I can now accept orders for the YAESU-MUSEN FT-400 Transceivers, delivery soon, price target around \$600, with sales tax and all charges included. The Transceivers will have my own improvements to prevent blowing out final valves and components. Other Yaesu-Musen models will be announced later on, priced competitively, as to be expected.

Write for my NEWS-SHEETS with the latest information on all types of equipment available or expected, from microphones to beams and rotators.

Some of my current Prices:—

- ★ SWAN SW-500C, \$675.
- ★ GALAXY V. Mk. II., \$500.
- ★ HEATH HA-14 Linear Kit, \$150.
- ★ HEATH HW-32A Kit, \$165.
- ★ WEBSTER Bandspanner with spring mounting, \$55.
- ★ HY-GAIN TH-6-DXX with BN-86 Balun, \$200.
- ★ HY-GAIN TH3JR, \$100.
- ★ NEWTRONICS 4-BTV 10-40 M. Vertical, \$55; same for 10-80 M., \$65.
- ★ German W3DZZ 10-80 M. Dipole, with balun and traps, 100 ft. long, for 75 ohm co-ax feedline, a sensible answer to the G5RV contraptions, \$25.
- ★ HAM-M Rotator with 230v. a.c. control-indicator unit, \$180.
- ★ CETRON 572-B/160TL 150w. Triodes for Linears, \$18.
- ★ Soon expected, EIMAC 3-500Z Triodes, \$38. Also Sockets and Chimneys for these valves.
- ★ MATCHED PAIRS of 6HF5 Valves, so necessary for stability and no TVI, \$10.
- ★ Galaxy V. Mk. II. demonstration set, near-new, under warranty, \$450.
- ★ Used Hallicrafters SX-111 Receiver, \$160.
- ★ Used KW-Viceroy Mk. I. SSB Transmitter, \$200.

—Arie Bles

SIDEBAND ELECTRONICS ENGINEERING, Box 23, Springwood, N.S.W., 2777. Phone Springwood 511-394

DYNAMIC MICROPHONE & STAND

★ *LOW PROFILE* ★ *COMPACT* ★ *STABLE*

SPECIFICATIONS:

Impedance: 50 ohms, 50K ohms
Frequency Range: 80 to 12 Kc.
Output: —55 db. (0 db. — 1V./dyne Cm²)
Switch: D.P.D.T. P. to T.
Housing: Angle adjustable



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Internal 500 Kc. crystal. VFO frequency coverage: 250-500 Kc. 2 Kc. dial divisions.

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Full CW-AM-SSB coverage, 80-40-20 metres. 180w. PEP SSB-CW. VOX-PTT-ALC. 10 Kc. Receiver offset tuning.

Kit **\$328.78**, Wired **\$428.78.**

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2SC73

2SD65

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All at Bargain Price of **25 cents each.**

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Frequency coverage: 3.4-29.7 Mc. in 7 bands. Triple conversion, employs xtal locked 1st and 3rd conversion oscillators. Selectable USB or LSB. Selectivity variable, 0.5 Kc. to 4 Kc. 1 Kc. dial calibration. Three stages double locked geared dial mechanism, 30 Kc. per turn tuning rate. Vackar oscillator employed in VFO for maximum stability.

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A fibre-glass printed circuit board, the finest German crystal filter, diode ring modulator, and solid state circuitry all contribute to make the A111 the finest SSB Exciter available. Specifications: Sideband suppression, 80 db.; carrier sup., 65 db.; audio freq. response, 350 to 3,000 cycles; mic. input, 1 mV. on 5K ohm load. Incorporates VOX amplifier and relay amplifier.

Price with KVG **XF9B** Filter, **\$120.**

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Frequency coverage: 4950 to 5550 Kc. Frequency stability better than 100 c/s. over 12 hours long term; better than 8 c/s. over 10 minutes if enclosed in suitable box. Output: 350 mV. on 220 ohm load.

Price **\$22.**

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807—70 cents ea.

815—70 cents ea.

6AC7—20 cents ea. or 12 for \$2.

6J6—30 cents ea. or 7 for \$2.

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VR150/30—75 cents ea. or 3 for \$2.

VR105/30—75 cents ea. or 3 for \$2.

QB2/250 (813)—\$7 ea.

TZ40—75 cents ea.

6H6 (Metal)—20 cents ea.

DM71 (Indicator Tube)—40c ea. or 6 for \$2.

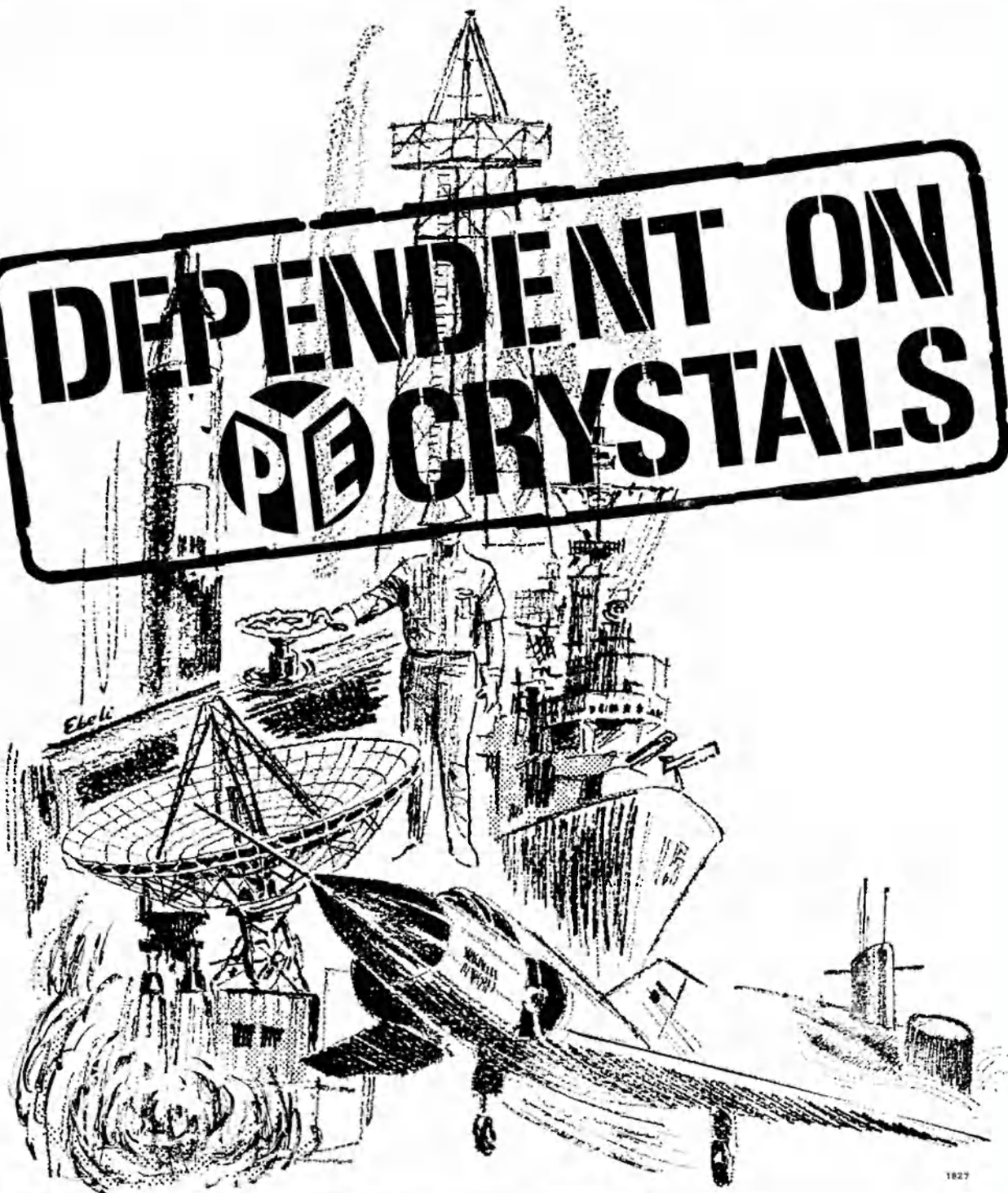
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amateur radio

Vol. 36, No. 10

OCTOBER 1968

Registered at G.P.O., Melbourne, for
transmission by post as a periodical

Anniversary Issue

35

YEARS OF SERVICE TO THE AMATEUR

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3 INCH SPOOLS			
150 Feet — Acetate Base	55c	
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600 Feet — Mylar Base	\$1.85	
4 INCH REELS			
400 Feet — Acetate Base	\$1.40	
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600 Feet — Acetate Base	\$1.85	
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900 Feet — Mylar Base	\$3.00	
1200 Feet — Mylar Base	\$3.80	
1800 Feet — Mylar Base	\$5.75	
5 1/4 INCH REELS			
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1200 Feet — Acetate Base	\$3.40	
1200 Feet — Mylar Base	\$3.75	
1800 Feet — Tensitised Mylar Base	\$4.75	
7 INCH REELS			
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1200 Feet — Mylar Base	\$3.75	
1800 Feet — Acetate Base	\$4.50	
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3 inch 25c	5 inch 40c
3 1/4 inch 35c	5 1/4 inch 55c
4 inch 40c	7 inch 50c
Postage 20c.			

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.. 5:	11 in. x 8 in. x 2 1/2 in.	\$1.50
.. 6:	13 in. x 7 in. x 2 1/2 in.	\$1.50
.. 7:	13 in. x 10 in. x 2 1/2 in.	\$1.75
.. 8:	17 in. x 8 in. x 3 in.	\$2.15
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(Pack and Post 20c)			

LATEST MINIATURE TYPE SILICON PLANAR N-P-N TRANSISTORS

Type 325—replaces BF115, SE1010	
Type 327—replaces BC108, 2N3565, SE4002	
Type 328—replaces BC109, SE4010	
All 75c each, or three for \$2.00	
Type 2N441 Transistor, \$2.40	

BARGAINS!

3-gang Capacitor, Roblan, 200 pF., 90 pF.-200 pF., padderless	.....	\$3.50
Phillips Trimmer, 4-60 pF.	.....	32c
Oscillator Coil to suit gang, Aegis or sim.	.....	\$1.50
I.F. Transformer, 455 Kc., Aegis ST45C or sim.	.....	\$2
Ceramic Filter, Murata SF455D	.....	\$1.50
Transistors, BF115, AT325	.....	Three for \$2

BARGAINS!

KNIFE SWITCHES

Single Throw, 50c. Double Throw, 80c.

MULTIMETER, Model 200H

20,000 ohms per volt d.c., 10,000 ohms per volt a.c.

Specifications:
 D.C. volts: 0-5, 25, 51, 250, 500, 2500.
 A.C. volts: 0-10, 50, 100, 500, 1000.
 D.C. current: 0-50 uA.; 25, 250 mA.
 Resistance: 0-60,000 ohms; 0-6 meg.
 Capacity: 0.01-0.3 uF. (at A.C. 5v.); 0.0001-0.01 uF. (at A.C. 250v.)
 Decibel: Minus 20 db, plus 22 db.
 Output range: 0-10, 50, 100, 500, 1000.
 Battery used: UM3 1.5v., 1-piece.
 Dimensions: 3 1/4 x 4 1/2 x 1 1/8 inch.
 Price \$11.25, inc. tax. Post free.
 Complete with internal battery, testing leads, prods.



RESISTORS

Ranging from 10 ohms to 4.7 megohms.
 1/4 and 1/2 watt 8c each
 1 watt 10c each
 Postage 10c.

CASSETTE CARTRIDGES

(PLUG IN)	
C90	..... \$3.75
C60	..... \$2.75
Postage 10c.	

MULTIMETER, Model OL-64

20,000 ohms per volt d.c., 8,000 ohms per volt a.c.

Specifications:
 D.C. volts: 0-0.3, 1, 10, 50, 250, 500, 1,000, 5,000.
 A.C. volts: 0-10, 50, 250, 1,000.
 D.C. current: 0-30 uA.; 1, 50, 500 mA.; 10 A.
 Resistance: 0-5, 500K ohms; 5, 50 megohms.
 Decibels: Minus 20 to plus 22 db., plus 20 to plus 36 db.
 Capacitance: 250 pF. to 0.02 uF.
 Inductance: 0-5000 H.
 Load current: 0-0.06, 0.6, 60 mA.
 Self contained batteries: 22.5v. (BL-015) x 1, 1.5v. (UM3) x 2.
 Size and weight: 6 x 4 1/5 x 2 in. 650 g.
 Meter movement fund. sensitivity: 30 uA., F.S.D.
 Price \$19.75, postage 25c.

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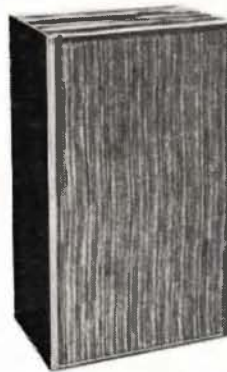
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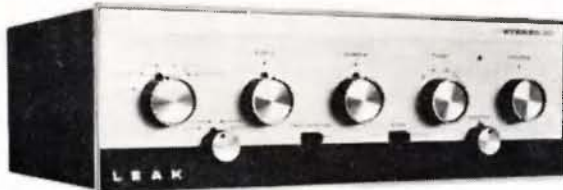
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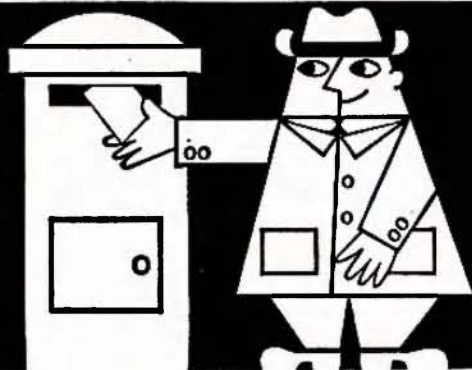
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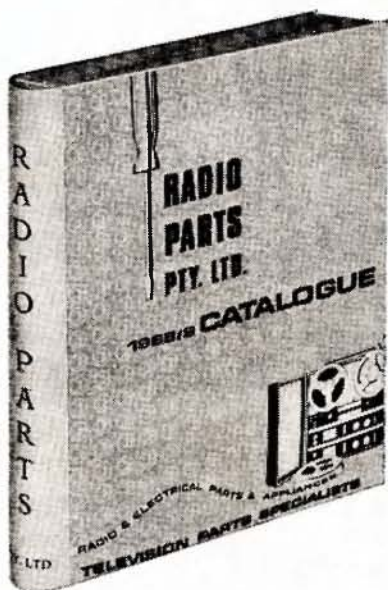
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FEDERAL COMMENT

We like to think that our members are members because they wish to be represented by a strong organisation in relation to Amateur Radio matters. It is perhaps worthwhile to give some thought to what the Institute can do, and by way of illustration, let us look at some of the things of current concern.

In recent times the use of satellites has made obvious the need for reliable low power translators. At the same time, reliance on v.h.f. by W.I.C.E.N. groups has made the use of similar techniques to materially extend reliable range in hilly areas an obvious solution to the major disadvantage of v.h.f.

Properly placed repeater units can open up wide areas to the v.h.f. enthusiast; Tasmanian Amateurs readily appreciated this, and started designing appropriate equipment. The only trouble was that the "Handbook" had never contemplated the use of these techniques in Amateur bands. In Tasmania the local V.h.f. Group and Ian Nichols, VK7ZZ, prepared a careful and detailed written submission; in Victoria the Australis Group led the way by actually developing a sophisticated translator and operating it on an experimental basis with Departmental approval subject to certain rigid conditions. What was needed was some conditions that would be generally acceptable to regulate the use of these devices, but a number of difficulties were obvious.

A permanent unattended installation was desirable, yet it had to be of a high technical standard to avoid malfunctions that could have disastrous consequences, particularly if not controlled quickly. Translators could not be permitted to appear at random. A proliferation of translators is hardly a reasonable use of v.h.f. Amateur bands.

How do you identify that a translator is being used? Should one use already regularly used channels as part of a repeater system?

The Institute took the matter up with the Central Administration of the Australian Post Office. The result of these discussions were the conditions

published in last month's issue of "Amateur Radio". We thought these conditions were eminently fair and reasonable. We know that if experience shows that any particular amendment is required then the matter may be raised again.

You will have noticed that the Department requested that where possible the local Institute organisation coordinate applications for permission to operate repeaters or translators. We hope that Amateurs will look to their Divisions to do this. If translators are established in each State then an over all Australian-wide plan may be desirable, particularly for the benefit of Amateurs travelling Interstate. Perhaps another job for the Institute? Already the New South Wales Division is taking the lead in discussing this matter with the other Divisions.

Now a new matter has emerged of fundamental importance to all Amateurs and one which again calls for all of us to be represented by the one voice.

The Administrative Council of the I.T.U. has called for a world-wide session on space communications in the latter part of 1970. The last such conference was in 1963 and then the Institute participated by an Observer in Geneva for a period. It is expected that the forthcoming conference will be primarily concerned with frequencies above about 200 Mc. It has already been suggested by the A.R.R.L. that it is almost certain that one or more countries will propose taking existing Amateur allocations as a solution to the allocation problem.

Of course the forthcoming conference is not a world conference to examine and revise the whole table of allocations. This must remain for the future. When (and if) such a conference does occur the real effect of the new countries as members of the I.T.U. (the so-called "emerging nations") will be discovered.

In the future, as in the past, we shall need a strong voice to represent our hobby. We hope that this is one of the reasons why you are a member!

MICHAEL OWEN, VK3KI,
Federal Vice-President.

S.S.B. Transmitter—An Amateur Engineering Project

PART ONE

H. F. RUCKERT,* VK2AOU

WHY DID I DESIGN AND BUILD THE TRANSMITTER MYSELF?

These days commercial interests are penetrating all phases of our life and many Amateurs ask themselves whether home-brew or manufactured equipment should be their next choice. The XYL would often be in favour of the manufactured gear because the OM would not spend so much time in the shack—and provided they can still afford that new refrigerator, car or fur coat. The little boxes look more like hi-fi amplifiers and less "technical". The OM, on the other hand, has to consider several other factors important to his hobby.

I designed for over 35 years my own receivers, transmitters and aeriels, and I am not a professional electronic equipment engineer. Why should I change my habit now?

Time: If I would have no time to do my hobby properly, there would be something wrong with my way of life, with most likely serious consequences. What does it matter if it takes two years to complete a home-made rig, as long as I learn what an Amateur should know about electronics today? How long does it take a university graduate to gain professional experience? We and he can never afford to stop learning. After all, I did not want to excuse my laziness or inability to learn and to understand present day Amateur Radio techniques with the popular QSO saying: "I have no time to roll my own these days!"

Some high pressure sales terms like: Hire purchase, time payments, interest rates, re-sell value, investment, never put screwdriver or soldering iron on; only serviced by manufacturer-trained personnel, in original carton, latest serial number, snob value, and home construction does not pay—are already a major source of worry for many of us as far as the day to day life is concerned and I certainly do not like to see these by-products of modern living spoil my way of serving and enjoying Amateur Radio.

QSO: We should feel sorry for Amateur Radio when a growing number of apparently proud operators read an advertisement from a magazine as a technical QSO description of their station, some of which state that the "power cord" is also included as special sales feature. This earned some op's the name "power ham" or "appliance operator".

The manufacturer goes to a lot of trouble to prepare a fool-proof instruction manual, from which we could learn a lot the other text books do not reveal, but some op's are honest enough to say that they are non-technical and have not yet studied the manual, if asked about their equipment. They may have sold their soldering iron and multimeter to help pay the deposit,

and they send the gear to the service department of the dealer to have a valve replaced. Is this modern Amateur Radio? I am afraid that this attitude—also promoted by some advertisements in our magazines—may ruin Amateur Radio in the long run, endanger the Amateur equipment industry and the dealer's business.

Constitution: The W.I.A. constitution lists as the first of thirty articles:

- (a) For the association of persons interested in the encouragement and scientific development of radio communication in all its branches . . ."

A change of the constitution to favour "modern attitudes" may be enough reason for the authorities to shut Amateur Radio down.

by the F.C.C. The constitutional aims are not declared outdated, but the rules are being updated to enforce the constitution.

The new expected and proposed rules seem to aim at insuring that a U.S. Amateur knows sufficient to be able to design and develop his own equipment, no matter whether he finally builds or buys his gear. The present extra class examination may have to be passed, new licence classes and call signs will have to be earned if one wishes to retain the presently held general class privileges. It is expected that up to 50% of those who thought that buying without having to learn is modern Amateur Radio, will more or less lose privileges or drop out.

Such a development would not be very popular in some countries, but it may have to come if the present trend spreads much further. Some radio inspectors seem to be quite worried about the op. who has no multimeter and often, not the know-how the present licence examination calls for.

I designed and built my own s.s.b. transmitter to examine myself, to see whether the recent electronic development had overtaken my ability to learn and to find out if an Amateur (not professional equipment engineer) can still do it. Advertisements which aim at human laziness and discourage the practice of Amateur Radio as laid down in the constitution do Amateur Radio a bad service. The authorities who allow us to use valuable frequencies don't like to see us helping to drain the country's gold reserves so that we can talk non-technical about fishing and weather on the air, but they support constitutional aims as cited above.

Youth Radio Club: "To develop in young people an interest in radio and electronics, which can be pursued as a vocation or as a hobby through life—to reinforce their school studies—that they will enter those employment fields with interest and aptitudes already established."

No statement fits my own case so well as this one. Without Amateur Radio my life would have taken a far less successful turn. The method used by me may be described symbolically as holding the book in one hand and the soldering iron in the other. It can still be done today without a heavy investment the school boy and many old boys cannot afford, quite in contrast to the discouraging talk the youngsters hear so often on the bands.

If we of the second generation of Radio Amateurs demonstrate that we are not too old to learn, the third generation now entering our ranks is likely to keep Amateur Radio going for many years and this includes Amateur Radio equipment manufacturers and their dealers.



The Transmitter and Exciter on the desk with the Linear on top. The VFO stands again on top of the p.a. with heat shield underneath. Transmitter is switched to six bands, each 500 Kc. wide.

F.C.C. Rules Section 97.1: "Continuation and extension of the Amateur's proven ability to contribute to the advancement of the radio art. Encouragement and improvement of the Amateur Radio Service through rules which provide for advanced skills in both the communication and technical phases of the art. Expansion of the existing reservoir within the Amateur Radio Service of trained operators, technicians and electronic experts."

"QST" published many hot debates in recent years concerning the new "incentive licence scheme" proposed by the A.R.R.L. and now being worked out

* F.C.C.'s Proposals for Incentive Licensing. "QST," May 1965, page 44.

† VK1KM, "A.R.," October 1965.

‡ W6KZF, "QST," December 1966.

§ W3GD, "QST," June 1965.

* 25 Berrille Road, Beverly Hills, N.S.W., 2209.

How to Learn: The Amateur who is a professional equipment engineer or technician does not have to roll his own to learn Amateur electronics. He may get a great deal of fun testing and modifying manufactured gear. Some Amateurs had sufficient experience in the past, learned the instruction book by heart and keep their knowledge up to the mark by reading Amateur literature and enjoy technical QSO discussions or lectures given at meetings. They too could use manufactured equipment and still pass any examination an incentive licence scheme may impose.

The writer belongs to the next group who wants to find out more about details, often not published in Amateur publications, looking for the answers of the many questions "WHY" which we face when a rig is to be designed and developed. I don't mind the hard way because the pleasure of achieving something in spite of difficulties cannot be bought. One U.S. Amateur wrote in "QST": "Nobody should get pleasure out of fishing from the barrel!"

Time and Money: Amateur fishing is in many cases very uneconomical and time consuming, but this is seldom considered a deterrent. The same should go for the time spent to build a piece of Amateur equipment. Making skillful use of components collected over the years (junk box), plus those bits which are still cheaply obtainable, designing around the need for costly parts and not minding a few more knobs on the front panel, brings the price down to a fraction of manufactured gear—10% in my case here described.

IS IT EASY TO DESIGN AND BUILD A S.S.B. TX WHICH INCLUDES MANY FEATURES?

Some writers say it is easy, and their papers describe straight forward successes, causing other less clever or lucky ones to start who have little chance to succeed. Most of us need far more detailed information, stating not only again what should be done, but also why a certain way is correct, and why other apparent possibilities are wrong.

I say it is a full size engineering project, and I intend to describe more the errors made earlier than the final success, in the hope to help others who got stuck half way through the job.

It is not even easy for the professional equipment designer of the manufacturer. His gear is either highly sophisticated (complex and expensive) or the price and the cabinet size are predetermined by a market survey calling again for a great engineering effort to fit many required features with a minimum of components and ease of assembly into the box. The industry cannot afford to offer too little to customers as difficult as Amateurs often are, or soon after magazines all over the world publish improvement proposals of this manufactured equipment. To get away with one valve less can be decisive in industrial design, to keep the price down, but one valve more means little to the Amateur building one—and not 10,000—of a type of a transmitter, which is an advantage for the home constructor.

THE PLANNING STAGE

During the previous minimum of the sunspot cycle I had converted my transmitter from a.m. to d.s.b., but only a few QSO partners could copy this modulation and they were the s.s.b. pioneers. To work D.X.C.C. after 1952 I had to go back to a.m. Things have now changed and it is hard to find an a.m. DX station. Therefore the present quiet sun period was used to go s.s.b. The a.m. rig was pulled to pieces, recovered components were checked and sorted out. Piles of "QST," "Amateur Radio," "DL-QTC," etc., up to 15 years old and other s.s.b. publications were checked through. Block diagrams started to emerge and were compared with those of recently manufactured equipment. They had to be adjusted to make use of components at hand, like valves, relays, air capacitors, switches, crystals and parts easily obtainable.

A list of circuit features was compiled and the designing around diffi-

culties started. With the first circuit drawn up, the layout of parts was tried, to see how to fit everything in and how big the chassis would have to be. The desired and the also likely occurring undesired carrier, v.f.o. and c.o. frequencies and harmonics as well as the various mixer and output frequencies were determined, to see what would have to be done to prevent trouble.

Several changes had to be made at this stage and quite a number of questions showed up that my expert friends and the available literature did not answer. There was only one way, try, measure, modify and repeat the other steps until one knows why one way is better than another. This means sufficient chassis space and far more components would be needed than the circuit shows. Stage by stage construction, and step by step measuring and aligning, was necessary. Ways had to be found to obtain reliable answers with the limited measuring equipment available.

MEASURING EQUIPMENT USED

BC211: To check crystal frequencies of filter and oscillator crystals and v.f.o. calibration.

As s.s.b. receiver on the carrier, intermediate and Amateur band frequencies.

Transmitter monitor.

V.T.V.M.: To check oscillator voltages and stage gain, stage linearity.

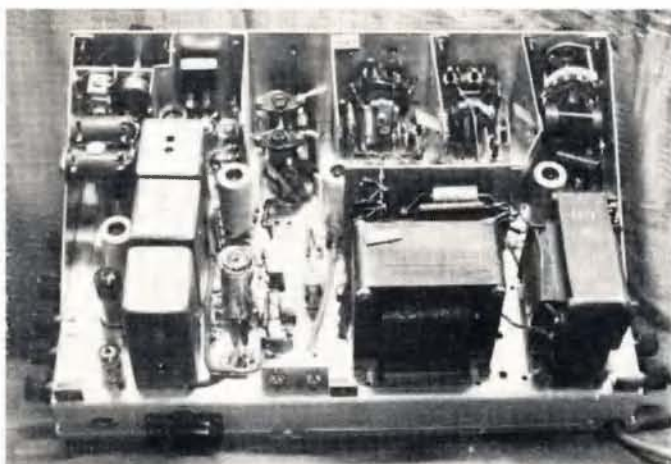
To measure output on dummy load and to calibrate the s.w.r. meter.

A.F. Generator: To check performance and a.f. response, carrier frequency position.

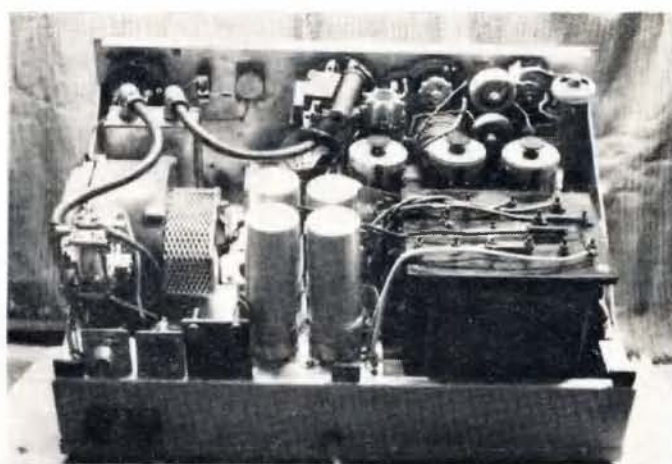
To prepare a 800 and 1,800 c/s. double tone recording to test p.e.p. rating.

Tape Recorder: As speech source when checking the various stages for distortion.

As a means to record received (with BC211 or station receiver) audio from stage to stage tests, to compare performance of different circuits and settings of controls (retaining the evidence).



Exciter chassis open, from the rear, left to right: Audio and vox valves, ring modulator and crystal filter under shielding cans, i.f. band filter, switched 2nd mixer, pre-amp. and driver tuned circuits (near front panel). Rubber pad on mains transformer prevents 50 cycle magnetic excited cover hum (steel). Flat springs on stage separating shields contact plated cover to prevent bridging of shielded coil sets with resulting feedback.

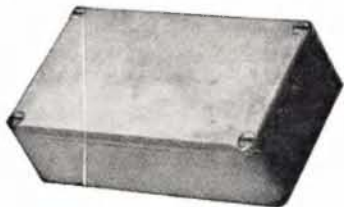


Linear-P.A., cover removed, from left to right: Aerial relay, fan and SWR (in shielding can) circuit. Four electrolytic capacitors and behind these the variable and fixed pi output capacitors (in the middle of front panel). Mains transformer, three valves, two pi coils (crossed mounted) and ceramic fixed capacitors around switch at front panel.

CITIZEN BAND TRANSCEIVERS

TOKAI Type TC-911 9-Transistor Citizen Band Transceivers. P.M.G. approved. Use like a telephone with separate microphone and receiver. Push-to-talk operation. 100 mW. Input. Single rod antenna system. Range better than 2 miles over average terrain. Best we have ever tested. Best value on the market.

Price \$88 pair

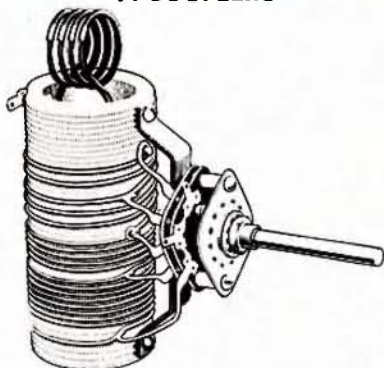


INSTRUMENT BOXES

These virtually water-tight die-cast boxes are made of zinc alloy material in four sizes. Each box is supplied with a close-fitting flange lid, securely held with countersunk 4 BA screws. Natural finish. These substantial boxes are invaluable for many purposes. Sizes available:—

Type 6908/P (650) 4 1/2 x 3 1/2 x 2 in. \$2.79
 Type 6827/P (845) 7 3/4 x 4 1/2 x 2 in. \$4.50
 Type 7134/P (896) 4 1/4 x 2 1/4 x 1 in. \$1.93
 Type 903 7 3/8 x 4-11/16 x 3 in. \$4.86

PI-COUPLERS



WILLIS MEDIUM POWER TYPE

For use up to 600 watts p.e.p. Match plate loads of 2,000 to 3,500 ohms [Z] and higher into co-axial cable. Operating O increases on higher frequencies to increase harmonic suppression, enabling practical values of tuning capacity to be used on 10 and 15 metres and allowing for wiring inductance (L). Incorporates extra switch section for shunting additional capacity (C) if required, or switching other circuits. Switch rated for 10 amps. at 2,000 volts with contact resistant (R) of 0.8 milli-ohms. Price \$8.85.

Geloso Pi-Coupler Type 4/111 for use with parallel 807's, 6146's, etc. 75 watts. \$4.00.

Geloso Pi-Coupler Type 4/112 for use with single-ended 807, 6146, etc. 75 watts. \$4.00.

Geloso Pi-Coupler Type 4/113 for use with parallel 807's, 6146's, etc. 100 watts. \$4.37.

BEAM ROTATOR

German "STOLLE" Light Duty Beam Rotator. Compass point dial control box automatically positions beam on motor driven gear box at mast head. Unit supplied complete with 90 feet 5-core control cable.

Price \$55.53 (Inc. Sales Tax)

PUNCHES

WILLIS HAMMER DIE PUNCHES

WILLIS hammer type die punches are made to precise sizes for use in industry wherever a clean, round hole is wanted. Designed to punch down to 14 gauge steel. Centre remnant removed with a flick of the hand. Can be used in die press. Special sizes made to order at slight additional cost.

3/8 in. ..	\$2.40	1-1/2 in. ...	\$8.00
7/16 in. ...	\$2.43	1-5/8 in. ...	\$6.40
1/2 in. ..	\$2.60	1-3/4 in. ...	\$7.20
5/8 in. ...	\$2.60	1-7/8 in. ...	\$8.00
11/16 in. ...	\$2.80	2 in.	\$8.40
3/4 in. ...	\$3.00	2-1/16 in. ...	\$8.60
13/16 in. ...	\$3.20	2-1/8 in. ...	\$9.00
7/8 in. ...	\$3.80	2-3/16 in. ...	\$9.40
1 in.	\$3.80	2-1/4 in. ...	\$9.60
1-1/16 in. ...	\$4.00	2-5/16 in. ...	\$9.60
1-1/8 in. ...	\$4.00	2-3/8 in. ...	\$10.40
1-3/16 in. ...	\$5.00	2-1/2 in. ...	\$11.00
1-1/4 in. ...	\$5.20	2-3/4 in. ...	\$12.40
1-5/16 in. ...	\$5.20	3 in.	\$13.40
1-3/8 in. ...	\$5.60	3-1/4 in. ...	\$15.80
1-7/16 in. ...	\$5.90	3-1/2 in. ...	\$20.00

O-MAX CHASSIS CUTTERS

SCREW TYPE

3/8 in.	\$1.80	1-5/16 in. ...	\$2.60
7/16 in.	\$1.90	1-3/8 in.	\$2.80
1/2 in.	\$2.00	1-1/2 in.	\$3.10
9/16 in.	\$2.00	1-5/8 in.	\$3.10
5/8 in.	\$2.00	1-3/4 in.	\$3.10
11/16 in. ...	\$2.25	2 in.	\$4.75
3/4 in.	\$2.25	2-3/32 in. ...	\$5.40
13/16 in. ...	\$2.60	2-1/2 in. ...	\$6.35
7/8 in.	\$2.60	2-5/8 in. ...	\$11.70
15/16 in. ...	\$2.60	2-3/4 in. ...	\$14.67
1 in.	\$2.60	3 in.	\$22.40
1-1/16 in. ...	\$2.60	11/16 in. sq. h.	\$4.65
1-1/8 in. ...	\$2.60	1 in. sq. hole	\$4.85
1-3/16 in. ...	\$2.60	21/32 x 15/16 in.	
1-7/32 in. ...	\$2.80	rectang. hole	\$6.00
1-1/4 in.	\$2.80		

MODULATION TRANSFORMERS

BRITISH "WODEN"

Type No.	Audio Watts	R.F. Watts	In. Max. Sec. Current	Price
UM0	10	20	60 mA.	\$16.96
UM1	30	60	120 mA.	\$23.83
UM2	60	120	200 mA.	\$30.96
UM3	120	240	250 mA.	\$33.33

LOW PASS FILTERS

A "Cabena" Low Pass Filter will fix t.v.i. Cut-off frequency, 30 Mc., attenuation at 60 Mc. better than 30 db.; insertion loss, negligible. Impedance 50-72 ohms.

Price \$12.00

GRID DIP METER

The LDM-810 LEADER Grid Dip Meter has been designed for quick checking of circuits and components in radio receivers, transmitters, antennae and a host of other electronic equipment. Using a 6CW4 Nuvistor in a stable Colpitts oscillator circuit, the unit covers a frequency range of from 2 Mc. to 250 Mc. with six well constructed and protected plug-in coils.

It features a large 310 degree calibrated dial, edgewise 500 microammeter with a polished aluminium scale backing for easy observation of "dips," an internal neon oscillator to generate an audio frequency of approximately 1 Kc. for r.f. alignment when the function switch is in the appropriate position. In alternate positions of the function switch the unit can operate as an unmodulated r.f. oscillator or a diode detector. A phone jack is also provided for the monitoring of a.m. signals with a pair of high impedance headphones when the function switch is in the "diode" position.

Price \$47.75 (Inc. Sales Tax)

DOW-KEY MANUAL CO-AXIAL SWITCHES

R.f. Ratings: 1 kw. to 500 Mc. Fine silver finish. Fitted with u.h.f. type SO239 co-axial sockets

DK78-2 Single Pole two throw	.....	\$18.65
DK78-3 Single Pole three throw	.....	\$19.10
DK78-6 Single Pole six throw	.....	\$20.70
DK78-T Transfer Switch	.....	\$19.75

AMERICAN DOW-KEY ANTENNA RELAYS

Coil Ratings: 6, 12, 24 volts d.c. at 2 watts. 6, 12, 24 volts a.c. at 6va., 50/60 cycles. Special coil voltages available on request. R.f. Ratings: 1kw. power rating to 500 Mc.; 20 watts power rating to 500 Mc. in types DK60-G and DK60-G2C in de-energised condition. The DK60-G and DK60-G2C have a special isolation connector in the de-energised position to reduce cross-talk to a minimum.

V.S.W.R.: Less than 1.15 : 1 from 0 to 500 Mc. (50 ohm load).

Isolation: Greater than 60 db. at 10 Mc. in DK60 and DK60-2C; greater than 100 db. from 0 to 500 Mc. in DK60-G and DK60-G2C when in energised position.

Operating Time: Less than 30 milliseconds from application of coil voltage; less than 15 milliseconds between contacts.

Connections: Standard SO239 type v.h.f./u.h.f. Co-ax. Connectors. Available with Type N, BNC, TNC, C Connectors to order.

Type DK60 standard single-pole D.C. A.C. change-over

..... \$18.42 \$19.55

Type DK60-G standard single-pole change-over with special isolation contact in de-energised position to reduce cross-talk

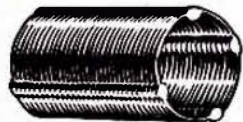
..... \$20.45 \$21.45

Type DK60-2C, same as DK60, but includes external set of double-pole change-over contacts

..... \$20.53 \$21.68

Type DK60-G2C, same as DK60-G, but with external double-pole change-over contacts

..... \$22.10 \$23.60



"WILLIS"

AIR-WOUND INDUCTANCES

Take the hard work out of Coil Winding—use "WILLIS" AIR-WOUND INDUCTANCES

No.	Diam. Inch	Turns		B. & W. Equiv.	Price
		per Inch	per Inch		
1-08	1/2	8	3	No. 3002	65c
1-16	1/2	16	3	No. 3003	65c
2-08	5/8	8	3	No. 3006	77c
2-16	5/8	16	3	No. 3007	77c
3-08	3/4	8	3	No. 3010	90c
3-16	3/4	16	3	No. 3011	90c
4-08	1	8	3	No. 3014	\$1.05
4-16	1	16	3	No. 3015	\$1.05
5-08	1 1/4	8	4	No. 3018	\$1.40
5-16	1 1/4	16	4	No. 3019	\$1.40
8-10	2	10	4	No. 3907	\$1.70

Special Antenna All-Band Tuner Inductance (equivalent to B. & W. No. 3907 7 in.)

7 in. length, 2 in. diameter, 10 turns per inch. \$3.00

References: A.R.R.L. Handbook, 1961; "QST," March 1959; "Amateur Radio," Dec. 1959.

WILLIAM WILLIS & CO. PTY. LTD.

430 ELIZABETH STREET, MELBOURNE, VIC., 3000

Phone: 34-6539

Dummy Load: A 52 ohm low s.w.r. dummy load (Heath Cantenna) capable to handle 400 watts p.e.p. output or more for an hour or longer. Light globes have often too much impedance and an unstable resistance under speech pulse conditions, which can cause mis-leading results.

Multimeter and r.f. amp. meter.

G.D.O.: To prealign tuned circuits, as L-meter with known C.

Absorption Wave Meter: To check frequency combinations at the various stages.

THE FREQUENCY PLAN OF THE TRANSMITTER

Our a.m. rigs often had the v.f.o. on the 160 metre or 80 metre bands and a string of frequency multipliers gave the output at the desired band. With s.s.b., frequency multiplication would increase the transmitted frequency

spectrum and at the receiving end the same frequency division would be necessary to restore the original audio pitch. To overcome these difficulties, s.s.b. transmitters use one or more frequency conversions which are often upward in frequency, in contrast to most superhet. receivers which use one or more downward conversions. A mixture of upward and downward conversions is employed where a high frequency filter (often 9 Mc. or 5 Mc.) is used in the transmitter, receiver or transceiver. This means that the superhet. problems like unwanted mixer products, oscillator output, image signals, harmonics, p.a. feed back to mixer frequencies, the adjustment of oscillator to input signal level, mixer gain and transmitter (receiver) selectivity will be encountered.

It is therefore very helpful to draw up a frequency plan to see what will happen at the various stages.

Tables A1 and A2 show an example of the frequencies used for l.s.b. and u.s.b. 14 Mc. transmission. It is important to note that a sideband inversion of the output signal takes place where the oscillator frequency is higher than the s.s.b. input frequency. What was lower sideband up to the second mixer becomes upper sideband from here on in this case.

Table B lists the transmitter stage frequencies for the lower band edges of six band segments. This calculation shows which crystal frequencies the c.o. of the second mixer should have, with the carrier, v.f.o. and intermediate frequency being always the same.

Table C gives some idea of the number of signals and their frequencies we may find in the output of the first and second mixer and also in the aerial. To these we have to add harmonics of the various oscillators and the mixer products these form. If the p.a. is not

SSB TRANSMITTER FREQUENCY PLAN

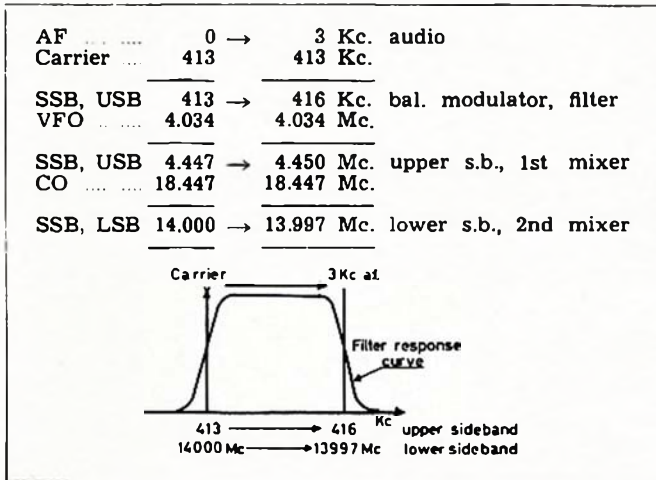


Table A1.

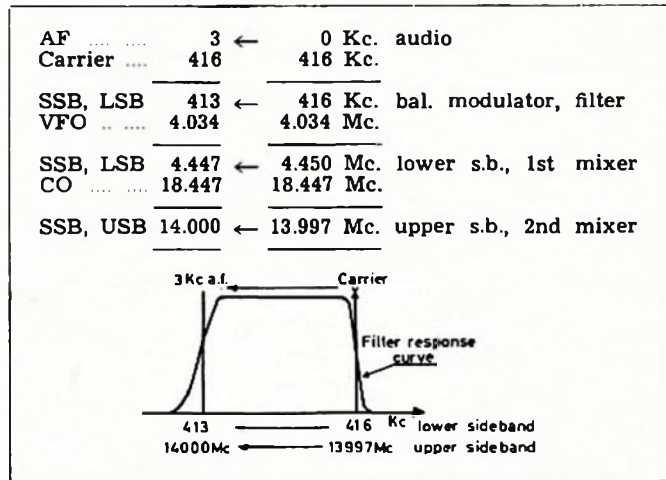


Table A2.

80 Metres		15 Metres	
Carrier	0.414 Mc.	Carrier	0.414 Mc.
VFO +	4.036 Mc.	VFO +	4.036 Mc.
CO -	4.450 Mc.	CO -	4.450 Mc.
	7.950 Mc.		25.450 Mc.
	3.500 Mc.		21.000 Mc.
40 Metres		10 Metres	
Carrier	0.414 Mc.	Carrier	0.414 Mc.
VFO +	4.036 Mc.	VFO +	4.036 Mc.
CO -	4.450 Mc.	CO -	4.450 Mc.
	11.450 Mc.		32.450 Mc.
	7.000 Mc.		28.000 Mc.
20 Metres		10 Metres	
Carrier	0.414 Mc.	Carrier	0.414 Mc.
VFO +	4.036 Mc.	VFO +	4.036 Mc.
CO -	4.450 Mc.	CO -	4.450 Mc.
	18.450 Mc.		32.950 Mc.
	14.000 Mc.		28.500 Mc.

Table B.

15 Metres		Combinations	
Carrier O.	0.414 — 0.414 Mc.		a
VFO	4.036 ← 3.536 Mc.		b
Output from 1st Mixer			
VFO	4.036 ← 3.536 Mc.		b
- 1st Image	3.622 ← 3.122 Mc.		(b - a)
+ 1st Mixer	4.450 ← 3.950 Mc.		(b + a)
CO	25.450 — 25.450 Mc.		c
Output from 2nd Mixer			
- VFO Image	21.414 → 21.914 Mc.		c - b
- 1st Image	21.828 → 22.328 Mc.		c - (b - a)
- 2nd Mixer	21.000 → 21.500 Mc.		c - (b + a)
+ VFO Image	29.486 ← 29.986 Mc.		c + b
+ 1st Image	29.072 ← 28.572 Mc.		c + (b - a)
+ 2nd Image	29.900 ← 29.400 Mc.		c + (b + a)
VFO	4.036 ← 3.536 Mc.		b
CO	25.450 — 25.450 Mc.		c

Table C.

sufficiently isolated from the mixer stages, its radiation may reach the mixer stages and mix with these also, to form output signals which may not be sufficiently sorted out by the following tuned circuits. Non linear operation of the later transmitter stages can make things quickly worse.

Broad band tuned circuits used to avoid costly ganged tuning, or an insufficient number of tuned circuits to save components and to reduce the number of knobs on the now often too small front panel, heavily loaded driver and p.a. tanks, have little selectivity near resonance or far off. It is very interesting and it can be strongly recommended to check the transmitter output with an absorption type wave meter or better still with a general coverage short wave receiver. Don't mix up receiver image signals with transmitter spurious signals. This investigation will tell whether more selectivity has to be used or where traps should be installed. Manufactured transmitters are an example showing where design short cuts had to be fixed by traps.

Checking the transmitter output at only one frequency per band is often no safeguard, because certain beat notes will only show up within a limited band segment depending on the frequency of the other tuned circuits involved. All this makes it clear why I had to replace three multiband tank circuits, following the 2nd mixer, pre-amplifier and driver earlier used, to avoid band switching and the many coils now needed. There were so many signals close together that tuning up on an out of band frequency was hard to avoid.

As we know from publications, many different combinations and mixer arrangements may be used. Each method has certain merits but also problems. One should work out a frequency plan before crystals are bought and holes are drilled in the front panel. Make sure not to transmit on a frequency used by the Navy or Airport authorities. A spurious signal of 4w. over a few miles may be too much for them, whilst the Amateur reckons that 40 db. suppression of the unwanted signal, compared with the 400 watts p.e.p. legal signal, is all he has to do.

An aerial coupler, a more selective matched directive aerial, more traps or a low pass filter may be required. A change of the operating conditions (grid bias, screen grid voltage, balancing, shielding, installation of grid or plate suppressors) of valves and transistors can often solve the observed problem. The evil has to be noticed and pinned down before a cure is tried and affected, so tests have to be made and the findings interpreted.

THE BLOCK DIAGRAM

The heptode and triode of a 6AJ8 act as r.f. pre-amplifier, followed by a slow decay fast attack a.f. compressor, which was described in "QST" by W3ZVN. A 6BA6 is the a.g.c. valve supplying 10% of its output voltage to the ring modulator (balanced modulator). The full a.f. output goes to one half of a 12AT7 vox amplifier. The anti trip amplifier EF12 (9001 or any low gm valve) is in this case part of the receiver. A 6AL5 rectifies both a.f.

voltages, compares them and controls the other half 12AT7 relay valve operating the standby relay.

A 6AU6 is found in the s.s.b. carrier oscillator with crystals for lower or upper sideband operation. The two section half lattice filter passes one sideband, depending on the carrier frequency crystal selected. A 6AJ8 heptode amplifier with high gain reserve follows on 414 Kc. The triode acts as a.m. carrier oscillator, and the heptode serves as a.m. mixer (modulator). The s.s.b. carrier is switched off (B+) in this case.

Two nearly identical twin triode balanced mixer stages follow with 12AT7 valves. The first mixer converts the 414 Kc. signal to the 4.45 to 3.95 Mc. intermediate frequency. A frequency linear v.f.o. with a 12AT7 Franklin oscillator and 6AG5 buffer belongs to this mixer. The second mixer with a 6AM6 oscillator is crystal controlled to cover six band segments. A 6AK5 acts as buffer for the c.o.

A 12BY7 pre-amplifier and a 6BQ5 driver with stagger tuned switched tuned circuits and a pi circuit for the driver complete the exciter. The pi output capacity of this tuned circuit is formed by 15 pF. from the co-axial cable connecting exciter and p.a., and

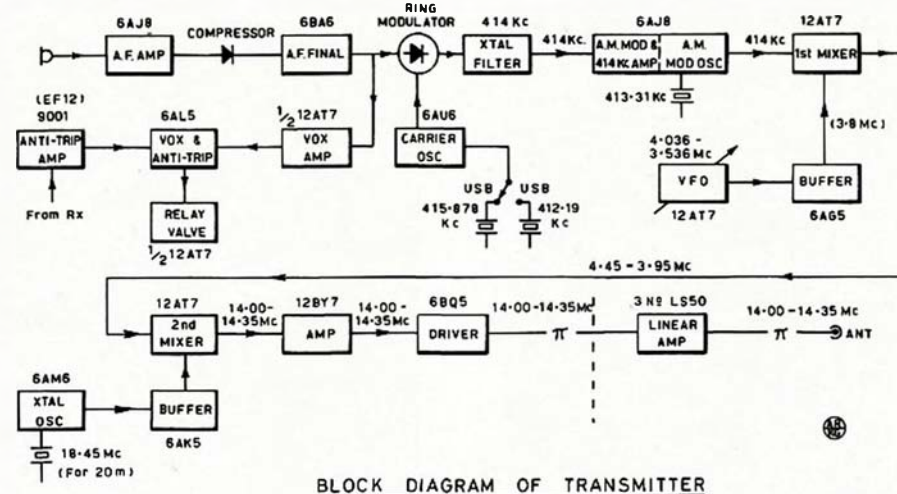
parallel to this is the combined input grid to cathode capacity of the three valves used in the linear p.a. (3 x 15 pF.). Adjustable netting level, selectable a.l.c. level as well as driver r.f. output measuring (exciter tuning indicator) are also provided. The exciter has its power supply built in.

The v.f.o. is in a separate box to reduce heating up and temperature drift. The c.o. is at the moment jointly used in the receiver and transmitter, but there is enough space in the v.f.o. box to include later a separate c.o. for which the crystals have already been obtained.

The linear amplifier is housed in a separate cabinet matching the exciter in width and depth, including power supply, s.w.r. meter, watt meter, grid current meter, multimeter with seven positions, aerial relay, cooling fan (blower type).

The transmitter is also band switched for the full 80, 40, 20, 15 metre bands, and on 10 metres with two 500 Kc. segments between 28 and 29 Mc. Voltage stabilisers cover all critical voltages in the exciter and p.a. The h.t. voltage is well regulated, having a low resistance circuit and large storage capacitors.

(To be continued)



BLOCK DIAGRAM OF TRANSMITTER

ERECTION STARTS ON EAST-WEST LINK OF WAVEGUIDE AND ANTENNAE

A 1968-style outback convoy of vehicles carrying equipment and men to work on one of the nation's biggest telecommunications projects is working its way slowly across the Nullarbor Plains.

The men, from Andrews Antenna Pty. Ltd., are erecting 142 antenna dishes at the top of 60 microwave radio towers between Port Pirie in South Australia and Northam in Western Australia. Each dish will be connected by a waveguide to a power unit at the base of each tower.

Riggers will spend ten months climbing to the top of the 250 ft. high microwave radio towers. The towers average 25 miles apart and span a total distance of 1,400 miles.

They form the East-West microwave radio trunk telecommunications system now being built by the Australian Post Office at a cost of more than \$8 million. It is one of the longest microwave telecommunication systems in the world and equals the distance from London to Moscow.

When completed early in 1970, it will carry telephone, telex and telegraph traffic with pro-

vision for television relays between Perth and Adelaide. It will increase available telephone circuits from hundreds to thousands and will supersede the existing aerial wire trunk system first established in 1877, but subsequently re-built and extended over the years.

The antennae being erected were manufactured by Andrew Antennas Pty. Ltd., of Melbourne, and the connecting waveguide by the parent company, The Andrew Corporation of Chicago, one of the biggest manufacturers of microwave radio equipment in the world.

The company's engineering team will spend 10 months in the desert and includes an engineer, a technician, three riggers, a cook and an inspector.

Two drivers will run a shuttle-service every two weeks between Melbourne and the Nullarbor area delivering the 142 antenna dishes to the microwave tower sites.

In addition to the transport vehicles, the convoy includes an air-conditioned instrumentation van, and two Rolls Royce army scout cars each towing a 28 ft. long caravan. One of the caravans provides living accommodation and the other is a mobile restaurant.

For a large part of the route, the microwave radio system will follow a path near the coast and to the south of the actual Nullarbor Plain. The huge towers will be visible in some places from both the road and the Transcontinental Railway.

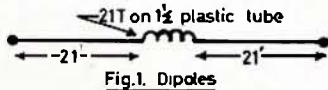
"THE WORLD WITH A TRIANGLE"

WAL SALMON,* VK2SA

The title of this article is rather unusual and I did have in mind an alternative title, "How to Beat the Quad" which I think would have been more to the point after the severe winds over the last week-end.

The article is written around an antenna development which has its origin in the "7 Mc. Corner Antenna" devised by the author (reference "Amateur Radio," Vol. 35, No. 4, April 1967). Hundreds of excellent DX contacts have been made on this antenna on 7 Mc. and 14 Mc. and on many occasions when I gave the technical details the guy at the other end asked "Can you rotate it?" This of course is the 64-dollar question.

The main lobes of radiation are restricted so far as directivity is concerned and thought was then given to the possibility of utilising two antennas with a versatile feeder patching arrangement and the ultimate goal was an array to work four main directions and so virtually cover the world. This endeavour has been achieved at VK-2SA without resort to Quads, Yagis or rotating mechanism.



Reference might now be made to the dipole in the original article in "A.R." April 1967 and for space convenience alone, it was decided to adhere to the original dipole specification. Reference might now be made to Fig. 1. The total length of the dipole is 42 feet plus 4 inches, which is the length of the plastic 1/2 inch centre loading coil former. The coil is wound with 23 turns close spaced enamel and doped and covered with plastic tape. The dipole was then resonated to 7 Mc. before connection to the feeder.

An examination of the characteristics of the dipole indicate that it can be regarded as a centre loaded half wave dipole for 7 Mc., two half waves in phase for 14 Mc. and I leave any suggestion as to what it might be for 21 Mc. to readers as I don't operate on 21 Mc.

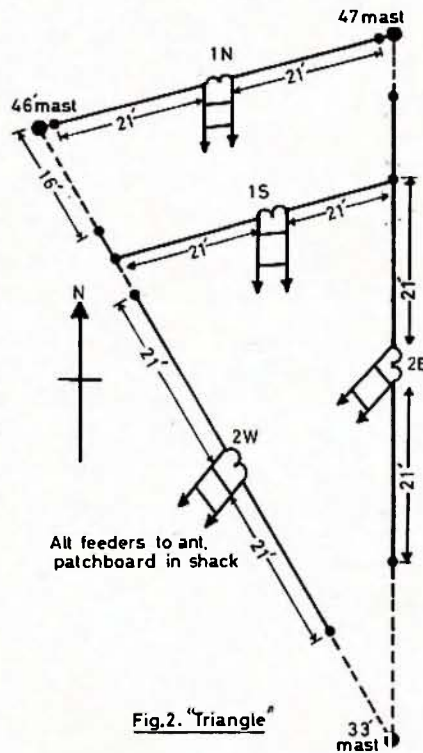
No one will deny that two half waves in phase for 14 Mc. is a useful antenna and when used with a similar dipole as a tuned reflector it could be extremely useful. This deduction has been borne out at VK2SA and reference might now be made to Fig. 2. The triangular formation of the antenna array will be immediately apparent. The scale is 1/10 inch to 1 ft. and the dipoles are numbered and No. 1N and No. 1S comprise the North/South antenna. No. 2E and No. 2W comprise the East/West antenna.

The antennas are fed with open wire line and by tapping directly across the

centre loading coil a high impedance point is available and all-band operation from 7 Mc. up is easily achieved.

The four feed lines from the dipoles are brought into the shack and terminate on a patchboard directly over the transmitter.

Reference might now be made to Fig. 3. It will be seen that two units, namely an antenna coupler and a "Reflector Tuner" unit, can be connected to any pair of feeders, thus facilities are easily available for the dipoles of the N/S or E/W antennas to be used as reflectors or radiators.

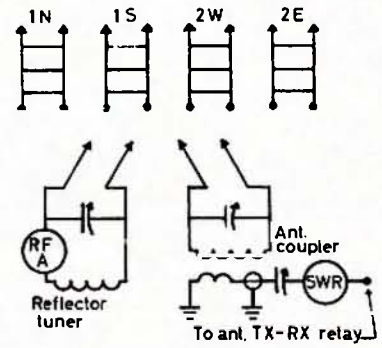


It will be noted that the spacing between the elements of No. 1 antenna is 16 feet and the spacing of No. 2 antenna is a tapering distance due to the formation of the triangle. This is not desirable, but is unavoidable owing to the placement of the three masts at this location. The height of the masts is 47 feet, 46 feet and 33 feet respectively. Owing to the relatively large spacing between the elements, optimum results are achieved by using the second element as a reflector and not a director in any desired direction.

With regard to tuning any pair of dipoles a most desirable feature of the antenna is the use of a reflector tuner and when the reflector tuner condenser is adjusted so that the capacity is set just past resonance on the low frequency side, the next process is to

adjust the antenna coupler controls till you get the greatest amount of r.f. in the reflector as indicated by a single turn and pea lamp. I use an r.f. ammeter in the reflector tuner closed circuit. I am quite convinced that this method of tune up is more positive and efficient than watching an s.w.r. meter.

So now we talk to the world without a Quad and how! The antenna described went into operation at VK2SA on 29th July, 1967, and reports of S7, S8 and S9 have been received on s.s.b. and c.w. from Europe, short path and long path, and the United States and Alaska, short and long path. The system works as a two element array on 7 Mc. in all directions and I have worked JA land S7 on s.s.b. and S8 on c.w. A good one last night was VS9MB, Maldives Islands, at S7 (s.s.b.) on 14 Mc.



In conclusion, I cannot help remarking about a character who said to me, "What, a new antenna, you remind me of the guy who used to put a new antenna up every month and every one worked better than the previous one." Come in on a QSO with me some time, you may beat me by a few decibels, but you still say I can hold my own with most Quads and Yagis.

OPEN-WIRE DEVELOPMENT

Developed originally in the U.S.A., a 300 ohm open-wire transmission line is now available in Australia. Early experiments here by the manufacturers, E. W. Cornelius Pty. Ltd., and Channel Master engineer, resulted in the "Lo-Loss" Formula III. open-wire line being produced.

Formula III. design incorporates a polythene sheathed, solid copper conductor, separated by hard polythene spacers, to give a constant standard transmission line impedance of 300 ohms. Laboratory tests have shown that Formula III. open-wire line has negligible capacitance and less than one-third the losses of flat feeder cables.

Further technical information may be obtained by writing to the manufacturers, E. W. Cornelius Pty. Ltd., 182 Bay St., Brighton, Vic.

* 77 Flora St., Kirrawee, N.S.W., 2232.

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TECHNICAL DETAILS


Frequency Ranges: 10 metre band (28-30 Mc.), 15 metre band (21-21.5 Mc.), 20 metre band (14-14.5 Mc.), 40 metre band (7-7.5 Mc.), 80 metre band (3.5-4.0 Mc.); 144-146 Mc. (26-28 Mc.) for external VHF Converter.
Intermediate Frequency Rejection better than 70 db.
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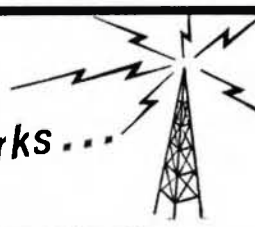
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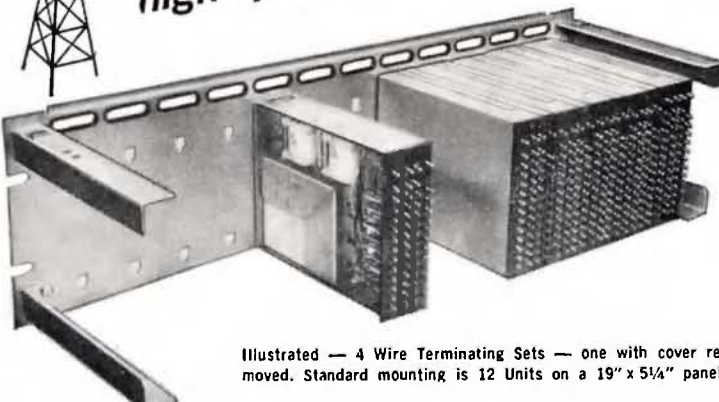
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Illustrated — 4 Wire Terminating Sets — one with cover removed. Standard mounting is 12 Units on a 19" x 5 1/4" panel.

4 WIRE TERMINATING SETS AND HYBRID COILS

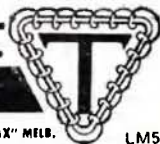
For use on high quality amplified voice frequency circuits at points where a 2 wire to 4 wire conversion is required. All units incorporate blocking capacitors in the line and network windings and basic components to provide for the average line balance network. Terminating sets contain variable attenuator pads in both the Hybrid-In and Hybrid-Out sides.

For further information please write giving application details.



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LM53

When Are They Biting?

M. N. O'BURTILL,* VK3WW

Chasing DX has been likened to catching fish. You must use the right equipment in the right spots when the fish are biting. I leave the choice of equipment up to the individual. The right "spot" is usually indicated on the Prediction Charts, the use of which has been very well covered previously. When are they biting? (I don't know, but I am sure an understanding of local and DX time zones would help your "fishing".)

Most communication organisations use G.M.T. as the standard recorded time and Amateurs are encouraged to log times in G.M.T. In contest work this is essential and in general operating, it is much easier when recording information on QSLs, etc.

What ever time standard you use in your log you still have to consider the relationship between local time at your QTH and that of the DX you wish to work. It is pointless calling CQ with the beam on an area in which it is 3 a.m. and no stations are operating.

On any reasonable world map you will see lines running North and South. These are known as meridians and run in a straight line from pole to pole. The zero degree meridian runs through Greenwich, England, and longitude is the angle measured West or East of Greenwich. The meridians are named by their angular distance East or West of the zero degree meridian. Every one degree of longitude represents a time difference of four minutes or fifteen degrees equals one hour.

By applying this principle you can calculate the actual time in any area on the earth's surface by knowing G.M.T. and the longitude of the position

at which time is required. Positions East of Greenwich are ahead of G.M.T. and positions West of Greenwich are behind G.M.T.

The usual practice is to select a suitable time to cover an area rather than changing your clocks every time you travel a few miles East or West, hence we have in Australia:—

W.A.S.T. = G.M.T. + 8
S.A.S.T. = G.M.T. + 9½
E.A.S.T. = G.M.T. + 10

I have made a chart relating local times in each area for which we have Prediction Charts, to G.M.T. and Australian times. I hope this will help Amateurs to understand the principles of time zones and at the same time provide an easy reference for working DX.

Some areas employ daylight saving during certain months of the years. To show this on a chart would complicate matters considerably, so if you are talking to Montreal and find the chart is an hour out, please don't come round and smash my clocks! I have indicated by means of an asterisk each place where daylight saving can be expected during the summer months.

Finally, the following list of countries normally operate on G.M.T.:—

Algeria, Ascension Island, Canary Islands, Channel Island, The Faeroes, Gambia, Ghana, Guinea Republic, Mauritania, Morocco, Portugal, Principe, Rio de Oro, St. Helena, Sao Thome, Sierra Leone, Spanish Sahara, Tangier, Togo Republic, Tristan de Cunha, West African Republic.

The way things are changing, some of the above may have new names and even new times, but the variation would not be more than an hour either way.

I hope that this information, together with the time chart, will be helpful when using the Prediction Charts to decide what area to beam to and call.

PHILIPS TO MAKE IC's HERE

Plant to manufacture integrated circuits is being set up in Australia by Philips. In Europe, Philips already are well established in the IC field, with quantity production in factories in Holland and Germany, and in U.K. through associated Semiconductor Manufacturers Ltd.

Following the fast development in IC's, Philips, in accordance with established policy, will help keep the Australian electronics industry abreast of world trends, to ensure self reliance in design and engineering for both the defence and domestic markets. Talks in Holland last month resulted in plans being formulated for future expansion of Philips in Australia.

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G.M.T. -7	G.M.T. -4	G.M.T. -3		G.M.T. +1	G.M.T. +2	G.M.T. +3	G.M.T. +8	G.M.T. +9	G.M.T. +9½	G.M.T. +10
19	22	23	02	03	04	05	10	11	1130	12
21	24	01	04	05	06	07	12	13	1330	14
23	02	03	06	07	08	09	14	15	1530	16
01	04	05	08	09	10	11	16	17	1730	18
03	06	07	10	11	12	13	18	19	1930	20
05	08	09	12	13	14	15	20	21	2130	22
07	10	11	14	15	16	17	22	23	2330	24
09	12	13	16	17	18	19	24	01	0130	02
11	14	15	18	19	20	21	02	03	0330	04
13	16	17	20	21	22	23	04	05	0530	06
15	18	19	22	23	24	01	06	07	0730	08
17	20	21	24	01	02	03	08	09	0930	10

Time Chart. (°Daylight saving during part of the year.)

THE FL-50 S.S.B. TRANSMITTER

INTRODUCTION

During the past ten years or so Australia has seen the introduction of commercial Amateur equipment being handled in quantity by agents. This has aided an increase in the use of commercially manufactured equipment by Australian Amateurs. Equipment is available from various countries of manufacture, there being several competing with one another.

A relative newcomer to the Australian market, but no newcomer to Amateur equipment design and manufacture is the Japanese Yaesu Musen Company (pronounced Yaysoo Moosen), whose Australian agent is Bail Electronic Services.

Yaesu Musen manufacture Amateur Radio equipment exclusively and they have a wide range of equipment with different capabilities and functions. The equipment reviewed here is one of their lower-cost lines meant for the Amateur on a low budget.

Several units of the FL-50 were made available by the agent. This was done to enable comparisons to be made between the performances of individual units. The FL-50 has been made to compete with the low cost market and sells at \$225 including sales tax. A matching v.f.o., the FV-50, is available for full band coverage.

GENERAL DESCRIPTION

As with most equipment, facilities and complexity are directly proportional to price. Thus some facilities that are incorporated in higher priced equipment are not included in this design. An internal v.f.o., v.o.x. and selectable sidebands are not incorporated features of this model. The power capability is also less than higher priced models. But nothing else, it seems, has been sacrificed to lower the price. The rest of the review will affirm this.

The FL-50 is a complete, five-band transmitter for s.s.b., c.w. and a.m. The transmitter has an internal v.x.o. which allows approximately 10 Kc. shift. Crystals are extra by order. The power input to the final is nominally 50w. (d.c.). Sideband generation is by the filter method using a five-crystal lattice filter on 5173.9 Kc. and a carrier crystal on 5172.4 Kc. This gives u.s.b. output. The correct sideband for the band in use is automatically selected by the proper heterodyne frequency in the v.x.o. or external v.f.o. (See block diagram.)

A calibrated meter (and switch) enables the cathode current of the p.a. to be read as well as r.f. output (from diode detector).

Transmitter control is normally p.t.t. via suitable push-button microphone. There is provision on the chassis for including v.o.x. circuitry if so desired.

Internal a.l.c. is taken from the p.a. and applied to the 5 Mc. amplifier (see block diagram). The p.a. uses a single 6JS6A tube.

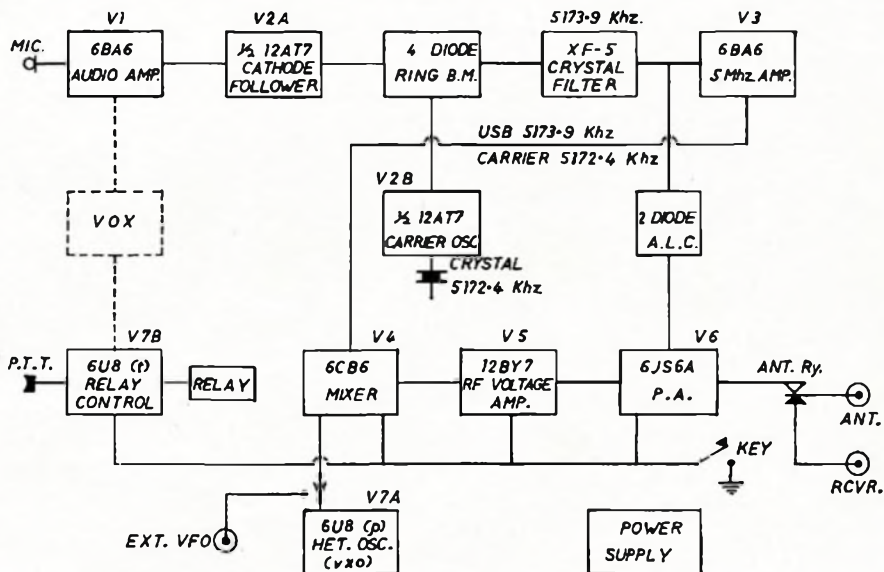
The carrier level control is a front panel control which enables carrier to be re-inserted at the grid of the 5 Mc. amplifier. Thus the level of carrier can be set to any desired level for tuning, and for a.m. or c.w. operation. Straight or break-in operation is available for c.w. work.

The rear apron has sockets for antenna (SO239) and receiver control, switched by an internal antenna (c/o) relay. Also sockets for FV-50 power and r.f. leads are mounted on rear chassis. The p.a. bias adjustment pot. is also on the rear apron.

gives a 0.005% stability figure but if crystals of greater stability are used (i.e. 0.001%) then this is achieved.

The output frequency of the crystal oscillator, and thus the transmitter, varied slightly between individual units. This was attributed to the fact that different 6U8A tubes have different input capacities coupled with different stray (wiring) capacitance in the different units. It was rarely more than 5 Kc. from the marked crystal frequency.

A socket on the front panel facilitates changing of crystals. A switch next to



BLOCK DIAGRAM OF FL-50 TRANSMITTER

CRYSTAL OR V.F.O. RANGE		POWER SUPPLY	
		Stated	Measured
3.5 Mc. Band	8,872.4 Kc. to 8,747.4 Kc.	Plus 500V.	Plus 480V.
7	12,172.4 .. 12,272.4 ..	Plus 250V.	Plus 225V.
14	8,827.6 .. 9,177.6 ..	Plus 150V.	Plus 150V.
21	15,827.6 .. 16,277.6 ..	Minus 100V.	Minus 100V.
28	22,827.6 .. 24,527.6 ..		

HANDBOOK TECHNICAL SPECIFICATIONS

- Type of Emission: c.w., a.m. and s.s.b. (l.s.b. on 80 and 40 metres, and u.s.b. on 20, 15 and 10 metres).
- Operation: Push to talk.
- Power input: 50w. d.c.
- Output Impedance: 50 to 120 ohms.
- Frequency Range: 3.5-3.8 Mc., 7-7.5 Mc., 14-14.5 Mc., 21-21.5 Mc., 28-30 Mc.
- Frequency Stability within 0.005%.
- Carrier Suppression: -50 db.
- Sideband Suppression: -50 db.
- Distortion Products: -30 db.
- Audio Response: 300 to 2,700 c.p.s., ripple within ±3 db.
- Power Requirement: a.c. 100/110/117/200/220/234v., 50/60 c.p.s., approx. 100 vA.
- Cabinet Size: 6" x 13" x 10 1/2".
- Net Weight: 23 lbs.

V.X.O.

The stability of the crystal used is the main factor here. The handbook

this socket enables an external v.f.o. to be switched in.

The shift attainable with ordinary HC6/U crystals is generally around 10 Kc. A variable capacitor coupled to a large hand-span knob on the front panel facilitates this. Special low capacity crystals are obtainable which enables the frequency to be pulled 20 to 50 Kc. They have to be "tailor-made" though for individual units for reasons given above.

CARRIER AND UNWANTED SIDEBAND SUPPRESSION

One unit was checked, on 21 Mc., and the following figures obtained relative to full power output.

- Carrier Suppression:
 - Switch on, -58 db.
 - After 15 minutes, -63 db.
- Unwanted Sideband:
 - Switch on, -50 db.
 - After 15 minutes, -50 db.

The carrier suppression on other units was as good as or only slightly degraded (6-8 db.) from these figures.

The unwanted sideband suppression was as good as this, with minor fluctuations, for other units.

Carrier suppression was measured relative to full power output with audio applied. The carrier suppression was degraded about 4-5 db. with two-tone signal.

These figures are very good and show that the handbook specifications are somewhat conservative.

Many higher priced transmitters do not claim or attain these figures for carrier and unwanted sideband suppression.

DISTORTION PRODUCTS

All distortion products were more than 36 db. below full output on two-tone test signal. This is very good.

R.F. POWER OUTPUT

The following figures are an average for the units measured:—

80 Metres	62 Watts
40 "	64 "
20 "	62 "
15 "	57 "
10 "	56 "

Average p.e.p. output = 60.2 watts.

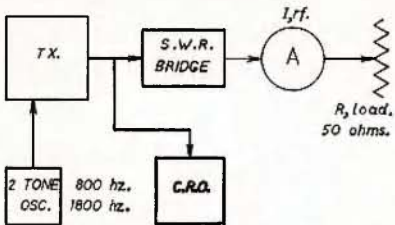


Fig. 1.—Power Measurements.

The single 6JS6A p.a. appears to be doing a good job. It appears to be operating in class AB2 and measurements indicate that the anode efficiency is around 60 to 65%.

This indicates a well-designed p.a. and efficiently constructed tank circuit.

Power output was measured as shown in Fig. 1.

The method used was:

- (1) Transmitter tuned up as per the handbook.
- (2) Two-tone oscillator then applied.
- (3) Tuning touched up.
- (4) Two-tone level adjusted so that pattern on c.r.o. is not quite flat-topping.
- (5) Measurement of I_{RF} then taken.
- (6) Calculate P_m :

$$P_m = I_{RF}^2 \times R_L$$

- (7) Calculate p.e.p.:
p.e.p. out = 2 P_m .

OVERALL FREQUENCY RESPONSE

This was measured by applying an accurate audio oscillator to the mic. input and setting the transmitter to maximum output with a 1 Kc. signal applied to the audio. The output of the transmitter was then measured and subsequent readings referred to this.

The results are shown in Graph 1 for one unit that was measured. It can be seen that the response "rolls off" a little sooner than expected on the low frequency side as the -3 db. point is at 650 c.p.s. rather than around 300 c.p.s. as mentioned in the handbook specifications. This may be owing to the carrier crystal being a little low in frequency.

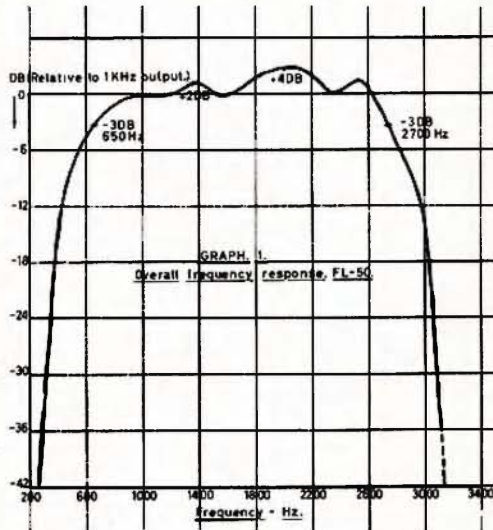
The upper -3 db. point is at 2700 c.p.s. as per the handbook.

The ripple is well within ± 3 db. as mentioned in the handbook specifica-

tions (i.e. 6 db. peak-to-trough). In this case, the ripple is only 4 db. peak-to-trough or ± 2 db. ripple.

The bandwidth is a little narrower than expected, but is nevertheless very good. On-the-air reports give "good quality", "easy to resolve" to "excellent".

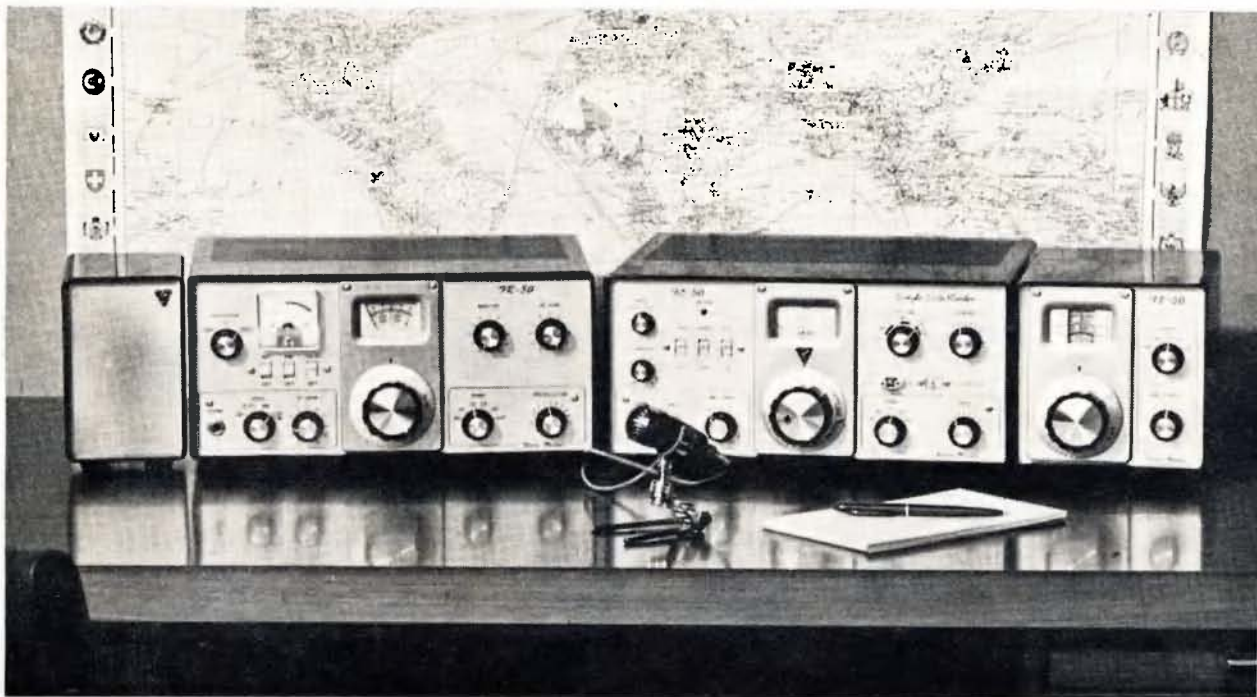
These results indicate a well designed and constructed crystal filter.



T.V.I.

It appears that this little rig does not radiate spurious signals which are sufficiently strong to cause t.v.i.! Need I say more?

The FL-50 is a straightforward, single conversion design and, as such, reduces the possibilities of spurious output signals to a minimum.



The Yaesu Musen "50" Series (left to right): SP-50 Speaker, FR-50 Receiver, FL-50 Transmitter, and FV-50 VFO.

POWER SUPPLY

The power supply is in-built on the same chassis so that a completely self-contained unit results. This appears to be a feature with all Yaesu equipment.

One transformer provides all the necessary voltages. The a.c. input is nominally 234v. for Australian conditions, but other taps are available to provide 100/110/117/200/220 volts at 50 or 60 c.p.s. The power drain on the mains is approximately 100 watts.

The rectifiers are all solid state and adequate protection is provided. Both transient and surge suppression components are included.

A regulated 150 volts is supplied from a gas tube regulator for the oscillators and p.a. screen.

A neon regulates the bias supply and also serves as an "on-air" indicator.

All the filter capacitors have about a 1.7 times safety factor on the voltage rating. The amount of capacitance used ensures low ripple content.

The choke used is also of adequate proportions. The regulation of the main h.t. is very good, being approximately 8%. When the key is up the p.a. h.t. is 480 volts, with key down and full power output, this drops to 440 volts. The drop is about half this on speech peaks.

After some considerable time of operation the power transformer is warm to the touch but not hot.

All in all, it appears that the power supply has been well designed and is of adequate proportions.

The main h.t. can be halved by a very simple modification to bring the h.t. down to about 250v. The transmitter may then meet the requirements for low power operation if required for special cases. The agent will perform the modification upon request.

CONSTRUCTION

I was very impressed with the construction of these units. The layout is neat and logical. The wiring is very neat and looms are used for the long runs of wiring. All the components are mounted on tag-strips or socket lugs and are at right angles to a chassis wall and parallel to the bottom.

All components are easily accessible and readily identifiable. The valves are clearly marked on the chassis. The chassis is punched steel which has been cad-plated, passivated and lacquered.

The tank coil is a large (1½") diameter ceramic former with heavy gauge plated copper wire wound on it. It is mounted well clear of the chassis on two stand-offs. The bandswitch has ceramic p.a. sections. All this ensures high efficiency in the tank circuit.

The front panel is satin finished aluminium and the layout of the controls is balanced and pleasing. The front panel could do with some brackets behind it for support, although wiggling it around during transmitter operation has no effect. It doesn't wiggle much anyway.

The sideband generator is mounted on a printed circuit board. This board ("F" type s.s.b. generator) is available separately for those who wish to roll their own.

The overall construction is very robust and very neat. Yaesu are to be commended on this point.

ON THE AIR

The unit is very easy to use. Tuning and loading is smooth and not critical on all bands. The rig can be tuned in a minute or less. The audio gain is ample for quite a number of different high impedance mikes.

The carrier control is also very smooth and easy to adjust, as is the bias control on the rear apron.

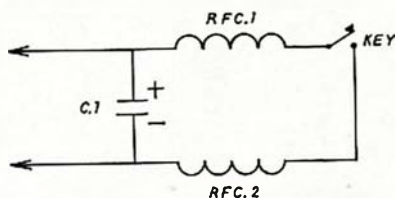


Fig. 2.—Suggested Keying Filter.
C1—2.8 uF. 350v.w. electrolytic.
R.F.C.1, R.F.C.2—Aegis Type C4.

The small switches are easy to operate with one finger and once switched, cannot be knocked into alternate position.

Audio quality reports are consistent for different units and very encouraging. For example, "very natural", "easy to resolve", "very good" and even an "excellent".

A.m. quality is reasonable but not as good as a proper a.m. transmitter because only one sideband and carrier are transmitted by the FL-50 on a.m. (usual system with most s.s.b. rigs).

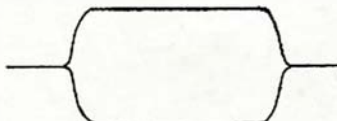


Fig. 3.—Keying Waveform of FL-50.

With a key with no filtering, the keying characteristics tend to show "clicks" and "thumps". The agent attaches some supplementary operating notes to each handbook and a filter is suggested in these notes. Fig. 2 is taken from these notes and gives the envelope as seen on a c.r.o. (Fig. 3). This gives an excellent character. No chirp is evident on the transmission either.

The type of keying used is grid bias keying; the keyed stages being the r.f. stages.

THE HANDBOOK

The handbook is well presented and includes a very clear description of the circuit operation. All the information necessary for alignment and trouble shooting is included as well as a very comprehensive voltage chart.

A large, clear, easy to read circuit diagram is included, along with circuit diagrams for the crystal filter and v.o.x., with or without anti-trip. The crystal filter curve is also supplied.

The agent has included two pages of supplementary notes. One page is all about the FV-50 remote v.f.o. The other page gives more detailed operating information and hints.

No list of mechanical parts is included nor installation information. This, though, is a minor point.

Unfortunately, it is not a printing but a dyeline copy type, but is nevertheless clear and easy to read.

THE GUARANTEE

There is a 90-day guarantee on components and workmanship excepting valves. (Receiving valves used in transmitters are not normally guaranteed), the usual provisions apply regarding transport charges and misuse. Incidentally, spares for all valves, including the 6JS6A, along with just about anything else are available from the agent. He also does pre-sales inspections and servicing as well as after sales service. Included in this is the installation of a 3-core a.c. power cable and plug to replace the 2-core cable originally fitted.

CONCLUSIONS

At \$225, this little transmitter is a bargain. There has been no corner cutting or skimming on component tolerances in this design. Robust construction and careful circuit design makes for an efficient little rig. It has circuit features that are included in many higher priced rigs and a quality to equal them.

I feel that the lack of v.o.x. facilities will not be missed as many operators prefer push-to-talk operation. But if you wish for v.o.x. then it can be easily installed. (A suggested circuit is included in the handbook.)

From Table 1 it can be seen that the handbook specifications are generally equalled or exceeded.

One rarely sees such robust construction and generous design in low cost Amateur equipment. Along with that, the performance is excellent and the Yaesu Company should be commended for this.

(Copyright Reserved)

Specification	Handbook	Measurement
Stability	within 0.005%	Depends on Crystal
Carrier Suppression	—50 db.	—63 db.
Sideband Suppression	—50 db.	—50 db.
Distortion Products	—30 db.	—36 db. or greater
Audio Response	300 to 2700 c.p.s. ±3 db. ripple	650 to 2700 c.p.s. ±2 db. ripple
Power Input	50 watts d.c.	52 watts (average) d.c.

Table 1.

A NEW FIELD-DAY V.H.F. BEAM

COL HARVEY,* VKIAU

Since the advent of t.v. and rabbit ears, some of us have wondered why the movement of homo sapiens near the installation has produced such effects as enhancement of the picture; loss of synchronisation; and ghosting. Could it be that our human friend was metallic? Or as some unkind critics of Amateurs might contend, di-electric from the tummy up? And why is that pussy-on-the-window sill and pluto-on-the-mat seem not to display the effects so readily demonstrable by their two-legged masters?

The National Capital provides an unique opportunity to demonstrate these effects, since Big Brother frowns on t.v. aerial arrays outside, and because the two local t.v. stations pour volts of r.f. into the Territory. What's more, with Channels 3 and 7 available, some interesting comparisons can be made, using the lounge room as an antenna range!

By locating the rabbits ears on a flower pot in the centre of the room, it is possible to stand in a position which is the equivalent of either a director or a reflector. Observation of the t.v. set picture, via a strategically placed mirror, will show that by standing at a relatively critical distance from the rabbits ears, the t.v. signal is significantly and even drastically altered. What's more, the position at which this effect occurs is different on Channel 3 to what it is on Channel 7. What gives? Obviously homo sapiens is an antenna element! But what is his resonant frequency?

So far as I can deduce, Fr. H.S. is not greatly affected by the distance between ears and toes, nor does his circumference seem to have a bearing on his resonant frequency. Simple substitution of the OM, for the XYL and then the first and second operators, seems to show that a similar effect is attributable to all available sizes. Furthermore, the effects seemed to be strongest on Channel 3 if the human antenna element is placed between the t.v. receiving antenna and the t.v. station.

Deduction 1: Homo sapiens is "resonant" at a frequency somewhat higher than Channel 3.

Repeating the performance on Channel 7 transmissions (which with restless assistants is not as easy as it sounds!!!) produced results which suggest that a stronger variation occurs

when the human "element" is positioned on the opposite side of the t.v. receiving antenna to the t.v. station!

Deduction 2: Homo sapiens is "resonant" at a frequency lower than Channel 7. Ergo, he must therefore be capable of being used as a reflector element on the 2 metre band, and probably as a director on 6 metres!

I leave it to others to decide how much power our friend will tolerate before letting off steam, and to decide just how to keep our hero rooted to the right spot during a long transmission.

Despite such problems, there is no doubt that the human body can significantly affect the field pattern of v.h.f. antennas. Since the body is also a conductor, presumably r.f. currents are coupled into it from any nearby radiator, and it will re-radiate in typical antenna fashion—even though it has poor efficiency and is broad band, due to its circumference.

Presumably, the presence of a nearby human element would therefore also affect antenna impedance and standing wave ratio. In practice, most of us have observed variations in field strength and s.w.r. whilst engaged in adjustments of driven elements, which seems to further confirm the concept. I don't go so far as to suggest link coupling the XYL to a kilowatt whilst pointing her mid-ships interstate. What I do suggest is to try with low power, vertically polarised equipment to determine whether or not a useful change from the normally circular polar diagram can be achieved by using Mum as a reflector and a string of Junior Ops. in descending order of age, as vertical directors! Providing the house is big enough and your assistants will co-operate, you could also experiment with horizontal polarised human beams.

Rough lounge-room experiments suggest that the human director is worth many db. in front-to-back ratio. For example, a really solid t.v. signal can be made almost unusable, by introducing an appropriately located human director/reflector.

If the same thing can be made to occur with portable transistorised 2 metre equipment, some marginal contacts might be made "solid" simply by correctly positioning a couple of assistants in the desired direction of transmission or reception! Results of tests direct to "Amateur Radio," please.

One word of advice to intending experimenters, if you want to retain your XYL as an assistant long enough to reach any conclusions, don't refer to her as a "thick unipole" when she stands in the wrong place, or moves away from it before you complete your field strength measurements.

POST-SCRIPT

An experienced but young bachelor engineer to whom the above text was referred immediately saw possibilities never dreamed of by the author. He suggested that human resonance effects might also explain the well known flower people phenomena seen regularly during the British summer in Hyde Park, apparently whenever Radio Caroline is on the air.

Casting around for a means to create similar effects at will in the National Capital, he almost gave up when he realised that the many knowledgeable fathers of the delectable Young Things in Canberra could thwart his efforts simply by de-tuning their daughters, perhaps with a simple belt of aluminium foil. Nevertheless, our hopeful engineer is often to be seen in the Mall on Friday nights, furiously raising and lowering his hat (in which there is a halo-like shorted turn) as each D.Y.T. passes him by.

As his activities so far have resulted only in brief encounters with very senior members of the Fat and Over Fifty Club, he is beginning to wonder whether or not some of his colleagues with access to Radio Belconnen, are sabotaging his experiments by inducing well timed bursts of low frequency r.f., which mask the more delicate v.h.f. resonances which he is seeking so assiduously.

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OTL

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SIDEBAND ELECTRONICS ENGINEERING

As so frequently the case, not all news is good news. The recent 15% sales tax rate on transmitting equipment will add \$10 to \$15 to every new transceiver—we shall just have to pay up. On items in stock since before the increase, I have already paid what there is to be paid, so there the old prices still apply. New imports will just become dearer and in many cases not only because of the higher sales tax rate. Prices overseas are also rising, a TH6DX Hy-Gain Beam was \$140 in the U.S.A. some 18 month ago; the equivalent TH6DXX, electrically the same with just a different boom to mast clamp, now costs \$US160.

When my stock of HEATH Kits is sold out I shall have to drop that line, there is no joy in it. HEATH does not extend discounts to dealers, nor exports directly to me, so what I buy from them costs me just as much or even more than to everybody else who orders a single kit in one way or other. Sorry, I cannot continue to tie up money in stocks and then have to decide to sell them at a loss in order to make them move.

But there is also good news. The new GALAXY V. Mk. III. will soon be in stock and for its price range offers more than any other set of its type. Conservative 500 watt PEP input, the smallest powerhouse on the market!

Am also going to add MOSLEY Beams to my range of brands. So if you have planned a TH33Jr, wait a little longer till they have arrived and shall be available for less than \$100—yes, all charges included. All my prices include sales tax, but no power supplies with transceivers, unless specifically mentioned.

Those who have missed the September 1968 issue of "Amateur Radio" should take a good look at the cover picture and the story on its pages 9 and 10! At last an Australian manufacturer is going to make Amateur equipment and not just a transceiver and power supplies only. The full ACITRON line, planned by A.C.I. Technical Centre Ltd., subsidiary of AUSTRALIAN CONSOLIDATED INDUSTRIES, will consist of:

- All-band SSB transceiver.
- AC and DC power supply units for that transceiver.
- External VFO for it, range 5.0 to 5.5 Mc.
- Linear amplifier unit.
- A combination dummy-load, watt-meter, two-tone oscillator and 400w. p.e.p. output limit indicator unit.
- Johnson-type antenna feedline matchbox.

So at last, in 1969, Australian made first class Amateur equipment with a domestic service organisation, the best news so far.

Herewith a listing of my current prices. In the Japanese lines, I have added the TRIO transceivers and receivers, imported and priced correctly by Western Electronics. As to the YAESU-MUSEN, I hope to do even better in future. The FT-DX400 retails for approximately \$A300 in Japan, so with now 71% total in import duties and sales tax, plus freight, insurance and handling charges, a total cost of \$A600 leaves just enough margin for my profit mark-up. There certainly is a different ratio on overseas retail costs and what I sell them for on most American transceivers; for instance, SWAN 350C and GALAXY V. Mk. III. \$US420 or approx. \$A380 against \$A550 selling prices here! 73, Arie Bles.

GALAXY V. Mk. III.	\$550	SWAN 350C ..	\$550
SWAN SW500C ..	\$690	SWAN SW250	\$425
GONSET 2M Sidewinder ..	\$350	YAESU MUSEN FT-400DX	\$600
TRIO TS-500	\$488	NEWTRONICS 4-BTV 10 to 40 mx Vertical	\$55
HY-GAIN TH6DXX 10/15/20 mx six element		With 80 mx top-loading coil	\$65
Beam with BN-86 Balun ..	\$200	HEATH HA-14 Linear Kit ..	\$150
HY-GAIN TH3JR Junior Beam	\$105	MARK 10/15/20 mx Tri-band Helical Mobile	
MOSLEY TA33Jr (in November)	\$98	Whip, the latest! ..	\$25
WEBSTER Bandspanner, 10 to 80 mx Mobile		MARK 40 mx Helical Whip	\$15
Whip with ball mounting and spring ..	\$55	EIMAC 3-500Z zero-bias Triodes	\$38

Spare Valves in Stock for all types of U.S.A. Transceivers

SIDEBAND ELECTRONICS ENGINEERING

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The Most Outstanding Transceiver Value Ever Offered the Amateur!

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SIX GREAT NEW FEATURES!

- ★ NEW PRECISE VERNIER LOGGING SCALE
- ★ NEW 500 WATT SSB POWER
- ★ NEW SOLID STATE VFO
- ★ NEW CW SIDETONE AUDIO
- ★ NEW CW BREAK-IN
- ★ NEW CW FILTER



SPECIFICATIONS

FREQUENCY COVERAGE: 3.5-4.0, 7.0-7.5, 14.0-14.5, 21.0-21.5, 28.0-29.0* Mc. (*Optional crystals for other 1 Mc. ranges.)

SOLID STATE VFO: Tunes 5.0-5.5 Mc. at all times, without any switching for best stability, and doubly temperature compensated and voltage regulated.

GENERATION SCHEME: 5.0-5.5 Mc. VFO mixed with 9 Mc. filter oscillator 80 and 20 metre operation, using sum-difference selection. 40-15-10 metre operation by pre-mixing VFO with correct crystal controlled oscillator, then into 9 Mc. I.F. system.

TUNING: Illuminated, two-color dial scale system with adjustable hairline fiducial. Two speed vernier reduction system of 12:1 allows fast tuning and 72:1 slow-precise tuning. Also includes new, precise dial logging calibration on tuning knob with adjustable hairline fiducial for high resetability resolution. Primary calibration 5 Kc. markers with 100 logging scale divisions each revolution of knob. Over eight linear inches of dial calibration.

STABILITY: New solid state VFO circuit has double temperature compensation and double voltage regulation for utmost stability. Drift is less than 100 c.p.s. in any 15 minute period after nominal warm-up; less than 100 c.p.s. change for 10% change of primary voltage on our power supplies.

CONTROLS: (1) Main VFO dial, illuminated; (2) A.F. gain; (3) R.F. gain; (4) Mic. gain; (5) Exciter tuning; (6) P.A. plate tuning; (7) Bandwidth; (8) Load control; (9) Sideband selector; (10) Function selector—PTT, VOX, CAL., TUNE, CW. Rear: Final bias set. Inside: "S" meter zero, VOX (if accessory installed). Gain, Anti-VOX, Delay.

TRANSMITTER: SSB 500 watts p.e.p. input; manual keying for SSB or CW, and also automatic "break-in" keying with VOX accessory on phone or CW; generating audio sidetone into speaker at all times in tune or CW functions; selectable sideband operation with illuminated USB-LSB indicators, showing SB in use; shifted carrier CW operation to minimize "leap-frogging"; shaped grid-block keying on CW to suppress clicks and chirps; carrier suppression of 45 db. or more without frequent re-adjustment; unwanted sideband suppression of 55 db. without frequent re-adjustment; bandpass of 2.1 Kc. nominal with 1.8:1 shape factor, and nominal response of -6 db. at 300 and 2400 c.p.s.; ALC control for maximum "talk-power" without "flat-topping"; Tune position for reduced power adjustment and longest tube life; high impedance microphone circuit (microphones should have -50 to -60 db. output for best results) with PTT control; adjustable pi-network output matching nominal 50 ohms and 40-100 ohm resistive range; compact size 6 in. high, 10 1/4 in. wide, 11 1/4 in. deep and 13 lbs. net weight.

RECEIVER: Coverage same as transmitting; pre-selection coupled with exciter tuning control and does not require separate adjustment; sensitivity better than 1/2 uV. for 10 db. S plus N/N; selectivity nominal 2.1 Kc. with internal six-crystal lattice filter (or may be reduced to nominal 300 c.p.s. with optional filter—peaked at nominal 800 c.p.s.); full AGC on received modes with fast attack, slow release, and less than 6 db. output change for 60 db. input variation, using audio derived system; nominal antenna input impedance of 50 ohms; audio response -6 db. at 300 and 2400 c.p.s. points; audio output impedance 8 ohms; audio power output 1 watt nominal.

PLUS THE SAME FEATURES THAT PUT THE GALAXY V. IN A CLASS BY ITSELF!

- Smallest 500 watt transceiver (6" x 10 1/4" x 11 1/4"). Makes it the best mobile and fixed station transceiver!
- Coverage: 80, 40, 20, 15 and 10 Metres.
- Selectable sideband (USB or LSB). Built-in, and no frequency jump changing sidebands, as with others!
- Best filter available today (2.1 Kc. with 1.8:1 shape factor).
- Stable suppression (45 db. carrier and 55 db. unwanted sideband without need of a panel control and constant adjustment) hottest receiver—bar none!
- Highest sensitivity—better than 1/2 uV. for 10 db. S+N/N!
- Break-in (with VOX accessory). CW with adjustable delay!
- Automatic sidetone generation on CW!
- Shifted carrier CW (prevents "leap-frogging"!).
- ALC protection and "talk-power"!
- New hybrid circuitry with solid state VFO, AVC, VOX, audio!
- Outstanding audio derived AVC "virtually block-proof"!
- New CW filter accessory for 300 c.p.s. bandwidth (the only transceiver with this feature at any price!).
- Dual vernier tuning (12:1 fast tune or 72:1 slow tune!).
- Extremely high stability with drift less than 100 c.p.s. in any 15-minute period after warm-up!
- E-Z view VFO dial—most convenient mobilizing!
- New styling with an improved, wrap-around, perforated, antique black cabinet. More rugged and lowered component heating. Also, attractive, 4-color brushed aluminium panel.
- Plus the most comprehensive line of matching accessories in any product line with a transceiver.

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A SIMPLE HIGH PERFORMANCE 6 METRE CONVERTER

RODNEY D. CHAMPNESS,* VK3UG (Ex VKOCR)

IN this day and age of transistors here, there and everywhere, a valve type v.h.f. converter may seem obsolete to some. Many people, however, are much happier using valved equipment and building same. Having been brought up on a diet of valves from an early age, I think in terms of valved equipment and then transistors.

The converter has an r.f. stage followed by a mixer stage which has oscillator injection from a crystal controlled oscillator. As indicated by the heading, this is a simple converter and uses only two valves. One feature not often found is the inclusion of a.v.c. to the r.f. stage. The 6EH7 is used in the r.f. stage because of its remote cut-off characteristics, high gain and lower noise compared to the much used 6AK5.

One triode of the 12AT7 is used as a Squier type overtone oscillator on a frequency of 45 megacycles, which is coupled by a small value capacitor to the grid of the other 12AT7 triode which functions as the mixer. Triode mixers are quieter than pentode mixers. It will be observed that the two sections of the 12AT7 are connected in series as far as d.c. is concerned to conserve h.t. current.

The placement of coils and valves more or less follows in a straight line, much as indicated in the schematic diagram. The oscillator coil and crystal are mounted close to the 12AT7. There is no need to crowd any components. The 6EH7 valve socket is placed so the input faces the aerial coil L1 and the

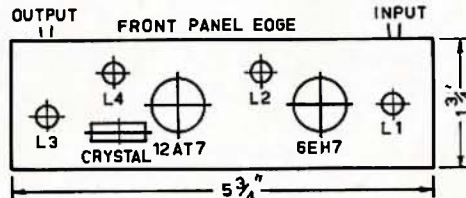


DIAGRAM 2

output faces the r.f. coil L2. A small tinplate shield, sufficiently big to shield the 6EH7 input and output and the coils, should be soldered across the valve socket earthing pin 4, the centre spigot and going between pin 1 and pin 9. The coils are all mounted below the chassis. All earth points for each stage to be earthed as near the one spot as possible.

Wire the stages as per schematic diagram. The capacitors across L1, L2 and L4 are all gimmick capacitors made up out of thin walled single conductor insulated hook-up wire or possibly bell wire. The 2 pF. capacitor from the plate of the oscillator to the grid of the mixer is made in the same way. No more than about 1 1/2" of twisted wire should be needed for any of these gimmick capacitors. Adjust these gimmicks until the coils tune to the desired part of the band as indicated by a g.d.o. with slugs half way in the coil, with the exception of L4 which is adjusted so that maximum output of the oscillator occurs with about half the core inside the coil.

These coils are all high Q, so we get high gain but not much bandwidth; the bandwidth is only about 1 to 1.5 megacycles with high gain, but this should be adequate in most cases. If lower Q is desired and wider bandwidth, fewer turns of wire on each coil with increased parallel capacity will be satisfactory. L4 doesn't affect the bandwidth, so is okay as is. Coil L3 is made broadly resonant at 8 megacycles and has a resistor wired across it to broaden its bandwidth. A normal 6-18 megacycle valve type aerial coil connected back to front would be ideal in this position. L5 is the low impedance aerial input coil. If high impedance output is desired, an r.f. choke in place of the 8 megacycle coil would be okay.

The unit is ready to try out, first making sure that the wiring is all correct. Apply power and connect to a receiver. Adjust the oscillator for maximum output by using your g.d.o. as an absorption wavemeter; this will also ensure that the oscillator is on the correct frequency.

Check and adjust the plate to cathode voltage of the oscillator so that it does not exceed 100 volts or oscillator drift will most likely be evident due to heating of the crystal. Increasing the

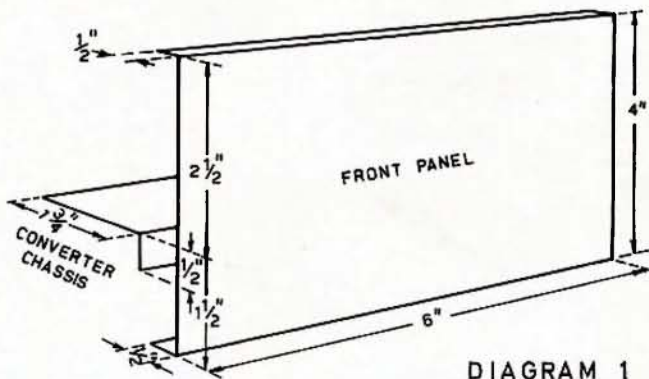


DIAGRAM 1

Now to a more detailed description of the converter starting with the metal work. The converter is quite small, being built into a 6" x 4" x 2" chassis which is in fact the converter case. A 6" x 5" sheet of aluminium or galvanised iron sheet has two right angle lips each of approximately 1/2" made along the 6" sides, so making a cover which will fit over the open side of the 6" x 4" chassis.

A small chassis is made out of sheet aluminium or sheet galvanised iron, measuring 2 1/2" x 5 3/4". Along one of the 5 3/4" edges a 1/2" right angle lip is made so that the small chassis can be bolted to the 6" x 4" chassis cover. The small chassis (on which the actual converter is built) is attached to the cover so that there is a 2 1/2" clearance on one side to allow for the height of the 6EH7 valve, see the diagrams for more details. This is the chassis made up now to the placement of major components.

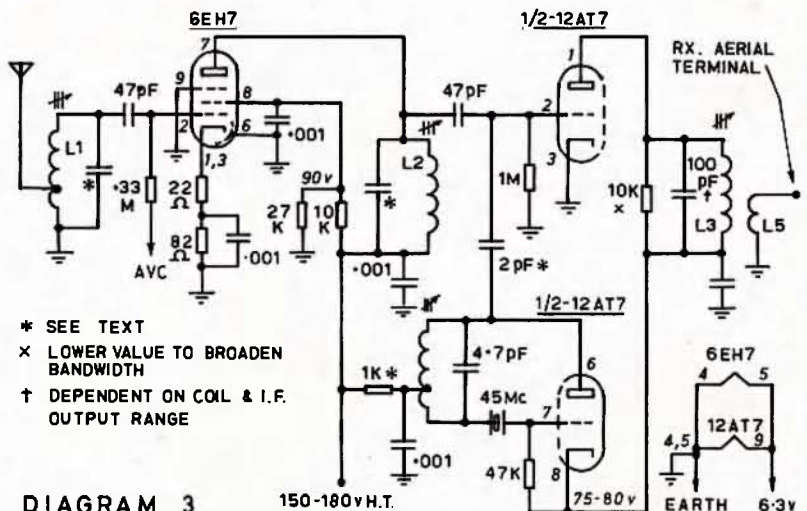


DIAGRAM 3

150-180V.H.T.

75-80V

EARTH 6-3V

* SEE TEXT

× LOWER VALUE TO BROADEN BANDWIDTH

† DEPENDENT ON COIL & I.F. OUTPUT RANGE

* 24 O'Dowds Rd., Warragul, Vic., 3820.

THE "REED RHOMBUS" — A LOW ANGLE ANTENNA

1,000 ohm resistor will give the desired result. A v.h.f. type crystal is used in this circuit and does not require much feedback to maintain oscillation. The amount of feedback is controlled by the position of the tap on L4.

Now check that the screen voltage on the 6EH7 is not higher than 90 volts; adjust if necessary.

With the oscillator going on 45 megacycles, inject a signal on about 53 megacycles or at your favourite centre frequency, at a millivolt or so, even as high as a 100 millivolts may be necessary if the coils are way off tune. Tune the i.f. receiver until the signal is picked up, then reduce the signal input level to a weak but useable level, or to a level of say S3 or 4 on the S meter. Now peak L1, L2, L3 for maximum signal output, or maximum S meter reading, reducing the signal level input to keep the S meter reading below S9.

Now alter the oscillator coupling capacitor for optimum injection for best signal-to-noise ratio on a weak signal. To get the best out of the converter, the tap on coil L1 is adjusted with the normal aerial in use, listening to a weak but steady signal and adjusting for best signal-to-noise ratio. Usually a tapping about 1 turn from the earthy end is fairly right.

If a.v.c. is not required, earth the bottom end of the 0.33 megohm grid resistor on the 6EH7. When using a.v.c. limit the control voltage to -20 volts, and the use of delayed a.v.c. to the 6EH7 is desirable for weak signal reception.

COIL DATA

L1—10 turns $\frac{5}{8}$ " long, wound on 5/16" slug-tuned former, tapped at about 1 turn from the earth end.

L2—9 turns $\frac{5}{8}$ " long, wound on 5/16" slug-tuned former.

L3—Tuned to resonate at appropriate i.f. frequency with about 10 turns insulated wire overwound on it to form L5. See text.

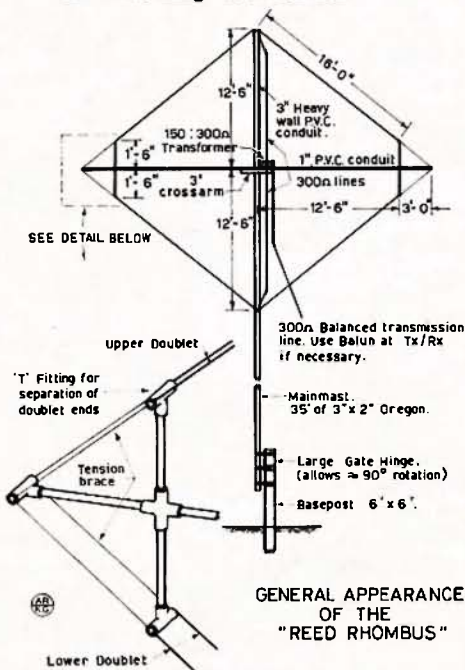
L4—12 turns $\frac{3}{4}$ " long, wound on 5/16" slug-tuned former, tapped at the 2nd or 3rd turn from the grid end of the winding. Tap position optimum which gives stable output with minimum feedback.

All coils with the exception of L3 and L5 are wound with 20 to 22 B. & S. bare tinned or enamelled copper wire.

That is all there is to the converter, a simple high performance unit which is quite stable and easy to get going and one that should give good performance for quite a long time. If anyone has queries on this converter I will do my best to answer them if a s.a.e. is enclosed with the queries.

Good luck and good listening on 6!

Named from the quadrilateral or rhombus formation of doublets, it consists of two 14 Mc. folded doublets in parallel formed in two "V" formations as shown in the diagram. 3" and 1" P.V.C. heavy wall electrical conduit, together with appropriate "T" fittings, is used to support the doublets. The horizontal arms are cross braced for rigidity. 21 and 28 Mc. doublets may be wound spider web fashion inside and parallel connected to the same ferrite matching transformer.



GENERAL APPEARANCE OF THE "REED RHOMBUS"

Being of dipole form, no earth radials are required in the system. The antenna gives a figure 8 radiation pattern with lobes of approx. 45°. This, together with a 90° swing supplied by a large gate hinge on the base post, allows 360° coverage.

The use of a reflector is not worth the mechanical complication involved as even with 100% reflection there will only be a 3 db. signal gain which is negligible. A greater height, which would be more effective in lowering the radiation angle for DX, is negated by the extra weight necessary to produce this height.

The 300 ohm balanced transmission line could be replaced with either 90

ohm Telcon K18M balanced line or 75 ohm co-axial cable with appropriate matching transformer on cross arm.

The VK2JR ferrite core transformer is housed in a P.V.C. "T" wiring housing (Clipsal 1 1/2" type) which will allow various methods of feeding and mounting. See diagrams. Output windings are wound to suit impedance of radiator type. 75 and 25 ohm for three-band multi wire doublets of 80-40-20 metres. Power rating, 250 watts A3 from 3 to 30 Mc.

—J. G. Reed, VK2JR.

COMPONENTS AND EQUIPMENT CATALOGUE

Featured inside the pages of this October issue of "A.R." is the new 1968-69 component and equipment catalogue produced by Melbourne electronic spares wholesalers, Radio Parts Pty. Ltd. Available on subscription, the catalogue is spiral bound in a handsome cover containing 370 pages showing retail and trade prices, and is profusely illustrated with many new products.

For many years Radio Parts' catalogue has been widely accepted throughout the electronic industry as an authoritative reference book and guide to components currently available in Australia and it should find ready recognition by Amateurs everywhere.

PROVISIONAL SUNSPOT NUMBERS FOR JULY 1968

Dependent on observations at Zurich Observatory and its stations in Locarno and Arosa.

Day	R	Day	R
1	55	16	149
2	37	17	117
3	30	18	96
4	26	19	102
5	28	20	93
6	41	21	93
7	54	22	86
8	89	23	93
9	91	24	101
10	99	25	120
11	124	26	134
12	152	27	131
13	151	28	118
14	147	29	129
15	123	30	115
		31	93

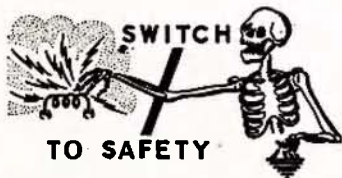
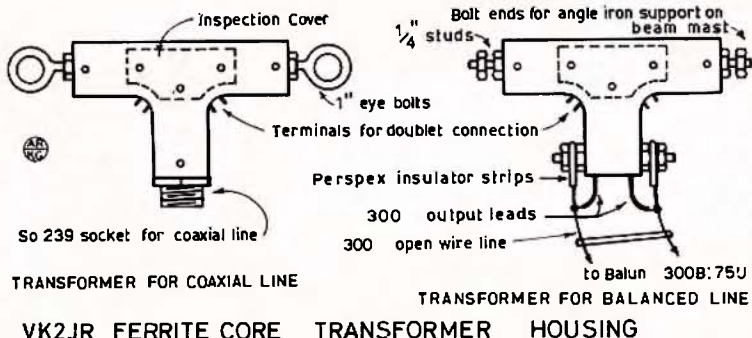
Mean equals 97.3.

Smoothed Mean for January, 1968: 102.2.

Predictions of the Smoothed Monthly Sunspot Numbers

August	109	November	104
September	108	December	102
October	106	January	100

—Swiss Federal Observatory, Zurich.





Changes for Mobile Radiotelephone Services

Licensees of V.H.F. land and harbour mobile radiotelephone services, now operating in 30 kc/s channelling areas, are advised that if they have not already installed equipment which meets the Australian Post Office 30 kc/s channelling specification, they must do so before 30 June, 1969.

This requirement has been brought about by the growing demand for V.H.F. mobile radiotelephone services in city areas which is taxing the existing channels available. The change to 30 kc/s channelling will enable more radiotelephone services to be brought into operation as they are required.

However, some changes to existing equipment will be necessary and the following programme for conversion, which is designed to cause the least inconvenience to all concerned, has been adopted:—

As from 30 June, 1969, licensees of V.H.F. mobile radiotelephone services operating in 30 kc/s channelling areas within the frequency bands 70-85 Mc/s and 156-174 Mc/s* will be required to make necessary changes so that:—

- (i) All base station transmitter/receivers (both amplitude and angle modulated) employed in a base station installation shall be of a type complying with the relative Post Office specification and approved for 30 kc/s operation and shall be operated in accordance with the terms of that specification.
- (ii) All angle modulated mobile transmitters shall be adjusted to function with a maximum deviation of ± 5 kc/s.

*This excludes the International Maritime Mobile V.H.F. Radiotelephone and the existing Australian Post Office Subscriber Services.

Early conversion will assist manufacturers in meeting delivery dates for equipment.

**FURTHER DETAILS MAY BE OBTAINED FROM THE SUPERINTENDENT,
RADIO BRANCH, G.P.O., IN YOUR CAPITAL CITY.**

AUSTRALIAN POST OFFICE

Antennas and Animals

I was very complacent about my knowledge of cows until I put up a couple of 80 metre Rhombics over their heads. Not that the actual erection worried them, it was just the inherent streak of perversity that makes cows appear in places where they know you don't want them to be.

These antennas were strung from a hill about 300 feet high and about 2,000 feet distant. The real trouble came later in the life of the Rhombics. A sapling mast snapped off at the top, letting the wire down. Fifty cows noticed it and, after due investigation, camped right there.

When I came along later I cautiously lowered the pole, re-attached the wire, then, waiting till no cows were over the wire, I pushed the pole up. One cow had her head over the wire as it came up, but I naturally expected her to back off. No such luck. The harder I pushed and grunted, the more she enjoyed the tickling of the wire on her throat. If that wire had carried my voice vibrations it would have raised blisters on her. Now this particular herd is allergic to Rhombics, due to a slight misunderstanding on a former occasion. At that time I put fifty cows over a 2,000 ft. length of wire that dangled a foot or so off the ground.

All went well as the leaders stepped over it, but others went under at the same time. The wire was dragged forward and tighter as some tried to jump it as others went under. It vibrated like a violin string. I had two separate 20 ft. poles at one end, only one of them attached to this wire. This pole swung out and back, clouting the stationary pole in time with the more violent vibrations. I could see those big and little waves travelling right to the top of the hill.

Now my blue cattle dog knows only one cure for all exciting events and he diligently applied his cure to all lagging heels. With bitten cows and also cows caught up in the wire all voicing their fears, I felt compelled myself to add to the din so I lifted up my voice and told all the neighbours just what I was going to do to that dog when I caught him. During this period, I was the owner of a very astonished dog. He was unlucky enough to have hold of the last juicy leg that went over the wire at its tightest time.

He had bitten many a cow through a wire fence, but this was the first time that he had been kicked by the wire itself. When Mother Earth stopped revolving round him, he just flattened out and watched that wire as it went up. When it started to come down again, you could have driven over him without feeling the bump. He knew what hit him.

Silence now descended on our little valley, broken only by my melodious voice and then that of Bluey as he started to repent. When it comes to pain for others, Bluey is all for it, but when his turn comes around he is the least brave of all dogs. He turns his

tummy up and waves his paws around most pathetically. He apologetically puts out a 400 cycle note rich in harmonics at about strength 5 and hopes for no heterodynes and that I will not beat with him. When his worst fears are confirmed, he can register up to nine S points in the next valley and even higher values on the db. scales in this one.

But to return to my present predicament. I had that pole half up with a cow stuck over the wire. I couldn't lower it as some cows had since wandered under it and I did not want any more circuses. I remembered then that cows feeding through fences always extricated their heads before "taking off" no matter what the urgency was. I confidently whistled for Bluey. Bluey, in the interests of peace, and also very much against his will, was sitting up well back. I had forgotten that this was his favourite cow. He always looked on my whistle as a clear mandate to bite her. This he promptly did.

The wire and the post, together with both the cow and myself, all vibrated in unison at this sudden onslaught. The cow and myself also put out a very fine well modulated signal at about strength 9. Bluey, when he heard mine, left at high speed. I do not wish to brag but I am confident he was still copying me 5 and 9 right up to when he reached his hidey-hole under the tank stand a quarter of a mile away.

The cow got free of the wire and I hung on to that bucking post long enough to get it up as the rest of the cows raced under it. You would think that after all that trouble things would settle down, but that is not my form. In the excitement, the bolt necessary to go into the top of the fence post fell out of my pocket several yards away. The pole was still balanced on its bottom bolt so I tried to tie it temporarily with my belt to the top of the fence post, but had no luck. After some thought, I realised that it was just a matter of nicely balancing that pole on its bottom bolt while I made a dive for the bolt. (Seals do these stunts quite easily.) I found that, at my age, it was most difficult to run fast, keeping one eye on the top of a vertical 20 ft. pole, and the other on a bolt lying on the ground. After some exciting adventures along these lines I gave that up too.

After some thought I tried yelling for the XYL to come and pick it up. That failed too, but at least it brought Bluey back, waving an apologetic tail. The sun was hot and that pole wouldn't stay still, so I again addressed some pithy remarks to Bluey. He hurried off. When it was too late I realised that if my XYL had been following Bluey to aid me then she would now probably get into his hidey-hole first.

I was reduced to watching the little black ants. These in their hundreds were evidently having races up and down the pole, but I noticed that, as

they ran over my hands, each paused just long enough to dig out a couple of choice morsels for sustenance on their way. I got tired of holding up that pole after a while so I lowered it, retrieved my bolt and then re-erected it. I was disgusted to think that I could have lowered it any time after the last cow had gone under the wire.

Another episode had me more worried. I had tied the end of a nylon cord to a post and run out about a hundred yards along the grass. I dropped my end temporarily and it disappeared. I saw then that an old jersey cow was standing about the middle of it blissfully lapping it up at about a foot at each lick. I didn't know whether to sneak round her and untie the end off the post or grab my end. When I did get hold of my end, I still did not know whether to worry over the possibility of her getting a half hitch round some of her internal works or to worry over possible teeth marks in the middle of my new cord. Actually she just opened her mouth and let me have it all back, about 30 ft. of it.

People would think that after dealing with cows other creatures would just be a walk-over for me; but if ever I am driven to tranquilisers it will be by chooks. Quite recently I was erecting a quite ordinary multiband at the Radio Shack under circumstances where nothing abnormal could possibly happen. I had the aerial rigged up between its poles and then I wanted one pole to come down. In my usual manner I removed the top bolt and let the pole fall in the desired direction. I always leave enough slack for this.

On this occasion I forgot that I had already taken up the slack at the other end and tied the wire to the far end of the chicken coop. The falling pole tightened the wire and gently turned the coop on to its back, one end raised and balancing the fallen pole at my end. This mishap caused me little concern until trouble suddenly erupted. My XYL had poked a stick through the wire-netting sides for a perch and four captive hens were sitting on it. Now they were on their backs. But not for long. Although in their new position there was nothing between them and the sky, those silly chooks flew at the side netting in heaps, clawing and flapping with much background music.

When they finally fell over the side, I noticed with surprise that, although under great emotional stress their sense of direction was unimpaired. Chooks differ from cows in another respect too. When they fall down in exciting times they don't waste time getting up before they start to run. This mishap must have been a great event in their lives. Although back on their two legs and with most of their feathers left, they still spent the next quarter of an hour trying to tell the world about it.

—VK4AT, A. J. C. Thompson.

INTRUDER WATCH

DAVID WARDLAW, VK3ADW
Federal Intruder Watch Co-ordinator

Over the years, crowding on the high frequency spectrum has become acute. One result of this is that many stations now operate on frequencies other than those allocated to their particular service. Any Amateur who operates on the 7 Mc. bands is only too well aware of this fact. More recently it has become apparent that there has been increased intrusion into the 14 and 21 Mc. Amateur bands by unauthorised stations. In the case of the 7 Mc. band, a large number of the intruding stations appear to be in countries which are not members of the I.T.U. and are, therefore, not bound by the frequency allocations as determined at the Conferences.

It should also be remembered that certain Amateur bands are shared with other services, e.g. in the 1800/1860 Kc. band and the 7100/7150 Kc. band. In addition, certain member countries of the I.T.U. have added footnotes to the frequency allocations, e.g. Soviet fixed stations can operate in the band 14250/14650 Kc.

It has become apparent around the world that unless the Amateurs register official complaints about these intruding stations, when frequency allocations are next reviewed the intruding stations will have a strong case to put

to their administrations, based on the contention that their use of these frequencies resulted in no complaints, and that therefore they should be officially allocated the frequency in question.

Therefore, several years ago in Britain and the U.S.A. an Intruder Watch system was introduced, and now a similar system has been established by the W.I.A., Australia. It is interesting to note that one of the points of great interest to the visiting delegates at the Region III. Conference held in Sydney at Easter this year was the establishment of Intruder Watch in Australia.

At the Federal Convention, each Federal Councillor was given details of the operation of Intruder Watch, together with some report forms. By now Intruder Watch Co-ordinators have been appointed in most, but not all, the Divisions. The names and addresses of the State Co-ordinators will now appear each month in "Amateur Radio".

For a report to be useful, it must be accurate as to time and frequency. It is impossible to lodge a complaint based on vague reports, which if examined, would only show the Amateur in a bad light with the Administration. In order to correlate reports from different parts of the Commonwealth, it is necessary to be able to demonstrate that each report refers to the same station. None the less, all Amateurs should be able to make observations of the required accuracy, so long as they exercise a

little care. In the case of special modes, it is hoped to distribute to each Division tape recordings of the different types (radio teletype, facsimile, etc.) to enable watchers to become familiar with these transmissions even though they do not possess specialised types of receiving equipment. Those who have experience of these special forms of transmission will be very welcome as Intruder Watchers. Intruder Watching is one tangible way that all Amateurs can contribute towards the preservation of their bands.

☆

JAMBOREE ON THE AIR

The 11th Jamboree on the Air will take place over the week-end of 19th and 20th October, 1968. Starting time will be 0001 hours G.M.T. on Saturday, 19th, and the event will conclude at 2359 hours G.M.T. on Sunday, 20th October.

As a result of its recent move to Switzerland, the World Bureau will not be able to operate its own station this year. However, the International Amateur Radio Club in Switzerland has very kindly offered their own station 4UIITU, well known to all Amateurs as the station of the International Telecommunications Union. It will be in operation for the full 48 hours of the event with, it is hoped, a team of Scout operators drawn from neighbouring countries.

4UIITU will operate on or near the following frequencies:

- 80 metre band: c.w. 3515 Kc.
- 40 metre band: c.w. 7015 Kc., s.s.b. 7070 Kc. (Note 3).
- 20 metre band: c.w. 14070 Kc., s.s.b. 14,185 and 14,290 Kc.
- 15 metre band: c.w. 21,070 Kc., s.s.b. 21,290 Kc.
- 10 metre band: c.w. 28,070 Kc., s.s.b. 28,700 Kc.

- Notes:
1. The bands used will depend on prevailing conditions.
 2. The station(s) will operate within 5 Kc. of these frequencies so far as conditions permit.
 3. The station(s) will listen from time to time, as announced, for calls on higher frequencies.

It is expected that there will be several other special stations taking part, among them being GB3BSI at Brownsea Island, ZS6JAM at Mafeking, AP2NMK in Pakistan, and, for the first time ever, an "Aeronautical Mobile" station operated by an Air Scout Troop in South Africa. Other stations to look out for are K2BFW, H.Q. of the Boy Scouts of America, DU1BSP in the Philippines, GB3BPH in London, XE-1ASM in Mexico, etc.

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SILENT KEY

It is with deep regret that we record the passing of the following Amateurs:

VK2AOG—Trevor Gabriel
VK3XO—Lee Paul

Recent Additions to Our Library

AMATEUR RADIO CIRCUITS BOOK

The second edition of this ever popular book, published by the R.S.G.B., has now arrived in Australia and should be available from your local W.I.A. Division.

In preparation of the second edition of this collection of circuits pertaining to Amateur Radio, a considerable number of new circuits has been reviewed and a number of those in the first edition replaced. The circuits cover a wide variety of applications in radio equipment. They are mainly in the form of single stage diagrams accompanied by typical component values, but in a few cases some additional information has been included where this extra data is essential. Several complete circuits are included where elaboration is desirable for clarity.

As far as possible, valve and semiconductor alternatives are provided, and in a few cases constructional data has also been included.

V.H.F. HAM RADIO HANDBOOK

Edward G. MacKinnon

Here is a brand new book that reveals the many v.h.f.-u.h.f. techniques in practice today, to escape the crowded lower frequency bands.

Written for the Amateur who takes pride in contributing to the advancement of the art, the content begins by explaining the differences between v.h.f. and lower frequency gear (such as vacuum tube limitations, lead inductance, wavelength factor, etc.). An entire chapter is devoted to propagation phenomena, including tropospheric propagation, effect of the aurora, sporadic E layer skip, and 6 metre moon-bounce communications.

Transmitting equipment for 6 and 2 metres, a 432 Mc. tripler, and several modulators are described in another chapter. The chapter on antennae covers several systems for 6 metres, including a cylindrical parabola and a base-loaded whip. For those readers who want to use existing equipment, detailed instructions show how to modify the Hi-Bander, Gonset II., Heath Seneca and Heath Sixer are included.

The final section contains 25 additional projects—some for the less experienced operator and others for the more knowledgeable one. Included are circuits for medium and low power transmitters, receivers, pre-amps., filters, r.f. amplifiers, a field strength meter, noise generator, and oscillators for 50, 144, 220, 432 and 1296 Mc. Truly a book every Amateur will want to own.

Published by Tab Books, May 1968, this is No. 460 in their series. Price: \$US6.95 hard-bound, \$US3.95 paper. 176 pages, over 100 illustrations. Our copy direct from the publishers.

ELECTRONIC HOBBYIST'S IC PROJECT HANDBOOK

Bob Brown and Tom Kneitel

A brand new book containing 50 integrated circuit projects for hobbyists, experimenters, technicians, hams, audio-philes—even professional designers!

Here's how electronics enthusiasts can become familiar with those fascin-

ating components—integrated circuits—and have fun building some useful devices at the same time. In all, this new book describes 50 different projects, all based on using popular inexpensive IC's.

Some of the devices—such as the 1 watt phono amp. and IC power supply—can be built in an evening. More sophisticated projects—like the electronic organ or the R.I.A.A. equalisation pre-amp.—offer a greater challenge. The book also shows how to build practical devices like the tachometer with bulb alert, or the 50-watt amplifier, or some "just for fun" gadgets like the simple memory tester or the miniature adding machine.

Amateur projects include a wide variety of transmitters, receivers, code keyers, mike pre-amps., etc. Technicians can make good use of such items as the IC tester, square-wave generator, and color t.v. convergence generator.

This is the first book of its kind—anywhere—and the projects are among the most fascinating ever published. If the reader's interests are strictly professional, the final section contains schematic diagrams for 32 of the most popular integrated circuits currently available.

Published by Tab Books, June 1968, this is No. 464 in their series. Price: \$US6.95 hard-bound, \$US3.95 paper. 160 pages, 100 illustrations. Our copy direct from the publishers.

VICTORIAN 160 METRE CONTEST

We have been asked by the VK3 Division to clarify the matter of bonus points applicable to this contest.

The bonus of 20 points does NOT apply to each contact made from a National Park, but may be claimed for EACH National Park from which contact is made.

★

CONTEST CALENDAR

Until 31st December: Concurso Mexico 1968. (L.M.R.E.)
 5th/6th October: VK/ZL Oceania DX Contest. Phone Section (N.Z.A.R.T.)
 12th/13th October: VK/ZL Oceania DX Contest. C.W. Section (N.Z.A.R.T.)
 12th/13th October: 28 Mc. Phone Contest (R.S.G.B.)
 26th/27th October: "CQ" W.W. DX Contest. Phone Section.
 28th/27th October: 7 Mc. C.W. Contest (R.S.G.B.)
 9th/10th November: 7 Mc. Phone Contest (R.S.G.B.)
 23rd/24th November: "CQ" W.W. DX Contest. C.W. Section.
 7th Dec., 1968, to 12th Jan., 1969: Ross R. Hull V.H.F. Contest (W.I.A.)
 1st/2nd Feb., 1969: John Moyle Memorial National Field Day (W.I.A.)
 —D. H. Rankin, F.E.

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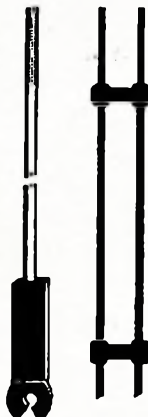
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★ “CO” MAGAZINE—One year’s subscription	\$5.70
★ “CQ” MAGAZINE—Three years’ subscription	\$13.50
★ “73” MAGAZINE—One year’s subscription	\$5.50
★ “73” MAGAZINE—Three years’ subscription (very good buy)	\$11.50
★ “HAM RADIO” MAGAZINE—A new American magazine put out by Jim Fisk, W1DTY (ex “73”), yearly	\$4.50

Send remittance to Federal Executive, C/o. P.O. Box 36, East Melbourne, Vic., 3002

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A.R.R.L., R.S.G.B., “CQ” and “73” publications also available as hereunder
(Remittances and orders to be sent to Divisional Secretaries for bulk handling)

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The Ham’s Interpreter	\$1.60
The Amateur Radio DX Handbook	\$4.00

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WORKED ALL VK CALL AREAS (W.A.V.K.C.A.) AWARD

OBJECTS

- This Award, to be known as the W.A.V.K.C.A. Award, is offered by the Wireless Institute of Australia as tangible evidence of the proficiency of overseas Amateurs in making contacts with the various call areas of the Commonwealth of Australia.
- The Award may be claimed by any Amateur in the world who is a member of an affiliated Society of the I.A.R.U., but no Australian Amateur will be eligible.

REQUIREMENTS

- A handsome Certificate will be awarded to any applicant who makes contacts with Australian Amateur Stations in the areas shown in the attached Appendix. The number of contacts required in each area is also shown.

OPERATION

- Contacts between overseas stations and Australian stations must have been made on or after the 1st January, 1946.
- Contacts may be made using any authorised frequency band or type of emission permitted to Australian Amateurs, but cross band contacts will not be allowed.
- No contacts made with ship or aircraft stations in Australian territories will be eligible, but land-mobile or portable stations may be contacted provided the location at the time of contact is shown on the confirmation.

VERIFICATIONS

- The applicant must submit documentary written evidence, confirming that two-way proof, in the form of QSL cards or other contacts have taken place. Such verifications must show the date and time of contact, type of emission and frequency used, signal reports and location (in the case of portable or land-mobile operation) of the stations contacted.

- Verifications must be submitted exactly as received, and forged or altered evidence may result in the disqualification of the station concerned.
- A list, in accordance with the details required in Rule 4.1, must be submitted with the application for the Award.

APPLICATIONS

- All claims for the W.A.V.K.C.A. Award must be made by the submission of the confirmations (Rule 2.1), together with the list (Rule 4.3), direct to "Awards Manager," Box 2611W, G.P.O., Melbourne, 3001, Victoria, Australia. Sufficient International Reply Coupons must be enclosed to cover return postage of the confirmations to the applicant.
- Where a reciprocal agreement exists between the W.I.A. and the applicant's Society, the appointed officer of that Society will carry out the check, and if correct, will forward a written application for the Award on behalf of the applicant, together with the list (Rule 4.3).

- Applications will be examined by the Awards Manager, who will arrange for the Award to be forwarded either direct or through the applicant's Society. The Awards Manager's decision on the application and interpretation of these Rules will be final and binding.
- Notwithstanding anything in the Rules to the contrary, the Federal Council of the W.I.A. reserves the right to amend these Rules as necessary.

APPENDIX

Territory	Call Area	QSL Required
Australian Antarctica		
Heard Island	VK0	1
Macquarie Island		
Australian Capital Territory		
Lord Howe Island	VK2	3
State of New South Wales		
State of Victoria	VK3	3
State of Queensland		
Thursday Island	VK4	3
Willis Island		
State of South Australia	VK5	3
State of Western Australia		
Flinders Island	VK7	3
King Island		
State of Tasmania		
Northern Territory	VK8	1
Admiralty Islands		
Bougainville Island	VK9	1
Christmas Island		
Cocos Islands		
Nauru		
New Guinea		
New Ireland		
Norfolk Island		
Papua Territory		

Note.—In Areas above, where more than one confirmation is required, contacts may be made with any or all of the Territories listed in brackets.

W.A.V.K.C.A. AWARD

The following Amateurs have received this Award during the period 1/1/68 to 30/6/68.

Cert. No.	Call	Cert. No.	Call
318	ZS1DC	328	SM5YV
319	VE3EVU	329	VE3BAP
320	ZL1ASY	330	JA1JAN
321	OK1ADM	331	JA21VJ
322	OK1ADP	332	JA11IX
323	UJ8AB	333	W3PVS
324	UA0CA	334	SM5CZY
325	9M2NF	335	DJ2YL
326	JA2EDG	336	JA4KW
327	OK3JD		

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RADIO SOCIETY OF EAST AFRICA AWARDS

To come into line with the independent status of Kenya, Uganda and Tanzania, the R.S.E.A. have issued a new award for contacts made with these three countries since 1st January, 1966. Applications for the old award will be considered for as long as stocks last. The conditions for the new award are as follows:

- Two-way contacts c.w./a.m./s.s.b./mixed on any bands with a total of four stations in Kenya, Uganda and Tanzania including at least one contact in each of these three countries; or
- Two-way contacts c.w./a.m./s.s.b./mixed on any bands with a total of ten contacts in any two of the above countries, but including two contacts in one of these two countries.

QSLs are not required but applications should be certified by the national society or by two other Amateurs. Applications should be sent with 15 I.R.C.'s or 1 dollar to the Awards Manager, 524KL, C/o. R.S.E.A., Box 5681, Nairobi, Kenya.

The above award is in green, black and white and is very attractive, depicting East African game against a background of palm trees, thorn trees and hills.

W.I.A. 52 Mc. W.A.S.

Additional Members to 30/6/68

Cert. No.	Call	Additional Countries
79	VK5ZTN	-
80	VK5EF	-
81	VK2ASI	3
82	VK3OF	3



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TRANSMITTER
Frequency Range: 144-148 Mc AM
Power Input to Final: 22 to 26 Watts
RF Output Power: 10W 144-146 Mc
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 9W 144-146 Mc
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 FT-243

Crystal Type: FT-243
Crystal Frequency: 8-8.222 Mc

VFO Frequency: 8-8.222 Mc
Microphone Input: High Impedance w/Push to Talk
Frequency Response: -3 dB at 300 and 3,000 c/s
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AC Operation: 117/230V 60/50 c/s
 Receive Power Drain 106 VA
 Transmit Power Drain 146 VA

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TOM M. B. ELLIOTT, VK4CM

V.H.F. NOTES

Dates worth noting in the v.h.f. field:—
October 12 and 13: V.h.f. Group Convention at Bendigo.
October 19 and 20: Jamboree on the Air.
October 27: First v.h.f. field day for season.
November 17: V.h.f. field day.
December 15: V.h.f. field day.
January 19: V.h.f. field day.
March 18: V.h.f. field day.

There is no separate v.h.f. field day in February, but it is hoped to arrange a field day over the New Year week-end.

News from the other States is still noticeable by its absence. What is going on, have all the v.h.f. stations gone on the blink, or is everybody building new gear for the coming season? News of activities, club and otherwise, field days and conventions is always welcomed.

The Auckland V.h.f. Group Inc. is trying to arrange schedules with VK Amateurs this coming summer. The frequencies they are most interested in are 144 and 432 Mc. If you are willing to assist them, please send them the following details: call sign, location, power, frequency and antennae system.
—73, Cyril VK3ZCK.

VICTORIA

2 Metres: Talk heard around the band indicates a swing to the use of v.f.o.'s and s.s.b. amongst some of the locals.

Gil VK3ZGS has a s.s.b. exciter sitting ready for use while Ken VK3ZJN is working on a unit and is well on the way to coming up with a few watts. Cyril VK3ZCK has a filter rig built for 20 metres which he hopes to place on either 6 or 2 metres soon.

Some of those operating s.s.b. on two metres are VKs 3BW, 3BQ, 3CP, 3ASG, 3AHL, 3ZER, 3RV, 3ZLT and 3ZPX. Quite an impressive list isn't it and it's not complete.

Using a.m. or s.s.b. the use of stable(?) v.f.o.'s is increasing and operation is beginning to show a trend to the type used on the h.f. bands where calling is done on a wanted station's frequency.

Readers are reminded of the V.h.f. Group's Convention to be held at Bendigo on 12th and 13th October. The location is 2½ miles out on the Spring Gully Road. Keep this week-end free to attend, it promises to be very interesting.

6 Metres: Readers of these notes in other States will remember that v.f.o. is a great drawback to operation within this band. Even though on Sunday mornings and late week nights, signals can be heard and contacts made.

VK3AOT has just finished a 150 watt n.b.f.m. rig with v.f.o. control, this being fed to five beside five stacked vertical beams, pokes out quite a signal.

Mac VK3RV is also regular on this band with a rig that runs a.m. (full plate and screen), narrow band f.m., and single sideband. The final runs about 20w p.e.p. and really gets out well.

Yours truly is running 400 watts p.e.p. out to a pair of 4-125As using upper sideband.

No reports have been received on DX, but we are all prepared and ready for a really good season.
—73, Robert VK3ZPX.

Tom must surely be one of the most interesting survivors of that almost extinct species known as the Radio Amateur Experimenter.

Not content with sharing in two honourable plaques (Sound and Television) in the City of Brisbane, he went even further afield and played an unobtrusive part in the flight of the Southern Cross across the Pacific in 1928.

It seems strange that such service to his fellow Amateurs and to Australia should be so soon forgotten.

But not by all!

He was recently made a Fellow of the Royal Historical Society of Queensland, and his records and log books safely stored for historical purposes at Newstead Park, Brisbane.

In our quaint way we always wait for people to die before giving them the honour that is their due.

Tom calls these plaques his epitaphs. The first one is situated in the entrance to the Queensland Insurance Building and reads: "Sound Broadcasting originated in Queensland from this building. Transmissions commenced 1920 and continued to 1923 under the auspices of Dr. V. McDowall. The installation was designed and operated by Thomas M. B. Elliott."

The second plaque is on the Old Observatory Tower (convict built) and reads: "An experimental television station was established in the Windmill in 1935 by Dr. Val McDowall and Thomas M. B. Elliott. The first actual television transmission in Australia was broadcast from this tower."

Speaking from memory, he said that the scanning disc was used in 1930, a mechanical drum in 1935 and electronically (200 Mc. and 180 lines) in 1938.

In many cases the valves were home constructed and the necessary chemical and coatings scrounged in devious ways.

His curious connection with the Southern Cross flight is little known.

It commenced with his radio contact with Messrs. Hines and Kaufman, makers of the radio installation on the Southern Cross prior to its departure.

They had installed a 50 watt transmitter on 33 metres with 1,000 volts supplied by a wind-driven generator.

Two-way contact was established at Fiji with the Southern Cross having navigational troubles. The radio operator (Warner) asked Tom to keep his key down on his 500 watt transmitter to provide a "beam". This they followed to about 100 miles off the coast when they lost it.

In 1958, Warner was brought to Australia by Qantas. He met Tom and signed his log book.

At present an attempt is being made to link these two up by Amateur Radio, but Warner is in and out of hospital in Oakland, California, and Tom has recently been admitted to a convalescent home, so there is little chance of success.

Tom had a stroke about five years ago and it affected both his speech and balance. He was able to operate a small 3 watt outfit that operated phone quite well up to a couple of hundred miles where the noise level was low.

At present his 5 watt transmitter and a windom aerial gives him quite a good signal and a wider range.

At the time of writing (7/7/68) he has not been on the air for several days. He is still on the Gold Coast, but now at The Golden Years Convalescent Home, Mermaid Beach, Qld.

—A. J. C. Thompson, VK4AT.



FEDERAL QSL BUREAU

Jack Smyser, W6BPO, who also owns the call sign VK2BPO, will be visiting Sydney again mid February, 1968. He will be accompanied by W4WS. Together and possibly with another VK2 they will activate Norfolk Island for a few days. Then they will proceed to VK9 Cocos-Keeling Islands where similar operation is planned.

Ray VK9LR, who has been active from the Mission Station, Goroka, for some time, is returning to the mainland in December.

Bruno Bossert, HB9QO, who is no stranger to VK, is migrating back here with his wife and child. Bruno, who expects to settle in Sydney, will reach that port on the Iberia about 15th December.

A reunion of present and past P.M.G. telegraphists was held in the Melbourne Town Hall in August. The function was most successful and attracted an attendance of almost 500. Amateur Radio was represented by Wally Matters, VK3MJ; Roy Perry, VK3OU; Alf Oxnam, VK3OU, and of course yours truly. Ex members of the Radio Branch present in their own right were Len Pearson, Frank Punch and Joe Keating. The previous function of this nature was held at the same location way back in 1919 to welcome home from active service all serving P.M.G. telegraphists.
—Ray Jones, VK3RJ, Manager.

QSL ?

All through life we carefully preserve documents showing that in the year so and so we were born, vaccinated, married, promoted, acclaimed, honoured, and finally retired. These are valuable to all of us.

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Not ALL Amateurs are interested in QSL cards, but those of us who take the trouble to send QSLs of our own accompanied by the necessary IR Coupons or stamps of the country worked and a self addressed envelope deserve a little consideration.

QSL cards make ME happy. Won't you help by sending me YOUR card? Thanks and may you be rewarded for your kindness and consideration.

—WSRU, Roy L. Alcistore, 5700 Canal Blvd., New Orleans, Louisiana, U.S.A.

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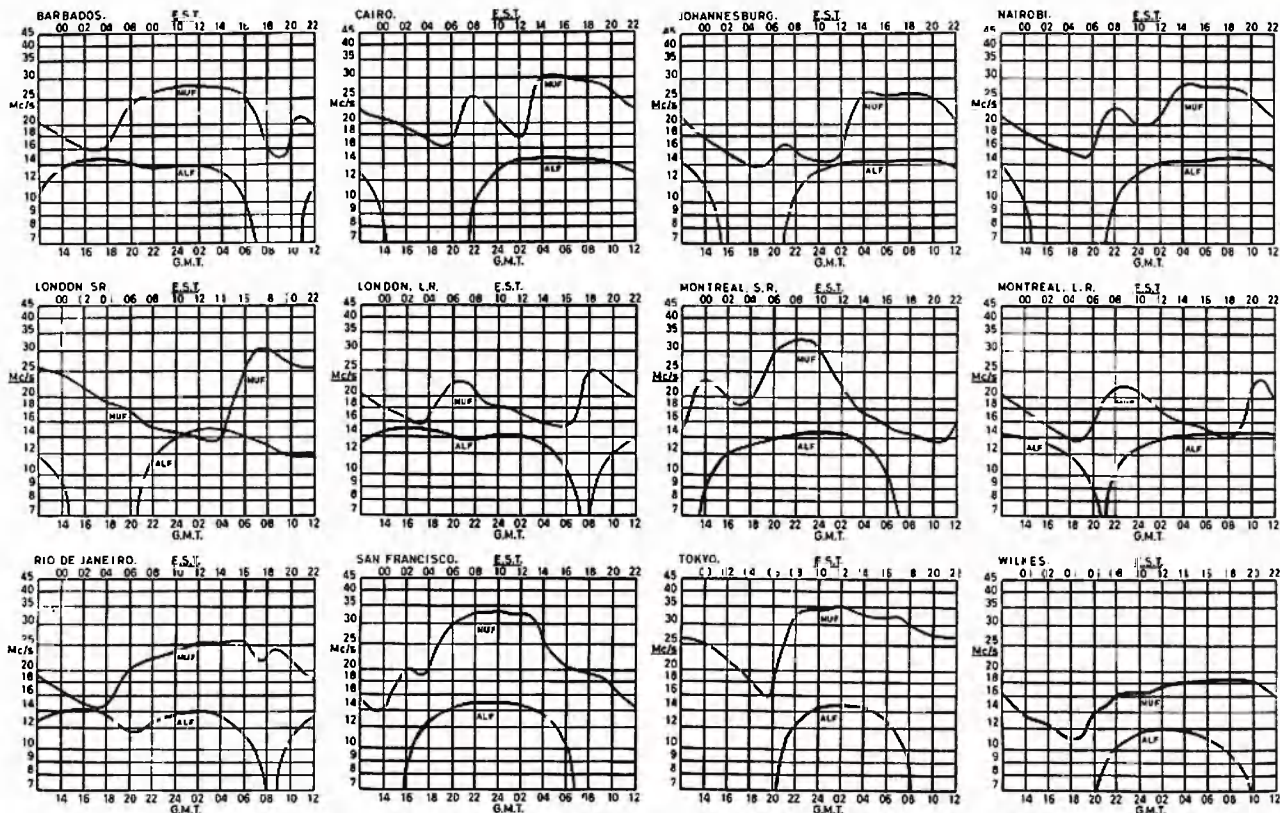
SATURDAY and SUNDAY,

12th and 13th OCTOBER, '68

Further particulars from Secretary, V.h.f. Group, P.O. Box 36, East Melbourne, Vic., 3002. Please mark envelopes "Convention".

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DX

Sub-Editor: PETER NESBIT, VK3APN
32 The Grange, East Malvern, Vic., 3145

BAND NEWS (all times in G.M.T.)

32 Mc.: Although 6 mx news is ordinarily restricted to the V.h.f. Notes, this item was so interesting that it is being included here:
W8GZ is on 2050 Kc. c.w., beaming towards VK with a rhombic. Beginning 1/9/68 for a period of two months, he is calling from 2200 until 2230z. He calls the first 2 1/2 minutes and listens during the second 2 1/2 minutes. He also maintains a check on 21415 Kc.

28 Mc.: With winter now past, conditions are improving with Ws and ZSs being worked. The main problem now seems to be lack of activity.

ZD3D operates on 28650 at 20z. QSL W9JVN. VP5CP from Turks/Calicos area, 28650 at 22-23z at week-ends.
VS6FX near the low end on c.w. at 09z.
KW8AX 28590 09z; also 28625 at 12z.
XK6ER active most days 28050 from 05 to 08z, also 11 to 13z.
EP2JP 28600 at 0945z.
LX1SK 28480 at 2047z.
ZP3AL reported on 28600 at 2020z.
7X0AH on 28040 at 1050z.
FOBBI activates 28570 at 2125z.
HCBFN 28650 at 2230z.
K86CN at 0035z on 28559.

21 Mc.: CR6GA and CR6JX on 21286 at 20z. ZD8GA 21253 at 22z.
ZD8Z (21030-2030z) says he may go to Cocos-Keeling for four to six months.
VP2DAJ 21260 at 215z, on a.m.
9K2z CC and CB reported on 21375 and 21365 around the 1930-2000z mark.
VSBME 16z on 21295.
LT8DL dislikes pile-ups. He prefers to speak French. Look for him around 21305 at 1130z, and if you QSL direct send it to B.P. 824, Bangui, Central African Republic.
TJ1AQ at 1120z on 21310.
TU2AZ at 1220z on 21228.
ET3REL, 21250 at 2105z.
9Q5PT 21082 at 2242z.
JT1CY, 21083 at 1830z.

For those who like to get up early, 6W8XX at 15-16z on 21038.
6O1GB gets them out early: 15z 21375. Also reported at 18z on 21330. QSL WIYRC.
VQ9L at 18z on 21305.
VP8JD at 20z, 21035.
BY1PK at 1630 on 21050, but are we allowed to work these chaps?
CR7IZ at 14z on 21029.
CT2AV, 0818z, on 21077.
FB8XX, 0918z around 21076.
9N1 "Mickey Mouse" at 1055 on 21228.
OD5LX 1318z on 21047.
SR8AD at 1530z on 21200.
ZD8GA and TJ1AL pile them up on 21280 around 16z.
4W1ADO from Yemen at 1530 on 21240.
6W8AL at 1845z on 21310.
LX2FB 1920z on 21050.
9X5PS 1945z on 21030.
From 20 to 21z there are 9Q5IA 322, OY5NS 397, YN2RAC 283, SV0WN 045, and at 23z SZ4LE 21043.

14 Mc.: PX1KT, Mike, 2245z on 14206. QSL via F3KT.
PX1UP 0035z 14225. QSL via HB9UP.
VU2IA at 0133 on 14030.
HB0AAI 0229z on 14220. QSL via HB9AAI.
FR7ZD 04z on 14197.
At 05z, JW2AP 235 and KJ6BZ 246.
VR4EL at 0545z, 1432z.
At 10z on 14240, both KA1MI (Marcus Isl.) and KA1IJ (Iwo Jima).
Bill 9M2CP at 1039 on 14204.
VP2LA "Alvin" at 1052 on 14225. QSL via VE3EUU.
PZ1BW 1056 on 14206.
HB0AJC 1114 on 14224. "Bruno" requests QSLs via HB9AJC.
K1EUP/KS6 operates between 14211 and 14231 around the hours of 11-12z.
VP2GW 1140z, 14188.
Between 11z and 13z there are HM9A 201 (operated during some sort of Korean national DX-pedition); VK9RL, Nauru, QSL via K6UJW; KC6JC 215, with QSLs via W2RDD; and VE7IR/YB1 187.
VS6AA "Maurine" at 1402z on 14222.
Between 20 and 21z: WX8AX 194, TU2AZ 196, LX1RC 190, 5T5AD 195 (name Alban), FC2CD 122.

9U5BB and ET3USA have been heard on 14195 and 165 respectively at 1845z.
ZD8CC populates the area around 14200 at 21z or so.
TJ1AS on 14004 c.w. at 2130z.
CE9AT on 14060 at 2130 to 2215z.
ZL2AFZ reports from New Zealand with the following:-

EV2A 030 1355.	VQ9B 083 2025.
6W8XX 005 2204.	7G1IX 014 1804.
7P8AR 045 1755.	FR7ZG 190 1820.
HB0AG 306 0715.	HCR9S 182 2315.
HK0BEO 135 2000.	JX4EJ 242 1944.
OY9IM 200 2147.	TJ1AP 125 2035.
TR8AG 133 2137.	YS10 177 0050.
ZD7DI 207 1615.	9L1KZ 130 1825.
CE0AE 225 0952.	4A1TQ 012 0400.

TA1AV 058 0810 (also heard 039 at 1805z).
VP8KF activates Falkland Isl. 14175 around 2045z, but skeds may be arranged through G3VVU. QSL goes via G3TWV.
(Thanks George—Peter.)

7 Mc.: Conditions continue to improve. There have been some good long path openings to the States from about 21z onwards. Europeans are beginning to respond to calls, and by the time this reaches you, they should be easily workable (try 20z).

Active stations include:
JW2BH working s.s.b. on 7070 at 22z.
CR6AI on 7011 at 2230z.
CR6CK heard here on 7020 at 2230z with a 589 signal, but faded almost right out a few minutes later.
KV4DB 7011 at 1035z.
VQ8CC on 7008 at 1350z with a good signal.
CM2DC and CM2KW on 7020 around 08-10z. QSLs via Box 6996, Havana, Cuba.
EI8BS worked at 0627z on 7018.
MP4BGU on about 7010 at 2110z.
UI8KAA on 7008 at 1305z—quite an early opening to this area.
ET3USA with a 599 signal on 7014 at 2255z, was audible until about 2340z.
VQ9JW/A—Aldabra. Will make skeds for 1645-1845z or so, preferably on odd dates because he is QRV for Ws on even dates.

3.5 Mc.: 80 mx is also improving as summer approaches, and Ws are workable every evening. There is still not very much activity in the mornings however.

JW2BH operates 3705 c.w. at 22z.
VQ9JW/A makes skeds for this band as well. ZK2AE and OA8V reported on 80 mx phone.

1.8 Mc.: ZL3GQ on 1883 listens for VKs around 1805 every Monday evening. Try 09-10z; his signals are quite good.

The Monday skeds with W4BGO and W9BGX continue. W4BGO on 1805 calls for 2 1/2 minutes and listens the next 2 1/2 minutes, beginning 1035 until 1055z. W9BGX then takes over with a similar calling procedure until 1115z.

VQ9JW/A!!

ASSORTED

If you recently worked a 4J0 or a 4L0, chances are you contacted the DX-pedition to Wrangal Island by UA3CS, UA3FT and UBSUN. UA1KEA operates from Antarctica; UA1KFT from Nova Zemla; and UA1KED from Franz Josef Land.
The HV1SJ using c.w. on 14 Mc. is branded a pirate by DL1DAA who, in a QSO with HV1SJ, was told that c.w. is never used.

The sunspots have now passed their peak and are now gradually declining. Latest numbers for this year are: June 114, July 110, August 109, Sept. 108, Oct. 107, Nov. 106, Dec. 105. Note that these are the predicted smoothed numbers, and the actual numbers may turn out to be above or below those expected.

KW8AX states he will be active for the next three years; he requests no breakers in the middle of a QSO, or he will start a "little black book".

SW1AT: As from 1st April, has been using SW1AR as his call sign.
PYCSP and PYDXX hope to activate some rare places some time in December.

VJ1DL/VJ8DL operates all bands.
AC3PT appears to be legitimate despite earlier anxieties.

The prefix for ZS8 has been changed to 7P8. VS9MB has not been able to operate 15 mx due to technical difficulties, and yet this call has appeared on 15 mx operated by "Harry". Hmmm.

Those who missed Lord Howe Isl. activity will get another chance when VK5XK arrives there during October. Operation will be on all bands.

WA9FZQ has been issued F0CV for operation the next year from Aix-en-Provence, France. He plans 10 and 15 mx s.s.b. operation to give as many as possible the new prefix. QSL direct with I.R.C. to Dan Weinstein, Year in France Program, 14, rue du Quatre, Septembre, 13 Aix-en-Provence, France.

VE7IR/YB1, operating from near Djakarta, says only YB0, 1, 2, 3 are licensed so far, but he expects other islands besides Java to come on soon as YB4, 5, etc.

YA5RG is said to be hungry for 3.5 and 7 Mc. contacts!

If you worked FB8YY between March 9 and December 13, 1967 (only) then send your card via F9MS.

A suspicious finger is pointed at PY0SOL (21005 1735z) and PY0FDN (14045 c.w. and 14105 s.s.b. 04z) by PY4BLR, NEDXA, and WGDXC.

UP0 stations are "North Pole Drifting Stations" (icebergs) and count as zone 40.

ACTIVITIES

Bruce VK3BM reports from Quambatook with the following news: 160 mx, hopes to be on again (s.s.b.) around late September. 80 mx, worked OA8V on 3685 at 1128z ("Gave me 5,8"!); 40 mx, regular contacts with G3AOO on 7084 at 0650z; 20 mx, wide open everywhere; 15 mx, 23-24W/V/E, G and Central/South America. G2YX often on with a good signal. Worked ZP5KN at 00z on 21316. 10 mx, beginning to open up after a winter spell. Ws, ZSs, etc., are workable but the trouble is lack of activity—not condx. (Thanks, Bruce, this sort of news is much appreciated.)

From VK5BS come a couple of interesting letters: "Latest 14 Mc. c.w. contacts include DJ9NX, F8CS, 11EVK, G3PFZ, DM2BUD, XE-1NRR, Box 349, Veracruz) and masses of Ws. Best QSLs include 5VZ8CM, HP1IE and FR7ZN. The QRP Contest was washed out by the AA Contest, but the following QRP QSOs were managed—WB2JYN, WSQWN, W4SK0I, WA1CBP, W2EMW, K7LMS, ZL1BDN, WA2VU, K7FJO, K3CQQ, and K7NHG. On 18th August I heard VK3APN calling W9BGX on 160 mx—darned if I could hear the W9, but about the same time I heard a WB6 about 5 Kc. up. Am still hearing a couple of ZLs on approx. 1977 working break-in c.w., but they don't identify very often. . . . Barry reports there are eight VK5s active on 160 as at 6/8/68. (Thanks Barry.)

George Allen, L6042, reports from Perth with the following: "Good ones on 14 Mc. c.w. lately are VY5AE, YN1MO/W4, WA8QIV/KL7, H5IEL, VE7IR/YB1, DL1SU/YB, WA2AOV/HL8, YS1AG, UH8DT, UJ8AH, HK1ABB, HL8QK and UJ8AG. Can hear quite a bit of phone activity on 1825 (VK3 net freq), but mostly too weak to read, and QSB is bad." (Many thanks, George, please send further reports.)

From Wud VK4MY: Worked on 20 mx s.s.b., 9GIGG 0750, LX2FB 0550, DM2BUD 0600, VE-8AJ 0710, 9G1DY 0630, VE0MZ 0700, 9L1KZ 0800. On 20 mx, c.w., VE4IM 0720, LZ2KKZ 0650, UY5UW 0715, TJ1AJ 0630, FG7TG 0655, VE8HH 0735, ZSSQU 0620, CR6DA 0650. Heard on 20 mx c.w. was 3A2MJC at 0730z. (Thanks, Dud, a nice list.)

Don L2022 reports the following: W5TLK/KL7 (Adak Isl.) at 0822z, LX2FB 0825z, DJ-5JK/CT3 (QSLs via DJ21W), UA2AB in Kallin-ring 1425z, ZL5AA every night at 08z, and LA6VL/MM with QSLs via LA2DD. Don helps out with details of the "Gateway to Africa" award, which are:

Issued by C.H.C. Chapter No. 3 in South Africa for hearing/working some of the following stations to make up 25 points. At least three call areas must be worked.

10 points for ZS1AB, 3AB.
5 points for ZS1ACD, 1CY, 2MH, 3AH, 50A, 50B, 6ACD, 6IW, 6YB.
3 points for ZS1NG, 1OU, 1RM, 2FA, 3D, 4IO, 4JB, 4MG, 5BP, 6ATA, 6IX, 6TD, 6BDD, 6BEJ.

Send list certified by two other Amateurs, plus S.A. 5/- to ZS1ACD, Box 1167, Capetown, South Africa. (Thanks, Don—Peter)

SUMMARY

Owing to space limitations, the usual list of QSL managers and addresses will be held over until next month. Truly the list grows day by day.

This column derives much of its information from overseas DX bulletins on an exchange basis. To keep these overseas reports coming in, it is necessary for me to regularly send lists of DX overseas. To assist in this regard, YOU could jot down details of any really good DX that you hear (time, frequency, QSL manager if given, and so on), and send it to the address at the top of the page. (You don't even have to work the station, just be 100 per cent. sure of the call sign.) Other information such as requests for skeds, etc., is welcome and will be sent overseas to the appropriate place. The deadline is at the end of each month, late reports being held over.

Acknowledgments to L1DXA, FLADXC, ZL-2AFZ, VK5BS, VK4MY, VK3BM, L2022, L6042. See your next month, 73, Peter VK3APN.

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

"S.W.R. INDICATORS—FACT OR FICTION"

Editor "A.R.," Dear Sir,

I have read with interest and appreciation the article of VK2JR, "S.W.R. Indicators—Fact or Fiction".

However, in my search for light in dark places, there are some points which are not clear to me, and on which the author might care to expand:—

(1) Has anyone who has gone beyond elementary electronics ever said that a travelling wave in a conductor, either incident or reflected, consists of a rush of electrons to and fro? If not, why labour the point?

(2) If reflected power is a somewhat mythical quantity, and if forward and reflected waves are somewhat of a mathematical fiction, what causes the instrument known as a V.S.W.R. Indicator, of either co-axial or open line type, to register?

(3) What is meant by "Electron flow in the metering and diode circuits is shown in solid lines for magnetic component and dotted lines for electrostatic component"? Is this meant to convey that electrons come under the influence of opposing forces from a magnetic field and from an electrostatic field simultaneously?

(4) A circuit of a V.S.W.R. Indicator is shown, and an explanation presented of a condition such that neither meter reads. I have used different manufacturers' versions of this type of co-axial V.S.W.R. Indicator, and have found that one meter (the "calibrate" meter) always reads. What explanation has the author for this condition?

(5) The author states that reflected power is mythical and imaginary; forward and reflected waves are a mathematical fiction; and standing waves are hypothetical. But he includes the statement that "the hypothetical standing waves and imagined reflected energy, still, mathematically speaking, bounce forth and back along the transmission line." How can these concepts be a mathematical fiction, and at the same time, mathematically speaking, bounce forth and back along the transmission line?

—J. C. Redman, VK2JE.

N.F.D. CONTEST

Editor "A.R.," Dear Sir,

Firstly, I wish to agree with Mr. Hunt's (VK5QX/P) opening remarks in August "Amateur Radio" with regard to the lack of space afforded to the results of the 1968 John Moyle Memorial N.F.D. Contest. Admittedly the Magazine Committee, in their wisdom(?) are trying to conserve space; but as this is one of the major contests on the VK Contest calendar, in conjunction with many other contestants, feel that the scant mention received in "Amateur Radio" is deplorable and lacking in foresight. It is, I feel, a very poor public relations attitude to the contestants and almost a direct insult to the contest committee. To see the amount of work they have put into tabulating the results and gathering the remarks of the contestants, brushed off with a half column of figures and no remarks must be very disheartening to them to say the least.

However, I feel that having made a good point, Mr. Hunt then tended to indicate that he had fallen by the way side.

Referring to Mr. Hunt's remarks on the A.R.R.L. Contest and the N.F.D. being on the same week-end being a mistake, I make several points, firstly it is good advertising for the Australian Amateur Radio and for the N.F.D. to advertise on a busy band and the A.R.R.L. Contest sure makes the band busy; secondly, the QRM on the band sure gets rough at times, but is this not what we go portable for, to test our gear in the field under the toughest conditions possible? Where is the test of our gear if we have a nice clear band with only five contacts per hour and no QRM, and thirdly rough conditions QRM, etc., separates the men from the boys and the operators from the maybes.

The aspect of having the N.F.D. on the same week-end as the A.R.R.L. Contest has, I feel, a lot to recommend it, for the main it gives us excellent practice in handling traffic under emergency conditions. Surely the matter of the numbers is a minor point, does it really matter, if, in the exchange of contacts we use numbers, place names or the height of the aerial, just provided that a contact has been established and can be confirmed, the essence of the contest is the speed of the operation,

the ability to change bands, aeriels, etc., without wasting time. Surely the waste of time trying to explain the difference in numbering system is overcome by accepting an accredited number from a station in the A.R.R.L. Contest and in return give the station the number next on your list. Thus numbers have been changed as required by the rules. So what's the difficulty?

Mr. Hunt's P.S. I feel was an afterthought, without much thought, for in 1967 there was no A.R.R.L. Contest and yet the scores indicated very little change from 1966. As has been said, maybe it was conditions, or maybe it was another factor that Mr. Hunt overlooked, a little thing called organisation. May I assure Mr. Hunt that the scores of 6400 in the 1968 effort and 3786 in 1967 was no accident (actually the 1967 score should have been better, but for the fact that we had to re-build one set of gear in the field). These scores were achieved by organisation to the last detail by a team who did not let up, and after each effort the faults were pointed and ironed out before the next effort. Beams were built and tested months before, gear was overhauled and tested under portable conditions, and when the day arrived it was only a case of set up and go, not fumble and try and make it work. So organisation is the operative word not the A.R.R.L. Contest, not the conditions, but organisation. Our group organised ourselves 7 bands, 5 beams, a good cook, good operators and a lot of fun. Mr. Hunt, the big jump in scores was because the organisation got better, not for any other reason.

Finally, may I assure the readers that we are well on the way with organising our 1969 Contest and we anticipate an even better score. One thing we would appreciate is a little more effort on the part of the publicity committee and a lot more stations on the air in the contest.

Come on chaps, get off the tail, organise yourself for next year, and make the John Moyle Memorial N.F.D. a memorial to a real pioneer in Amateur Radio, who never shirked when the going got rough; make it a major contest and lift it out of the wet fizzer it has been for the past few years.

Who among you will exert yourself enough to challenge the 6400 points put up last year? Don't kill, kindly it!

—S. E. Molen, VK2SG

(One of the group of VK2AAH/P)

The N.F.D. results were published exactly as received from the Contest Committee, the editorial red pencil never went near them.—Ed.]

R.D. CONTEST

Editor "A.R.," Dear Sir,

I take strong exception to David Rankin using his "Federal Comment" in "A.R." of August to snipe at the smaller Divisions. He should have remained objective in his remarks. He also should have checked the accuracy of his statements.

If David checks with the Federal Convention Minutes, 1968, he will discover that all States voted for the motion rescinding the 1967 rules, which after all were so full of holes that they looked like Mum's colander. These rules strongly favoured the larger States (all two of them) as long as everyone else remained honest. In 1967 any one of VK4, 5, 6 and, presumably, 7 could have wrested the victory from VK3 simply by submitting only their larger logs. However, better nature came to the top, they put Satan behind them, and VK3 won the Contest! Are these the rules the passing of which is mourned by David?

David's second last paragraph brought tears to my eyes, especially the bit about the larger Divisions (this time all three of them) losing interest in the Contest. I checked on the results in 1955—the 8th in the series. This is what I found:

VK2 (1,074 licences), 69 logs; VK3 (1,008 lic.), 81 logs; VK5 (370 lic.), 87 logs; VK4 (321 lic.), 46 logs; VK6 (189 lic.), 68 logs; VK7 (128 lic.), 52 logs. Note that VK5, the third largest Division won that year, and has won four times. Note also that VK2 could only rake up one more log than VK6; VK3 couldn't match the effort of VK5. Did VK2 or 3 deserve to win. They could have under 1967 rules.

Here then is the crux of the matter. We have discovered the secret of why the two largest Divisions cannot win the contest. It is lack of interest. They are not prepared to put any work into it. In VK6 (won it 8 times), we organise weeks before hand; we write letters to non members, we twist arms, we try to take care of those who have no gear themselves, we push it in Bulletin and Broadcasts. What does VK3 do? Personally, I say that when the largest Divisions stop crying, and settle down to a real effort to win the contest and prove that they can't do it, then is the time to "bias" it their way. So far they haven't made the effort.

—Bob Elms, VK6BE.

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—K. Moore, Hon. Treasurer.

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Publications Committee Report

Due to the postponement of the August meeting until after the September issue went to press, no report was included. When the meeting was finally held, technical articles were received from VKs 2ZGW, 3ACA, 3ZRY and 5EK. Correspondence was received from VKs 3RN, 3OM, 3SW, 3YC, 3ALM, 3AMK, 6BE, Treasurer VK6 Division, VK4 Central Coast Branch, L2282, Peter Curran and Chris. Howitz.

Practically the entire evening was devoted to discussion on the future of the magazine, and much valuable assistance was received from a representative of "Technical News Publications" who attended our meeting. As a result certain proposals were formulated for the approval of the publishers, namely the Victorian Division. Their approval was required as there will be considerable capital expenditure involved, and a considerable amount of financial risk will be incurred.

Dealing with the more immediate problems, a short discussion was held on the Postal Regulations for the mailing of periodicals. In order to comply with the new regulations we have had to expend all the money so far received from the 2 cent increase received since last May. On the subject of finance, the Committee was very pleased to receive the letter from the VK6 Division (see Correspondence page). The gesture is highly appreciated.

The plans for the October, 35th Anniversary issue, were discussed and our friend from Technical News Publications volunteered his assistance, which was gratefully accepted.

At the September meeting correspondence was received from VKs 2JE, 2SG and N. Wilson. Technical articles from VKs 3ZOP and 5QX were considered. The meeting was advised that the proofs of the 1968/69 issue of the Call Book had been returned by the Department and that printing would commence as soon as the October issue of the magazine was completed. Orders are down on last year, and estimates show that we will just about come out square on this edition. Advertising income is down on last year despite all our efforts to gain extra advertisers.

A long discussion was held on the paper to be used for the October issue, and many samples examined. It was agreed that the finances would not permit the use of the paper considered best for the job, but it is hoped that the compromise between price and quality proves acceptable, both to our readers and advertisers.

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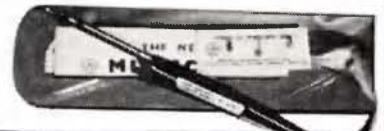
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VR150/30—75 cents ea. or 3 for \$2.
VR105/30—75 cents ea. or 3 for \$2.
QB2/250 (813)—\$7 ea.
TZ40—75 cents ea.
6H6 (Metal)—20 cents ea.
DM71 (Indicator Tube)—40c ea. or 6 for \$2.

● TRANSISTORS

2SC73
2SD65
2T65
2T76
OC66

All at Bargain Price of 25 cents each.

● STAR SR700 SSB AMATEUR BAND RECEIVER

Frequency coverage: 3.4-29.7 Mc. in 7 bands. Triple conversion, employs xtal locked 1st and 3rd conversion oscillators. Selectable USB or LSB. Selectivity variable, 0.5 Kc. to 4 Kc. 1 Kc. dial calibration. Three stages double locked geared dial mechanism, 30 Kc. per turn tuning rate. Vackar oscillator employed in VFO for maximum stability.

Price **\$461.50.**

● A111 9 Mc. SSB EXCITER

A fibre-glass printed circuit board, the finest German crystal filter, diode ring modulator, and solid state circuitry all contribute to make the A111 the finest SSB Exciter available. Specifications: Sideband suppression, 80 db.; carrier sup., 65 db.; audio freq. response, 350 to 3,000 cycles; mic. input, 1 mV. on 5K ohm load. Incorporates VOX amplifier and relay amplifier.

Price with KVG **XF9B** Filter, **\$120.**

● A112 5 Mc. VFO

Frequency coverage: 4950 to 5550 Kc. Frequency stability better than 100 c/s. over 12 hours long term; better than 8 c/s. over 10 minutes if enclosed in suitable box. Output: 350 mV. on 220 ohm load.

Price **\$22.**

ALL ITEMS FREIGHT EXTRA

UNITED TRADE SALES PTY. LTD.

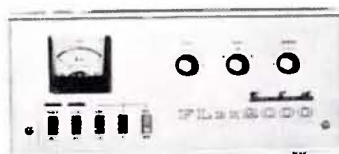
280 LONSDALE ST., MELBOURNE, VIC. (Opp. Myers)

Phone 32-3815



Yaesu SSB EQUIPMENT

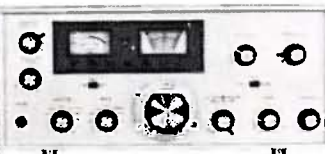
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FLDX-2000 Linear Amp.
80-10 mx, AB2 G.G.



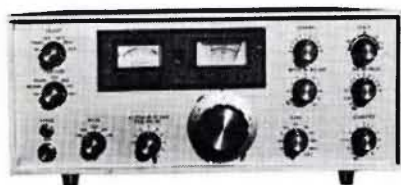
SP-400
Speaker



FRDX-400 Receiver
160-2 mx, WWV, C.B.



FLDX-400 Transmitter
80-10 mx, peak in. 300w.



FTDX-400 Transceiver
80-10 mx, peak inp. 500w.



FTDX-100 Transceiver
80-10 mx, Transistorised, 150w.



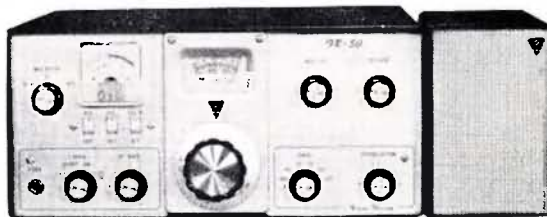
FT-50 Transceiver FV-50 V.F.O.
80-10 mx, peak inp. 100w.



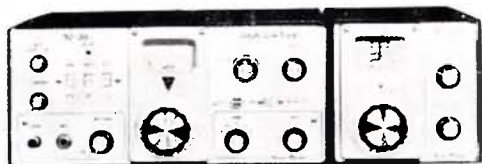
FF-30DX 3-Section L.P. Filter
For T.V.I. reduction



Type "F" S.S.B. Generator
Basis for Tx Construction



FR-50 Receiver SP-50
80-10 mx, WWV Speaker



FL-50 Transmitter FV-50 V.F.O.
80-10 mx, peak inp. 125w.

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Phone 89-2213

Rep. in N.E. N.S.W.:

MOSMAN RADIO SERVICES

P.O. BOX 198, TAMWORTH, N.S.W., 2340

FIXED CONDENSERS

125 Volt Rating:
10, 15, 18, 22, 27, 33, 39, 47, 56, 68, 82, 100, 120, 150, 220, 270, 330, 390, 425, 470, 560 pF. all 13c ea.

0.01	uF.	160v.	12c	0.0018	uF.	600v.	18c
0.01	..	600v.	25c	0.0022	..	400v.	12c
0.012	..	125v.	13c	0.0022	..	600v.	18c
0.012	..	400v.	12c	0.0027	..	400v.	17c
0.012	..	600v.	19c	0.0027	..	600v.	18c
0.015	..	125v.	13c	0.0033	..	400v.	12c
0.015	..	600v.	19c	0.0033	..	600v.	14c
0.018	..	600v.	22c	0.0039	..	400v.	12c
0.022	..	125v.	13c	0.0039	..	600v.	18c
0.022	..	400v.	14c	0.0047	..	400v.	15c
0.022	..	600v.	24c	0.0047	..	600v.	22c
0.027	..	160v.	14c	0.0056	..	400v.	15c
0.027	..	400v.	15c	0.0056	..	600v.	15c
0.027	..	600v.	22c	0.0068	..	400v.	15c
0.033	..	125v.	14c	0.0068	..	600v.	15c
0.033	..	400v.	15c	0.1	..	125v.	15c
0.033	..	600v.	22c	0.1	..	400v.	18c
0.039	..	125v.	14c	0.1	..	600v.	27c
0.039	..	400v.	14c	0.2	..	400v.	20c
0.039	..	600v.	28c	0.5	..	400v.	20c
0.047	..	125v.	14c	0.12	..	125v.	25c
0.047	..	400v.	14c	0.12	..	600v.	20c
0.047	..	600v.	14c	0.15	..	125v.	15c
0.056	..	125v.	14c	0.15	..	400v.	15c
0.056	..	400v.	14c	0.15	..	600v.	20c
0.056	..	600v.	18c	0.18	..	125v.	17c
0.068	..	125v.	13c	0.18	..	400v.	17c
0.068	..	400v.	14c	0.22	..	125v.	15c
0.068	..	600v.	18c	0.22	..	400v.	22c
0.082	..	125v.	20c	0.22	..	600v.	24c
0.082	..	400v.	22c	0.27	..	125v.	22c
0.082	..	600v.	28c	0.27	..	400v.	25c
0.001	..	125v.	15c	0.27	..	600v.	28c
0.001	..	400v.	15c	0.33	..	125v.	25c
0.001	..	600v.	18c	0.33	..	400v.	28c
0.001	..	5Kv.	45c	0.39	..	160v.	22c
0.001	Feed	Thru	29c	0.39	..	400v.	40c
0.0012	..	uF.	400v.	0.47	..	125v.	28v
0.0012	..	..	600v.	0.47	..	400v.	35c
0.0015	..	..	200v.	0.47	..	600v.	40c
0.0015	..	..	600v.	0.68	..	125v.	35c

MULTIMETER, Model OL-64

20,000 ohms per volt d.c., 8,000 ohms per volt a.c.
Specifications:
D.C. volts: 0-0.3, 1, 10, 50, 250, 500, 1,000, 5,000.
A.C. volts: 0-10, 50, 250, 1,000.
D.C. current: 0-30 uA.; 1, 50, 500 mA.; 10 A.
Resistance: 0-5, 500K ohms; 5, 50 megohms.
Decibels: Minus 20 to plus 22 db., plus 20 to plus 36 db.
Capacitance: 250 pF. to 0.02 uF.
Inductance: 0-5000 H.
Load current: 0-0.06, 0.6, 60 mA.
Self contained batteries: 22.5v. (BL-015) x 1, 1.5v. (UM3) x 2.
Size and weight: 6 x 4-1/5 x 2 in. 650 g.
Meter movement fund. sensitivity: 30 uA., F.S.D.
Price \$19.75, postage 25c.

CRYSTAL MICROPHONES

Price only
\$5.50

Stand to suit
\$2.50 extra.



Packing and Postage 25c.

Model BM3 (illustrated): Response 100-8,000 cycles, fitted with 6 ft. cable and phone plug with on-off switch. Can be used on stand or for hand use. BM3 Insert, \$1.00 each

ALARM BELLS

(Parachute type). 6 volt. Suitable for Burglar Alarms, etc., complete with trip rope, etc. Price \$1.25, post 50c.

SCOOP PURCHASE!

1/2W. AND 1W. RESISTORS

Cracked Carbon 5%, Preferred Range:

10, 15, 18, 22, 27, 33, 39, 47, 56, 68, 82, 100, 120, 150, 180, 220, 270, 330, 390, 470, 560, 680, 820, 1K, 1.2K, 1.5K, 1.8K, 2.2K, 2.7K, 3.3K, 3.9K, 4.7K, 5.6K, 6.8K, 8.2K, 10K, 12K, 15K, 18K, 22K, 27K, 33K, 39K, 47K, 56K, 68K, 82K, 100K, 120K, 150K, 180K, 220K, 270K, 330K, 390K, 470K, 560K, 680K, 820K, 1M, 2.2M, 3.3M, 3.9M, 4.7M, 5.6M, 6.8M, 8.2M, 10M.

1/2 watt: 8c ea. or \$6.00 per 100

1 watt: 10c ea. or \$7.00 per 100

When ordering 100 or over, minimum quantity of 10 of each selected type.

STEREO HEADPHONES

Large rubber earpiece, full audible frequency, 50-1500 cycles. Price \$9.00.

MULTIMETER, Model 200H

20,000 ohms per volt d.c., 10,000 ohms per volt a.c.

Specifications:

D.C. volts: 0-5, 25,

50, 250, 500, 2500.

A.C. volts: 0-10, 50,

100, 500, 1000.

D.C. current: 0-50

uA.; 25, 250 mA.

Resistance: 0-60,000

ohms; 0-6 meg.

Capacity: 0.01-0.3

uF. (at A.C. 5v.);

0.0001-0.01 uF. (at

A.C. 250v.).

Decibel: Minus 20

db., plus 22 db.

Output range: 0-10,

50, 100, 500, 1000.

Battery used: UM3

1.5v., 1-piece.

Dimensions: 3 1/4 x

4 1/2 x 1 1/8 inch.

Price \$11.25, inc.

tax. Post free.

Complete with internal battery, testing leads, prods.



BARGAINS!!

Philips Trimmers 10-60 pF. 32c; 3-30 pF. 23c
NE2 Neons 90v. 30c; 240v. 50c
Bezal Lamp Holders and Globe, red/white 45c ea.
Banana Plugs and Sockets 12c ea.
FT243 Crystal Sockets 29c ea.
Don Miniature Crystal Sockets 29c ea.
HC18 Crystal Sockets 40c ea.
Transistor Plugs and Sockets, 3.3m. 35c pr.
P.M.G. Plugs 40c ea.
P.M.G. Sockets 35c ea.
P.M.G. Joiner Socket 75c ea.
Dim Plugs, Single Pin 25c ea.
Dim Plugs, Three Pin 45c ea.
Dim Plugs, Five Pin 45c ea.
Dim Plug Joiners, Three and Five Pin 45c ea.
Coil Formers, 1 1/4 inch diam., available in
four and five pin bases 35c ea.
2.5 mH. R.F. Chokes 48c ea.
Egg Insulators 8c ea.
Speaker Plugs and Socket, four pin 18c ea.
Ageis Coils, ST45C \$1.50 ea.
" " M26A \$2.50 ea.
" " S0515 \$1.50 ea.
" " S203 \$1.50 ea.

BARGAINS!!

S.W.R. METERS, MODEL KSW-10

Specifications.—Standing Wave Ratio: 1:1 to 1:10.
Accuracies: Plus or minus 3 per cent. scale length.
Impedance: 52 ohms and 75 ohms. Meter: 0-100
DC microamperes. Price \$19 inc. tax.

SPECIAL! BARGAIN PRICED!

RECORDING TAPES

Well known make, fully guaranteed, sealed cartons

3 INCH SPOOLS

150 Feet	— Acetate Base	55c
225 Feet	— Acetate Base	75c
300 Feet	— Mylar Base	\$1.15

3 1/4 INCH REELS

600 Feet	— Mylar Base	\$1.85
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4 INCH REELS

400 Feet	— Acetate Base	\$1.40
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5 INCH REELS

600 Feet	— Acetate Base	\$1.85
900 Feet	— Acetate Base	\$2.30
900 Feet	— Mylar Base	\$3.00
1200 Feet	— Mylar Base	\$3.89
1800 Feet	— Mylar Base	\$5.75

5 3/4 INCH REELS

900 Feet	— Acetate Base	\$2.45
1200 Feet	— Acetate Base	\$3.40
1200 Feet	— Mylar Base	\$3.75
1800 Feet	— Tensilised Mylar Base	\$4.75

7 INCH REELS

1200 Feet	— Acetate Base	\$3.00
1200 Feet	— Mylar Base	\$3.75
1800 Feet	— Acetate Base	\$4.50
1800 Feet	— Mylar Base	\$5.00
2400 Feet	— Mylar Base	\$6.25
3600 Feet	— Mylar Base	\$9.75

EMPTY REELS

3 inch	..... 25c	5 inch	..... 40c
3 1/4 inch	..... 35c	5 3/4 inch	..... 55c
4 inch	..... 40c	7 inch	..... 50c

Postage 20c.

POWER TRANSFORMERS

VOLTAGE DOUBLER TYPES

Type No.	H.T. Sec. Volts	Max. D.C. mA.	Heater Windings V. A.	Price
PT2062	115	80	6.3CT 2.25	\$10.80
	tap 105			
PT2063	135	80	6.3CT 2.25	\$13.40
	tap 125			
PT2067	120	100	6.3CT 4	\$13.00
	taps 110, 100			
PT2064	135	125	6.3 2.25	\$12.30
	tap 125		6.3CT 2.25	
PT2065	115	150	6.3CT 6	\$13.60
	tap 105			
PT5324	124	150	6.3CT 3	\$12.20
	taps 114, 104		6.3CT 3	
PT2066	125	190	6.3CT 6	\$13.70
	tap 105			
PT2068	195	200	6.3 4	\$23.00
	taps 185, 175		6.3CT 3	
PT1965	115	300	12.6CT 5	\$29.00

FULL WAVE TYPES—VALVE RECTIFIER

Type No.	H.T. Sec. Volts	Max. D.C. mA.	Rectifier Heater V. A.	Other Heaters V. A.	Price
PT1892	150-0-150	30		6.3 1.7	\$5.00
PT1951	180-0-180	40		6.3 2	\$6.70
PT1940	285 0-285	40	6.3 2	6.3 2	\$8.50
			tap 5 2		
PT1993	225-0-225	50		6.3 2	\$5.70
PT1941	285-0-285	60	6.3 2	6.3 2	\$9.00
			tap 5 2	CT	

STEP-DOWN TRANSFORMERS

Primary: 240 volts. Secondary (switched): 24, 28 or 32 volts a.c., 50 cycle, 1.88 amp., with on/off switch and two outlet sockets. \$7.00, post \$1.00.



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We sell and recommend Leader Test Equipment, Pioneer Stereo Equipment and Speakers, Hitachi Radio Valves and Transistor Radios, Kew Brand Meters, A. & R. Transformers and Transistor Power Supplies, Ducon Condensers, Welwyn Resistors, etc.

amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA FOUNDED 1910



NOVEMBER 1968

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W.I.A. OFFICIAL BROADCASTS

NEW SOUTH WALES		SOUTH AUSTRALIA	
VK2WI, Sundays, at 1100 hours E.A.S.T.		VK5WI, Sundays, at 0900 hours C.A.S.T.	
3595 Kc. a.m.	145.130 Mc. a.m.	3625, 7146, 14195 Kc. Also selected	frequencies in 52 and 144 Mc. bands.
7146 Kc. a.m.	146.000 Mc. f.m.		
53.866 Mc. a.m.	(53.950 Mc. f.m., proposed shortly)		
VICTORIA		WESTERN AUSTRALIA	
VK3WI, Sundays, at 1030 hours E.A.S.T.		VK6WI, Sundays, at 0930 hours W.A.S.T.	
1825 Kc. a.m.	144.500 Mc. a.m.	3.655 Mc. s.s.b.	52.656 Mc. F3
3600 Kc. s.s.b.	145.854 Mc. f.m.	7.060 Mc. a.m.	52.4 Mc. a.m.
7146 Kc. a.m.	432.500 Mc. a.m.	14.100 Mc. s.s.b.	144.36 Mc. a.m.
53.032 Mc. a.m.			
QUEENSLAND		TASMANIA	
VK4WI, Sundays, at 0900 hours E.A.S.T.		VK7WI, Sundays, at 1000 hours E.A.S.T.	
3580 Kc.	53.995 Mc.	3672 Kc., and re-transmitted by	representative stations on—
7146 Kc.	144.36 Mc.	7146 Kc.	144.1 Mc.
14.342 Mc.		53.032 Mc.	432.6 Mc.

SIDEBAND ELECTRONICS ENGINEERING

In my last month's (October) advertisement I have included a plug for the ACITRON line of locally constructed equipment. My intention was to show my interest in all promising developments, naturally with also a little commercial consideration included.

A very ambitious programme and it will take time to realise. As soon as more news on the ACITRON line is available you can expect to hear more from me.

Meanwhile I continue to look for diversification, adding more YAESU-MUSEN gear to my stock. This stock will soon include half a dozen different brands, some 15 or more s.s.b. sets and over 25,000 dollars worth of gear! Yes, a long way from a modest start five years ago.

Mobile activity will soon increase and I am ready for it with the WEBSTER Bandspanners and Mark helical whips, the latter are 6 ft. long radiators for 40 metres and a genuine 10-15-20 metre triband one, no retuning or adjustments required. Also the matter of d.c. supplies will soon be solved with a reasonably priced Australian made unit, adaptable to Drakes, Swans and Galaxies. Target cost price no more than \$100.

For home use I still recommend the MOSLEY and HQ-GAIN Junior and the HY-GAIN Master triband 10-15-20 m. Yagis. Next best is the all-band trapped NEWTRONICS Hustler vertical 4-BTV, which needs no guy ropes under average wind exposure. The German W-3-DZZ all-band dipole has become so popular that I had to rush a follow-up order to DL-land, but they will soon be in stock again.

Well, hereunder is my expanding list of goodies. For those who don't know me, yet, I sell brand-new imported gear for less than anybody else in Australia, all equipment is fully guaranteed and where necessary checked and tested before shipment. Prices are net, cash, Springwood, N.S.W. As to trade-ins, sorry no a.m. gear or antiquated receivers or disposal items. My very limited profit margin of 10 to 15 per cent. gross does not allow me to be generous on trade ins. 73, Arie Bles.

Latest GALAXY V. Mark III. Transceiver, the smallest powerhouse, \$550.

GALAXY V. Mark II., one unit left, \$475.

SWAN SW350C, SW500C, SW250 Transceivers, VOX units, ask for the latest literature and special prices.

YAESU-MUSEN FLDX-400/FRDX-400 Transmitter-Receiver combination, \$750. FTDX-400 Transceiver, FTDX-100 Transceiver, now \$575 and \$550 resp. FLDX-2000 Linears and FT-50 Transceivers, to come, priced as competitively as the other Yaesu-Musen units!

Grab my last GONSET 2 metre Sidewinder to be ready for the summer 2 metre DX, \$350, including 115v. a.c. supply. Likewise be ready for the 6 metre DX this season with the Swan SW250.

HEATH HA-15 Linears, a few kits left, no more imports after that, \$150.

HY-GAIN TH6DXX, six element 10-15-20 metre beam, with BN-86 Balun, still only \$200.

HY-GAIN TH3JR triband beam, \$105.

MOSLEY TA33JR, \$98.

HAM-M CDR heavy duty Rotator, with 230v. indicator-control unit, \$180.

CDR AR-22 light Rotator, for junior beams, with control-indicator box, \$60.

NEWTRONICS Hustler 4-BTV, 10-40 mx vertical, \$55. With 80 mx top coil, \$65.

WEBSTER Bandspanner, 10-80 mx centre-loaded Mobile Whip with mountings and spring, still only \$55.

MARK 10-15-20 mx triband Helical Whip, sorry a bit dearer now, \$27.50; Mark 40 mx 6 ft. Helical Whip, \$16.

German W-3-DZZ all-band Dipole, balun with two traps, \$25.

CETRON 572B/160TL 150w. Triodes for Linears, \$18.

Used spotless COLLINS 75S-3A Receiver, with Collins speaker, c.w. filter, notch filter, \$500.

GALAXY V., used, 10-80 mx Transceiver with 240v. a.c. power supply, \$375.

SIDEBAND ELECTRONICS ENGINEERING

P.O. BOX 23, SPRINGWOOD, N.S.W., 2777

Telephone: Springwood 511-394

radioparts

PROPRIETARY LIMITED

CUSTOMER SERVICE



**A STEREO-RADIO COMBINATION of Exceptional Quality featuring
"ONKYO" HS303 SPEAKER UNITS, comprising:**

"RAPAR" Storage Cabinet, waxed teak finish, large size (illustrated), 25" h. x 19" w. x 14" d. Trade Price \$30.00 plus 2½% S/tax.

"ONKYO" HS303 Speaker Unit. Trade Price \$80.00 plus 25% S/tax (each).

"COMPAX" CE5000 Solid State Stereo Tuner and Amplifier; 20 watts per channel, freq. response 20-20,000 cycles. Trade Price \$135.20 plus 25% S/tax.

"RAPAR" Teakwood Gramo Base with hinged lid, 18" w. x 14" d. x 7" h. Trade Price \$25.00 plus 25% S/tax.

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FEDERAL COMMENT

JOHN B. BATTRICK, VK3OR, *Federal President, W.I.A.*

In the I.A.R.U. Region I. Bulletin recently received was an editorial by John Clarricoats, O.B.E., G6CL. John, you will remember, was, while Secretary, the driving force behind the R.S.G.B. He now enjoys his retirement (?) as Secretary to I.A.R.U. Region I. Division. He headed his editorial:—"A Dream Comes True," and went on to say:

"Way back in 1950 when the idea of establishing an I.A.R.U. Region I. Division was first discussed at the Silver Jubilee meeting of the I.A.R.U. in Paris, the present chairman (SM5ZD) and the present Secretary (G6CL) of the Division talked over the possibility of adopting a Regional system of running the Union, but as the years went by the difficulties appeared to grow larger until during the winter of 1964, thanks to Mr. Herbert Hoover, Jr., first steps were taken to inaugurate an I.A.R.U. Region 2 Division, although for some reason it has never assumed that title as of right preferring to be known, formally, as the Inter-American Union of Radio Amateurs—Region 2 Division.

"Last year Member Societies in Region 2 participated in a highly successful conference in Caracas, Venezuela, and as recently as Whitsun of this year the Executive of the Region gathered in Monterrey, Mexico, to discuss the problems facing Amateur Radio in the Western Hemisphere.

"And now comes the good news that Societies in Region III., notwithstanding the vast distances involved, have established an I.A.R.U. Region III. Division. . . . A dream has at last come true, and I.A.R.U. has indeed become a live international organisation and not just a name."

In addition, John Huntoon, W1LVQ, Secretary to the A.R.R.L. and I.A.R.U. Hdq., reports on the matter as follows in issue No. 76 of the I.A.R.U. Calendar, June 1968:

"At mid-year 1968 the major item of interest to organised Amateur Radio was the successful establishment of a Region III. Division of I.A.R.U. This was completed on a world-wide basis the regional system whereunder Societies in a certain area are able to cope more effectively with problems and projects specialised in that area. It was perhaps the long-term objective of European Amateurs, led by the Radio Society of Great Britain, in efforts leading to the establishment of the Region I. Division, back in 1950.

"The Wireless Institute of Australia felt that the occasion of its federal convention in April might be a suitable basis for convening representatives of Societies in the Region, and through correspondence was encouraged to issue formal invitations to an inaugural congress. Japan, Philippines and New Zealand attended, along with Australian delegates; Ceylon, India, South Korea, Laos, Thailand and Hong Kong indicated support for the meeting but were unable to send representatives. Our President, Robert W. Denniston, W0DX, who was a leader also in the establishment of Region II., attended from the I.A.R.U. Hdq. and was requested to chair the sessions. . . .

"President Denniston extends his sincere congratulations to many Amateurs who had a part in the establishment of the Region III. Division, expresses his deep satisfaction with the spirit of dedication and co-operation which characterised the meetings, and offers his best wishes for continued strengthening of Amateur bonds in Region III."

As was reported earlier in "A.R.," the form of the executive body of Region III. is somewhat different from that in Region I. A Directorate of five, representing the countries present at the Sydney conference has been appointed to act until the next Plenary scheduled for Tokyo in 1971. These Directors of Region III. Division I.A.R.U. are as follows:

W0DX, Bob Denniston, President
I.A.R.U. and A.R.R.L.

VK3OR, John Battrick, Federal
President W.I.A.

JA1BK, Kyoshi Misoguchi, Overseas
Director J.A.R.L.

ZL3AZ, Tom Clarkson, Overseas
Liaison Officer N.Z.A.R.T.

DUIEA, Emilo Asistores, Wireless
Institute of the Philippines.

This last Society—W.I.P.—is a new one! At Sydney Emilio represented P.A.R.A.—Philippines Amateur Radio Association, and one of the documents he collected was a copy of a Divisional Constitution of W.I.A. On return to his country, P.A.R.A. and P.A.R.L. (the Philippines Amateur Radio League) amalgamated to form the one representative body—W.I.P., based on W.I.A. lines.

It may seem strange that W0DX is a Director of the Region III. Division, however this was the wish of delegates in Sydney—he holds his Directorship by virtue of his office of President of I.A.R.U., and the N.Z.A.R.T. in particular were very strongly of the view that any Regional association was to "assist the officers of I.A.R.U. headquarters." It was not envisaged that the Societies in Region III. would "go it alone" in a manner separate and perhaps divergent from I.A.R.U. headquarters. The inclusion of the President for the time being of the I.A.R.U. as a Director is our practical expression of this wish.

Since the conference in Sydney, a Secretariat was formed comprising members of the W.I.A. Federal Executive, viz.:

Chairman: VK3OR (W.I.A. Director).

Secretary-General: VK3IZ (Federal Secretary W.I.A.).

Members:
VK3KI (Federal Vice-President W.I.A.).
VK3QV (Federal Activities Officer W.I.A.).
VK3ADW (Federal Intruder Watch Co-ord. W.I.A.).

The Secretariat is also assisted by VK3VX, George Pither, the I.T.U. Liaison Officer of W.I.A. We felt it was wise to keep George's office separate from the Regional Secretariat for the time being, so that the W.I.A. I.T.U. Fund can also be seen as separate from I.A.R.U. Region III. Funds. The I.T.U. Fund is in a separate bank account, set aside for a particular purpose, and cannot be used for any other purpose. It is in effect, over and above the organisation of Region III. Division and may be looked on as a W.I.A. second string. It amounts at the moment to over \$6,000.

As far as funds of the Region III. Division are concerned, J.A.R.L. has agreed to contribute 400,000 Yen—approximately \$1,200 per annum and W.I.A. agreed to contribute \$600 per annum. (Thus \$600 will be recovered from W.I.A. members at the rate of 20 cents p.a. per member.)

This matter of funds and finance brings up a quite important point. We as a Secretariat are charged with administering the Division—in terms of policy determined triennially at Plenary

meetings, and in between these Plenary meetings in terms of determination of the Directorate. We are also charged with handling funds—the remission of funds from Japan is subject to their Central Bank receiving a copy of a constitution and rules. Our Reserve Bank will also require such a set of rules—as may all banks in overseas centres before funds can be moved around the Region.

Michael Owen, VK3WI and the members of the Secretariat have drawn up an interim constitution for the I.A.R.U. Region III. Division. This runs to over 50 clauses and has been circulated to the five Societies who have appointed Directors. The preparation of this interim constitution for the Region III. Division, and the ensuing correspondence between countries has been the major activity since Sydney. Because we on the Secretariat are not prepared, or even able to act unless we are protected by proper rules, we have asked countries to adopt a somewhat unusual approach. We want them to adopt the interim constitution as it stands, and once it is adopted to then amend some of its clauses to improve it. Already certain valid and relevant objections have been raised, which can be the basis for amendment presently, however to get the Division "on the road" we must have some rules—however inappropriate they may seem in certain respects. A position of stalemate may be the outcome if we have to agree to rules in all details before we can act, because we certainly can't act without some sort of constitution!

Why the rush? Already I believe it is felt that W.I.A. was somewhat precipitous in calling the conference earlier this year, and with hindsight it may have been easier to have resolved the constitutional matters in Sydney—even at the expense of a longer conference. I feel that we have two years to do something in the Region to prepare for the next I.T.U. Conference, scheduled for late 1970 or early 1971. Perhaps our 1971 Plenary will have to be held earlier and prior to the I.T.U. Conference! Time may be running out—I hope we don't spend too much of it on polishing up a set of rules, but get down quickly to more active efforts. Emilio DU1EA, W.I.P. Director, does travel the Region in his capacity as Deputy Director of Civil Aviation in the Philippines, and could well make contact with administrations in our Region. I.A.R.U. headquarters has introduced D.A.R.E. (Develop Amateur Radio Everywhere) programmes into some countries of the Region. Perhaps the first way we could assist the officers of I.A.R.U. headquarters is to evaluate

the efficacy of this programme, and to assist in introducing this elsewhere in the Region.

J.A.R.L. has ratified the interim constitution and at the same time suggested one amendment; W.I.A. has also ratified the interim constitution, and we await ratification from I.A.R.U. hdq., N.Z.-A.R.T. and W.I.P. When these are received we can invite membership from other countries and really get to work!

(Members of W.I.A. may be interested to know that JA1FG and JA1BK, who represented J.A.R.L. in Sydney, have made a personal gift of a Yaesu Musen FTDX400 Transceiver to the W.I.A. in appreciation of our hospitality in Sydney. This will be used by

Executive to keep skeds on the Federal Communication Nets and by the Secretariat on the weekly Region III. Division skeds.)

Last month, Federal Vice-President reported on the activities of Executive and those at the Wodonga meeting on translators. He went on to refer to the forthcoming space frequency conference. It will be remembered that in the past W.I.A. could be said to have been one of the few effective voices from Region III, but now, if the I.A.R.U. Region III. Division can be made into an effective body, we can draw together the combined strength of the Region, thus the Amateur voice can be that much stronger.

DIRECTORS OF I.A.R.U. REGION 3 DIVISION



Top left (L-R): JA1FG, JA1BK, VK3KI, VK5TY.
Bottom left (L-R): VK3VX, VK3QV, VK3OR, DU1EA.

Top right: W0DX.
Bottom right (L-R): VK3IZ, ZL2APC, ZL2AZ.

S.S.B. Transmitter—An Amateur Engineering Project

PART TWO

H. F. RUCKERT,* VK2AOU

CIRCUIT DETAILS

The following circuit details are given with particular emphasis on mistakes made earlier, difficulties experienced and variations tried.

AUDIO AMPLIFIER

The a.f. amplifier has a gain of about 5,000, because the dynamic mike has only an output of about 2 mV. Therefore shielding of grid 1 and plate leads is necessary to reduce hum pick up and to maintain stability. The 100 μ F. (10 μ F. was too small) cathode by-pass capacitor of the 6AJ8 is necessary to prevent oscillation. The low impedance combination at the triode plate (22K ohm plate resistor and 0.1 μ F. coupling capacitor) is vital to prevent distortion

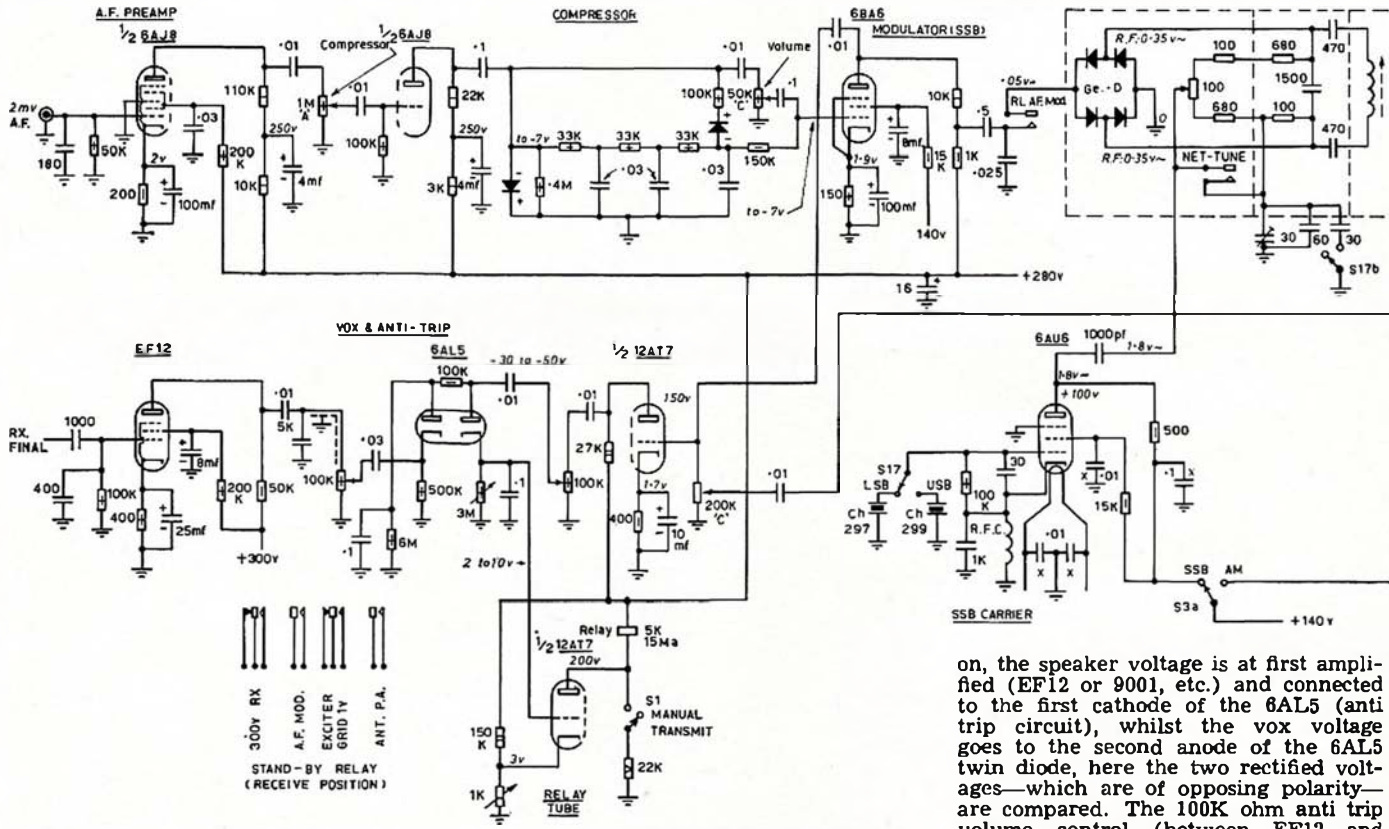
(μ F.) to the ring modulator must also be of low impedance to avoid distortion otherwise caused by the voltage dependent non linear load formed by the diode quartet.

The a.f. response shaping was therefore left to the crystal filter and carrier frequency position on the crystal filter response curve (slope), after many experiments, checking with a.f. generator and v.t.v.m. the result at each a.f. stage. This compressor⁶ does not cause non linear distortions, as produced by a clipper used in the a.m. rig, if used in a reasonable manner only to prevent occasional excessive drive and flat toping and not to compensate gain differences when switching from band to band.

It can be seen that the compressor gives a far greater speech pulse density and more power per transmitted time interval. The linear amplifier must be able to handle this duty cycle, which means that some of the now popular transceivers could not use a compressor. The power supply would be overloaded and the economy style t.v. valves in the final would overheat too.

THE VOX, ANTI TRIP AND STANDBY CIRCUIT

The a.f. voltage at the plate of the 6BA6 is further amplified in half a 12AT7, and the second half acts as relay valve. To prevent sound from the receiver loudspeaker actuating the vox circuit and turning the transmitter



caused by the non linear voltage dependent load of the first Ge diode of the compressor. A 12AX7 twin triode, with 0.2 megohm plate resistor and 0.001 μ F. coupling capacitor was quite useless.

A.f. response shaping cannot be carried out in front of the compressor because the compressor a.g.c. action would cancel the effect out. A small coupling capacitor at grid 1 of the 6BA6 cannot be used because the 50K ohm volume control setting would become frequency dependent. The plate load (1K ohm) and coupling capacitor (0.5

Speaking the vowels with apparent identical loudness and with similar pitch into the mike at first without, and then with the compressor 50% in, had the following results:

Vowel Spoken	Exciter Output in V. r.f. r.m.s.	
	without Compressor	with Compressor
A	60	60
E	16	40
I	6	44
O	24	60
U	4	36

on, the speaker voltage is at first amplified (EF12 or 9001, etc.) and connected to the first cathode of the 6AL5 (anti trip circuit), whilst the vox voltage goes to the second anode of the 6AL5 twin diode, here the two rectified voltages—which are of opposing polarity—are compared. The 100K ohm anti trip volume control (between EF12 and 6AL5) has to be so adjusted that the identical receiver speaker sound picked up the mike and the one amplified by the anti trip a.f. stages develops a similar but opposing voltage at the plate of the 6AL5. In this case the grid voltage of the relay triode (half 12AT7) is zero or slightly negative, and the relay will stay in the receive position.

When the op. talks into the mike, the grid of the relay valve becomes positive, and the valve draws more plate current, which operates the relay turning the transmitter on. There is,

* "QST," February 1963, W3ZVN.

obtained after the plate circuit of the carrier oscillator had been returned (this was the old circuit). The balancing trimmer had also to be reset. This made l.s.b. to u.s.b. changes rather complicated.

Using the XYLs hair dryer showed that the balance was temperature affected, and a thermistor was tried in one of the resistor lines to obtain automatic compensation. Using the BC211 frequency meter as an s.s.b. receiver revealed that the non linear and greatly fluctuating load (the diodes presented) caused f.m. of the 414 Kc. carrier crystal oscillator, which did not sound like s.s.b. Changing the carrier oscillator valve to pentode operation in an e.c.o. circuit with 330 ohm plate resistor (no more L and C circuit) and using a 1,000 pF. coupling capacitor to the ring modulator solved the f.m. problem and plate circuit tuning difficulty.

Care must be taken that the l.s.b. and u.s.b. crystals give the same r.f. voltage or the balancing is not identically good when switched from 80 mx l.s.b. to 20 mx u.s.b. operation.

Earlier an a.f. transformer (50:1) and r.f. chokes were used between the 6BA6 and the ring modulator. Matching difficulties were first suspected, but 100 c/s. hum pick up by the chokes and the transformer was identified as the trouble source. Every low a.f. input note gave two a.f. output signals behind the filter.

The reports on s.s.b. quality were still conflicting; some said it sounds okay, others said that the first CQ call or so was clear but later distortion developed, some claimed that they could not resolve the signal at all (only local stations), etc. Listening to one's own transmission (speech) is misleading and a tape recorder becomes very useful to check what goes on.

None of the many helpful suggestions offered by friends proved to have hit the spot. Several other difficulties (some only occasionally) occurred in the following stages (later discussed) were eventually identified and cured, but the modulation was still no good. This transmitter had an unusual sickness, so it appeared. I mention this in detail, because it shows that copying a circuit without understanding it may sometimes not work at all. A discussion with a physicist, who had made good Ge diodes, including those for ring modulators, did teach me that the smallest components are apparently the most complicated ones.

Soon after, on the first hot day (95° F.), followed a lengthy experiment, which heated the rig up (no cooling fan was installed at that time), a QSO was made, when it was observed that the output fell. More a.f. gain brought it back but only for a moment. The carrier became stronger, the gain fell back and distortions resulted. From these circumstances and meter readings, it became clear that the ring modulator diodes had packed up. As we often experience, extreme conditions revealed the trouble spot.

Diode data was now obtained, more informative than the few handbook values. A diode quartet was attached to a filament transformer with voltage taps and the current in the ring was

measured versus a.c. voltage across opposing ring positions.

V. A.C.	mA. D.C.
1	0.4
2	3.5
4.5	8
6.5	35

at 25°C.

It was now obvious that the safe current and power ratings of the diodes had been exceeded, especially at high operating temperatures.

The problems mentioned earlier were now quickly solved by installing Si diodes, which had very uniform characteristics, lower forward resistance and higher inverse resistance than the various types of Ge diodes tested so far. They can easily take the temperatures involved without runaway effects or derating. The carrier voltage across each diode was reduced to 0.5v. r.f. r.m.s. The carrier cancelling potentiometer (100 ohm) and trimmer (30 pF.) do no longer require re-adjustment and are not needed at the front panel.

The diodes for ring modulators must be dynamically matched. Suitable Ge

diodes are those for low impedance load (not the f.m. types). These diodes draw usually 15 mA. with 1v. d.c. The r.f. voltage has to be kept low if >25°C. (77°F.) ambient temperatures are used.

Published circuits which do not show all important voltage values are not very helpful to train Radio Amateurs.

THE CRYSTAL FILTER

Following similar frequency steps as used by a well known U.S. manufacturer, I had decided to build a crystal filter at about 400 Kc. using surplus FT241 crystals. An excellent paper by DJ2KY⁹ described a simple method.

The accompanying table shows crystal channel numbers and frequencies. Within each bracket is a group of crystals with frequencies symmetrically spaced above and below the value of the centre crystal (channel number).

I used group No. 7 for my filter. Both filter sections use the same No. 23 and 24 bridge series crystals. The -6 db. filter bandwidth is about 50% wider than the oscillator frequency spacing of these crystals, which is just right.

⁹ "DL-QTC," August 1961.

FT241 CRYSTALS—Channel Nos. 0 to 79 and 270 to 375

Fund. Freq. Kc.	Channel No.	Fund. Freq. Kc.	Channel No.	Fund. Freq. Kc.	Channel No.
370.370	0	420.833	303	470.833	339
372.222	1	422.222	28 304	472.222	55 340
374.074	2	423.611	305	473.611	341
375.000	270	424.074	29	474.074	56
375.982		3	425.000	306	475.000	342
376.388	271	425.928	30	475.928	57
377.777	272	426.388	307	476.388	343
379.166	273	427.777	31 308	477.777	58 344
379.630	5	429.166	309	479.166	345
380.555		274	429.630	32	479.630	59
381.481	6	430.555	310	480.555	346
381.944	275	431.481	33	481.481	60
383.333	7	431.944	311	481.944	61 347
384.722	276	433.333	34 312	483.333	61 348
385.185	8	434.722	313	484.722	349
386.111	278	435.185	35	485.185	62
387.037	9	436.111	314	486.111	63 350
387.500	279	437.037	36	487.037	63
388.888	10	437.500	315	487.500	64 351
390.277	280	438.888	37 316	488.888	64 352
390.741	11	440.277	317	490.277	353
391.666	282	440.741	38	490.741	65
392.593		12	441.666	318	491.666	66 354
393.055	283	442.593	39	492.593	66
394.444	13	443.055	319	493.055	67 355
395.833	285	444.444	40 320	494.444	67 356
396.292	14	445.833	321	495.833	357
397.222	286	446.296	41	496.296	68
398.148		15	447.222	322	497.222	68 358
398.611	287	448.148	42	498.148	69
400.000	16	448.611	323	498.611	70 359
401.388	289	450.000	43 324	500.000	70 360
401.852	17	451.388	325	501.388	361
402.777	290	451.852	44	501.852	71
403.704		18	452.777	326	502.777	72 362
404.166	291	453.704	45	503.704	72
405.555	19	454.166	327	504.166	73 363
406.944	293	455.555	46 328	505.555	73 364
407.407	20	456.944	329	506.944	365
408.333	294	457.407	47	507.407	74
409.259		21	458.333	330	508.333	75 366
409.722	295	459.259	48	509.259	75
411.111	22	459.722	331	509.722	76 367
412.500	297	461.111	49 332	511.111	76 368
412.963	23	462.500	333	512.500	369
413.888	298	462.963	50	512.963	77
414.815		24	463.888	334	513.888	78 370
415.277	299	464.815	51	514.815	78
416.666	300	465.277	335	515.277	79 371
418.055		301	466.666	52 336	516.666	79 372
418.519	26	468.055	337	518.055	373
419.444	302	468.519	53	519.444	374
420.370		27	469.444	338	520.833	375
		470.370	54		

The shunt crystals, No. 22 and 25, again evenly spread from No. 298 (centre), are used in both sections to reduce the side lobe of the filter response curve, cutting —80 db. or even deeper notches in the lobes. The first filter section has a No. 295, and the second a No. 301 shunt crystal, sufficient to reduce the far off resonance side lobes. The 1.5 pF. parallel capacitors attached to the No. 24 crystals allow a compromise between steep slope or less side lobes.

The filter response curve shows that this filter is as good as required and as good as the best we can find in Amateur equipment. The shielding between filter sections and input to output circuit has to be extremely good.

The crystal frequencies finally used (see Table 1) differ slightly because most of these crystals saw service in exotic areas and some have corroded electrode to wire solder connections, which are difficult to repair. Each crystal holder has to be opened and checked, or the filter will never or only intermittently work. Additional crystals were obtained via the extremely helpful VK2AVA, and grinding a corner of the crystal brought them to the desired spot frequency.

Channel No.	Measured Kc.
295	409.720
2 x 22	411.240, 411.180
297	412.590 Carrier
2 x 23	413.212, 413.190
298	413.705 Centre
2 x 24	414.736, 414.856
299	415.495 Carrier
2 x 25	416.740, 416.835
301	418.060

Table 1.

FILTER TESTING

(a) The g.d.o. was equipped with a coil and parallel capacitors to cover the range 414 ± 5 Kc., using a large 0-100° knob. This range was carefully calibrated with the BC221 frequency meter. The g.d.o. feeds into the input coil of the filter, the other coil end is earthed. A v.t.v.m. measures the output at the plate of the 6AJ8 heptode following the filter. Check coil tuning at the centre frequency. Check slope and side lobe attenuation. The slugs of the tuned circuits at the grid and plate of the 6AJ8 valve have to be carefully adjusted to obtain a flat top curve, or the audio response of the l.s.b. and u.s.b. will not be identical and flat.

(b) Plug No. 298 crystal in carrier oscillator, switch S2 to "netting", measure drive with exciter r.f. output voltmeter (included), peak all six 414 Kc. filter coils.

(c) Connect an audio signal generator to the microphone jack, switch s.s.b. carrier on, measure r.f. output at the exciter, replace driver pi output capacity (from p.a. valves) with a 60 pF. capacitor (a 1:4 cap. voltage divider

may be needed, if a Ge diode r.f. probe v.t.v.m. is used). Check driver r.f. output versus a.f. input.

It may have been noticed that the carrier frequencies are further away from the original No. 297 and No. 299 crystal frequencies. This was necessary to avoid too much bass (from the op's voice and dynamic mike) from passing the filter.

This effective way of audio response shaping has the advantage of further suppressing the carrier and unwanted sideband. The excellent filter shape factor of $1:1.68 [\Delta f (-60 \text{ db.}) \div \Delta f (-6 \text{ db.}) = 1.68]$ allowed a carrier suppression of >40 db. on the filter slope alone. Adjusting the carrier frequency can have remarkable results as far as voice intelligibility is concerned. The smaller the bandwidth (less treble) the less bass must be used too. Here again the tape recorder is very helpful for comparing the operator's voice:

- Recorded with hi-fi mike.
- Recorded with DX mike, or what have you.
- Recorded with a.f. taken from behind each a.f. stage.
- Recorded and received voice taken after each r.f. and mixer stage and from the p.a. operating the linear final into a dummy load.

THE A.M. MIXER (MODULATOR)

The 6AJ8 valve following the crystal filter has a dual function.

S.S.B.: Amplifying the s.s.b. signal to the maximum level the first mixer can handle, because high gain is easier obtained at 414 Kc. with 2.5 Kc. bandwidth than at 28 Mc. with 500 Kc. bandwidth. Usually only 10% of the gain of this stage is needed.

A.M.: The oscillator B+ and the a.f. is switched (S3a/b) to this 6AJ8 valve. The triode works as a.m. carrier oscillator valve and a fraction of a volt controls grid 3 of the heptode section. A.f. voltage from a separate volume control (200K ohm log.) reaches via switch S3b grid 1 of the heptode. The a.m. carrier can be keyed for c.w. operation or to test the final with max. drive.

The valve holders of valves carrying r.f. voltage are all mounted on top of the chassis, standing on their centre shield, and the "no r.f." carrying contact lugs are soldered to 1,000 pF. feed-through capacitors to simply shielding and to keep all r.f. out of the below chassis space. Capacitors marked with X are in parallel to these feed-through capacitors.

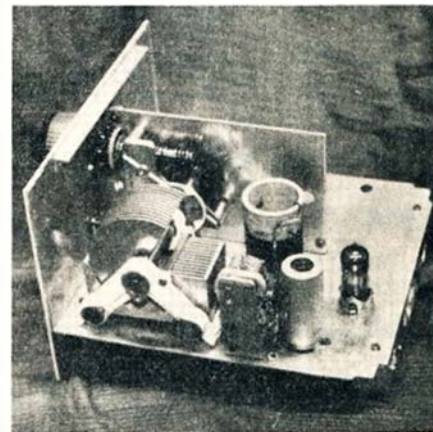
FIRST MIXER AND V.F.O.

The left triode of the 12AT7 mixer valve is the actual mixer with cathode injection of the oscillator (v.f.o.) voltage. The other triode has grid injection of the same oscillator voltage, causing similar but out of phase plate current as far as the v.f.o. signal is concerned, which therefore largely cancel out in the plate circuit, forming a balanced mixer. The stage gain of ten is halved by the double tuned 50 Kc. wide band-pass circuit.

It is very interesting to check with an absorption wave meter how well unwanted mixing products and the carrier are suppressed, because the

following fixed tuned and damped wide band circuits are far less discriminating. Tapping the mixer plate half way down the coil helped too. The ganged air capacitor tunes from 4.450 to 3.950 Mc. with a 90° rotation. The v.f.o. voltage is 20 times or more the s.s.b. mixer input signal, which helps to reduce mixer distortion.

The desirable features of the Franklin oscillator are well known. The air capacitor used (20 years old) has a frequency linear cut rotor (if a special parallel C is used) which, in combination of the right coil and worm reduction gear drive (ex U.S. surplus) and a 0 to 500 counting dial knob, was so adjusted that the numbers represent the kilocycle to be added to the lower band edge, e.g. direct digital frequency read out. Considerable patience is required to get this feature right.



VFO (chassis open): The special stator cut of the air capacitor, to achieve frequency linear tuning, is visible. Rotor and stator are machined from a block each and have quartz insulation. The worm gear drive has split gears, spring loaded. The coil wire is glued to the ceramic former. Half the chassis is free for the separate c.o. of the tx.

Differential \pm temperature drift compensation is included which maintains the total capacity but allows to increase or reduce the effect of a 20 pF. N3300 (TCc) or a 100 pF. P100 (TCc) ceramic capacitor. The 15 pF. trimmers are very stable miniature air capacitors. All other capacitors near the tuned circuit are NPO ceramic types. To reduce the overall drift, no magnetic core was used in the coil.

This v.f.o. is many times more stable than the one in the BC221 frequency meter. A buffer stage with the 6AG5 valve follows. The buffer output is matched with a link coil to the two feet long co-axial cable and mixer resistance. The output voltage lies between 2 and 3v., which is about right for the typical 12AT7 mixer circuit. The v.f.o. frequency range is 4.036 to 3.536 Mc.

Earlier an unexpected beat note and signal was observed. It was found that the balancing triode of the mixer started to oscillate (tuned grid-tuned plate) using the buffer plate circuit as grid tuned circuit. The 50 ohm grid stopper prevented the trouble finally. This sort of experience may be the reason why the industry so often uses a cathode follower as buffer today.

(To be continued)

REMEMBRANCE DAY CONTEST RESULTS

TASMANIA WINS R.D.

Congratulations to VK7 for their well deserved win. They had the highest participation, highest ever top-six log average, and the highest State score since VK5 won with 5707 in 1964.

An analysis of the last eight years' top logs shows that 1968, under the present scoring table, proved to be the best year, with all States' top logs scoring over 1,200 points. VK7DK's tally of 1822 points for 18½ hours of operating could stand as a record for some time.

Band conditions were most favourable with many logs showing numerous 10 metre contacts. S.s.b. usage also was noticeably predominate, and, because of it, the bands appeared able to cope with the station pile-ups that occurred without the mutual interference known of old.

Once again congratulations to Tasmania for a fine effort and we hope that next year all States will put up a good fight, trying to win.

—Neil Penfold, F.C.M. for F.C.C.

[See Analysis of R.D. Results after Listeners' results.—Ed.]

DETAILS OF STATE SCORES

Log Entry	Licenses	% Participation	Average Top Six Logs	Total State Points	State Score
VK2 72	1,744	4.1	1,114	21,407	1,988
VK3 60	1,702	3.5	1,041	20,689	1,771
VK4 60	661	9.0	1,102	18,546	2,771
VK5 85	720	11.8	1,132	19,251	3,373
VK6 83	424	19.6	1,115	18,809	4,795
VK7 65	217	30.0	1,294	13,577	5,367

STATE TROPHY WINNER TASMANIA

NEW SOUTH WALES

(Award Winners in Bold Type)

Phone—	
VK2YN .. 1101 Pts.	VK2APP .. 183 Pts.
2XT .. 872	2EY .. 166
2ANO .. 859	2AIC .. 162
2BGF .. 855	2RV .. 142
2AFD .. 711	2SS/M .. 142
2SJJ .. 620	2BLF .. 123
2AGF .. 618	2EU .. 118
2AHSV .. 605	2HQ .. 97
2AJY .. 513	2KA .. 88
2APQ .. 506	2YS .. 73
2AIA .. 422	2AKV .. 70
2RX .. 406	2ZCF .. 69
2BMK .. 401	2ADL .. 68
2AEC .. 312	2CU .. 46
2BDB .. 311	2BKW .. 41
2ADA .. 290	2AVT .. 37
2VG .. 278	2LA .. 34
2ACZ .. 264	2OT .. 25
2AWN .. 247	2ZCT .. 20
2MW .. 247	2AAH .. 15
2DK .. 241	2GJ .. 13
2AKR .. 210	2ZHZ .. 11
2AFI .. 187	2ZIC .. 16

C.w.—

VK2NS .. 568 Pts.	VK2HW .. 109 Pts.
2QL .. 429	2GD .. 101
2GW .. 419	2PQ .. 99
2ANZ .. 348	2AJQ .. 94
2VN .. 265	2RJ .. 87
2AGI .. 259	2RA .. 60
2VE .. 223	2HZ .. 56
2GT .. 202	2OY .. 48
2ZO .. 113	

Open—

VK2BO .. 1227 Pts.	VK2EL .. 408 Pts.
2DO .. 1181	2BNA .. 315
2BCP .. 587	2PU .. 314
2RB .. 489	2AGS .. 158
2CK .. 443	

VICTORIA

Phone—

VK3VK .. 1251 Pts.	VK3AJK .. 229 Pts.
3WW .. 1048	3KO .. 228
3ARD .. 1039	3ADS .. 203
3ADW .. 1015	3QZ .. 187
3SM .. 811	3AJP .. 176
3AOW .. 791	3AWV .. 172
3RV .. 704	3ZX .. 144
3OM .. 601	3BD .. 119
3YQ .. 550	3ACA .. 112
3DG .. 518	3WV .. 104
3YC .. 485	3ABA .. 101
3AMK .. 479	3ARV .. 71
7DJ/3 .. 445	3CO .. 39
3ATN .. 394	3OW .. 34
3XY .. 371	3AXU .. 33
3AR .. 340	3AUB .. 33
3ARM .. 333	3ZDE .. 24
3EG .. 320	3DY .. 20
3EF .. 287	3ZBB .. 15
3AUN .. 276	3ZWJ .. 13
3ASQ .. 272	3AER .. 12
3HE .. 243	

C.w.—

VK3APJ .. 658 Pts.	VK3RJ .. 126 Pts.
3XB .. 634	3IB .. 88
3OP .. 563	3AXK .. 84
3QK .. 401	3KS .. 43
3ABR .. 396	3AAL .. 40
3APN .. 331	3AKT .. 17

Open—

VK3ASW/P .. 1082 Pts.	VK3QI .. 169 Pts.
3AKS .. 724	3VF .. 150
3QV .. 542	

QUEENSLAND

Phone—

VK4WW .. 1129 Pts.	VK4XN .. 48 Pts.
4LB .. 1054	4XC .. 45
4PP .. 985	4HR .. 42
4CP .. 982	4EQ .. 39
4LT .. 951	4VJ .. 39
4XY .. 903	4GS .. 38
4BQ .. 743	4KE .. 36
4UA .. 701	4HD .. 35
4LZ .. 681	4HA .. 32
4DO .. 645	4UG .. 32
4LE .. 643	4XV .. 30
4LW .. 428	4EH .. 28
4LJ .. 392	4JI .. 27
4XZ .. 342	4CE .. 23
4ZW .. 317	4RG .. 23
4UW .. 251	4BC .. 22
4ZT .. 242	4TC .. 22
4FN .. 215	4LK .. 20
4RL .. 174	4ZHO .. 20
4XR .. 170	4ZHW .. 20
4NB .. 159	4JW .. 19
4HB .. 157	4GT .. 18
4CZ .. 155	4KS .. 18
4LN .. 112	4SF .. 18
4XJ .. 109	4RT .. 15
4HW .. 98	4ZTL .. 15
4AV .. 93	4ZAL .. 13
4QW .. 93	4ZGT .. 13
4QC .. 88	4NG .. 10
4PJ .. 86	4NZ .. 8
4EB .. 71	4ZRE .. 5
4RO .. 68	4ZRG .. 5
4SL .. 65	4ZRO .. 5
4EF .. 54	4ZRS .. 5

C.w.—

VK4XW .. 587 Pts.	VK4WO .. 78 Pts.
4UC .. 354	4ZB .. 64
4ES .. 199	4RE .. 33
4XP .. 168	4AW .. 13
4KK .. 96	

Open—

VK4RH .. 1398 Pts.	VK4MY .. 253 Pts.
4FX .. 1085	4LO .. 150
4CK .. 288	

SOUTH AUSTRALIA

Phone—

VK6FO .. 1350 Pts.	VK6PC .. 73 Pts.
5FT .. 1267	5GF .. 65
5BI .. 1021	5KF .. 63
5QX .. 819	5KE .. 62
5EF .. 688	4ZNB .. 60
5WC .. 637	5MQ .. 67
5KG .. 540	5LI .. 53
5TY .. 495	5TU .. 48
5NM .. 440	5ZQ .. 44
5XM .. 406	5ZDX .. 42
5OH .. 392	5AV .. 40
5HM .. 334	5GZ .. 40
5AX .. 332	5ZAR .. 39
5PL .. 328	5ZL .. 38
5GX .. 326	5VL .. 35
5JC .. 317	5EU .. 29
5WG .. 301	5ZKK .. 29
5LC .. 260	5FZ .. 27
5ZZ/T .. 246	5CL .. 27
5EK .. 237	5ZEJ .. 24
5GN .. 204	5SH .. 23
5NH .. 168	5ZIB .. 22
5DO .. 154	5FI .. 21
5DE .. 149	5DI .. 20
5SS .. 143	5DF .. 17
5UA .. 139	5ZKG .. 17
5LQ .. 134	5IJ .. 16
5CH .. 133	5ZEI .. 15
5RR .. 128	5ZZX .. 12
5DV .. 111	5ZK .. 12
5UF .. 108	5ZSW .. 9
5BV .. 107	5ZLT .. 9
5WN .. 94	5ZFX .. 6
5ON .. 85	

C.w.—

VK6AU .. 251 Pts.	VK6OR .. 93
5HO .. 188	5TL .. 68
5FM .. 124	5JG .. 18
5LD .. 106	

Open—

VK6GW .. 1238 Pts.	VK6WI .. 119 Pts.
5CV .. 979	5QR .. 84
5LN .. 938	5NK .. 80
5WO .. 444	5RK .. 60
5ZX .. 305	5ST .. 15
5XV .. 287	

WESTERN AUSTRALIA

Phone—

VK6XX .. 1419 Pts.	VK6ER .. 50 Pts.
6BU .. 955	6YL .. 48
6KY .. 870	6GL .. 47
6DA .. 725	6BO .. 34
6RY .. 648	6GH .. 33
6DT .. 630	6ZCB .. 31
6WY .. 582	6KW .. 31
6SM .. 445	6ZBB .. 30
6MF .. 369	6CR .. 27
6FN .. 361	6ZFH .. 26
6KK .. 357	6MM .. 26
6CN .. 285	6ZCW .. 25
6XW .. 277	6CD .. 23
6WL .. 270	6ZGP .. 22
6FG .. 245	6KH .. 21
6XO .. 214	6ZBV .. 21
6NM .. 152	6ZGO .. 21
6CY .. 139	6ZFO .. 21
6DI/P .. 138	6NJ .. 20
6MO .. 130	6ZFD .. 20
6RX .. 128	6ZED .. 19
6KJ .. 117	6ZKR .. 18
6KM .. 107	6ZDC .. 16
6TY .. 93	6ZFY .. 15
6AB/P .. 82	6ZBY .. 13
6EZ .. 81	6LC .. 10
6JA .. 81	6ZAF .. 10
6TX .. 78	6ZAZ .. 9
6BT .. 78	6ZEK .. 8
6SE .. 60	6TH .. 5

C.w.—

VK6WT .. 463 Pts.	VK6QJ .. 55 Pts.
6RS .. 173	6WW .. 51
6KP .. 158	6RP .. 43
6AS .. 101	6GA .. 30
6AJ .. 89	6RB .. 14
6ZZ .. 63	

Open—

VK6RU .. 1651 Pts.	VK6AI .. 319 Pts.
6BE .. 961	6UT .. 168
6CW .. 835	6TU .. 147
6PH .. 820	6JK .. 119
6NS .. 681	6WI .. 84
6ZW .. 478	6LU .. 57
6JC .. 396	6MA .. 38

TASMANIA

Phone—

VK7WH	1673	Pts.	VK7RX	29	Pts.
7TX	1254	"	7ZLH	26	"
7MD	671	"	7ZJG	24	"
7PA	559	"	7ZBJ	23	"
7LS	555	"	7ZAS	23	"
7SS/P	508	"	7EB	22	"
7EJ	482	"	7BQ	22	"
7JF	282	"	7DA	21	"
7WF	247	"	7ZRV	19	"
7SF	200	"	7CB	19	"
7BM	190	"	7ZOR	18	"
7AB	140	"	7ZCP	17	"
7PF	135	"	7JP	16	"
7MX	106	"	7KH	15	"
7LZ	91	"	7MR	14	"
7LD	82	"	7KC	14	"
7PJ	69	"	7JD	13	"
7IL	62	"	7ZCW	13	"
7KK	57	"	7DR	11	"
7CK	48	"	7NZ	10	"
7FM	46	"	7TT	9	"
7ZKJ	38	"	7ZWX	7	"
7ZRO/P	36	"	7ZAK	7	"
7FS	32	"	7ZRJ	7	"
7ZFL	30	"	7ZXT	6	"

C.w.—

VK7ZL	310	Pts.	VK7OM	57	Pts.
7LJ	88	"			

Open—

VK7DK	1822	Pts.	VK7ZX	55	Pts.
7SM	1574	"	7YL	50	"
7ZZ	767	"	7BJ	43	"
7AL	357	"	7JB	43	"
7NC	266	"	7KS	28	"
7RY	97	"	7HW	22	"

VKs 1, 8, 9, 0

Phone—

VK1JG	698	Pts.	VK0AL	106	Pts.
8DI	606	"	0VK	72	"
9WD	1001	"			

C.w.—

VK8IIA	276	Pts.
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Open—

VK8KK	1147	Pts.	VK9DJ	1121	Pts.
-------	------	------	-------	------	------

LISTENERS' SECTION

New South Wales

P. Grido	1113	Points
J. M. Hillard	850	"
P. Linsley	783	"
F. McGrath	533	"
N. Jays	429	"
R. B. McIntosh	307	"
D. W. Shephard	261	"
D. Grantley	225	"

South Australia

S. Ruediger	1343	Points
P. Field	232	"
L. M. Earl	356	"
C. H. Hannaford	346	"
J. Crawford		"
Lindsay	343	"
R. Edmeades	142	"

Victoria

R. Trenayne	1215	Points
A. Cox	864	"
G. Armstrong	739	"
C. Consiglio	673	"
R. Hanel	643	"
M. G. White	462	"
T. Hambling	391	"
E. Trebilcock	333	"
L. Milne	236	"

Western Australia

P. W. Drew	1600	Points
P. L. Jackson	1413	"
K. Woodley	682	"
R. P. Lockley	379	"

Tasmania

B. Livingstone	1076	Points
J. Everett	1020	"
B. Mutton	954	"
A. Dixon	258	"
R. Stewart	376	"

ANALYSIS OF R.D. RESULTS

Top Six Logs for 1968

VK2BO	1227	Points	399	Contacts
3VK	1251	"	427	"
4RH	1398	"	463	"
5FO	1350	"	497	"
6RU	1651	"	605	"
7DK	1822	"	606	"

Top Log Scoring

1960	1961	1962
VK2AHM/1011	VK2AHM/1215	VK2AHM/1218
3APJ/971	3ALZ/874	3ALZ/813
4UX/958	4DP/919	4RH/756
5NO/1227	5NO/1389	5MS/1286
6RU/1105	6RU/903	6RU/889
7RX/971	7MS/807	7MS/735
1963	1964	1965
VK2AHM/1205	VK2AHM/1089	VK2AHM/1116
3ALZ/826	3MO/965	3MO/1065
4DJ/778	4RH/920	4RH/1091
5ZP/1440	5ZP/1270	5NO/1226
6CL/807	6CL/560	6RY/759
7AI/657	7SM/485	7DK/938

1966	1967	1968
VK2AHM/1304	VK2B/1037	VK2BO/1227
3MO/1273	3MO/1341	3VK/1251
4RH/1389	4MH/1329	4RH/1398
5EF/916	5NY/1112	5FO/1350
6RU/1365	6RY/1138	6RU/1851
7SM/1290	7SM/1334	7DK/1822

Total Log Entries

1960	432	1963	483	1966	474
1961	466	1964	473	1967	435
1962	493	1965	418	1968	425

Total Licensees used in Scoring

1960	3982	1963	4314	1966	3709
1961	4088	1964	3595	1967	5277
1962	4141	1965	3765	1968	5468

ERRATA

Readers are asked to note the following corrections to "A Table Top S.s.b. Transceiver for Six Metres," Sept., 1968, "A.R."—

1. Coupling capacitor between plate of V9 and grid of V10 omitted. Its value is 220 pF.
2. The 20 pF. drift adjust capacitor is a N750 not NPO.
3. The 0.001 uF. capacitor from the a.l.c. line to earth should be 0.1 uF.
4. The 6BE6 mixer screen resistor should be 25K 1w.

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE

VK5MS	315/338	VK5AB	298/314
VK3AH	312/326	VK4FJ	282/301
VK6RU	307/332	VK4TY	275/278
VK6MK	304/323	VK3TL	271/277
VK2JZ	303/320	VK2AAK	268/273
VK4HR	303/321	VKAKS	264/279

New Members:

Cert. No.	88	VK3JW	153/154
"	89	VK3QR	102/102
"	90	VK1VP	115/115

Amendments:

VK4DO	205/217	VK4PX	172/173
VK3ZE	194/197	VK4UC	107/107

C.W.

VK2QL	300/322	VK3YL	266/283
VK3AHQ	292/306	VK3ARX	266/275
VK3CX	289/312	VK8RU	266/289
VK4FJ	289/313	VK3NC	264/286
VK2AGH	282/296	VK3XB	263/277
VK4HR	276/299	VK2APK	260/268

Amendments:

VK3TL	255/260	VK4KS	131/137
VK4UC	167/168	VK4PX	101/105

OPEN

VK2AGH	311/331	VK4TY	301/315
VK4HR	309/333	VK4FJ	296/320
VK6RU	309/334	VK3ARX	289/298
VK6MK	305/324	VK3TL	287/293
VK2VN	304/321	VK3XB	286/274
VK2EO	302/325	VK2APK	282/292

New Member:

Cert. No. 113	VK3AMK	139/139
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Amendments:

VK4KS	272/291	VK4UC	202/203
VK4DO	228/246	VK4PX	194/199

D.X.C.C. members will notice that nearly all scores have been amended this month. Please refer to this month's Federal Awards Notes for information relating to additions and deletions.

* AEGIS

* Registered Trade Mark

INSTRUMENT KNOBS

Just 4 of our wide range of bakelite and metal knobs



MV3/R

Black with silver insert, brass bush bored for 1/4" shaft and 2 grub screws at 90°. 1 1/8" diam. x 3/8" high.

Available everywhere. Write for detailed, illustrated leaflet and prices



MK 132

Metal knob, gold, plain, 1 grub screw. 1" diam. x 1" high.

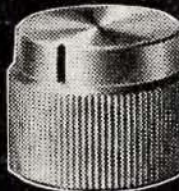
MK 231

Metal knob, silver, knurled black ring and black vertical line. 2 grub screws at 90°. 15/16" diam. x 1/2" high.



MK 144

Metal knob, silver, silver knurling with one black vertical line, one grub screw. 15/16" diam. x 13/16" high.

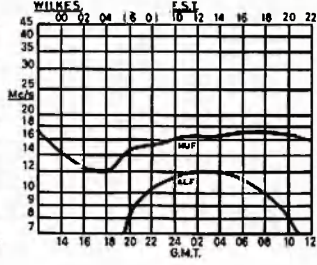
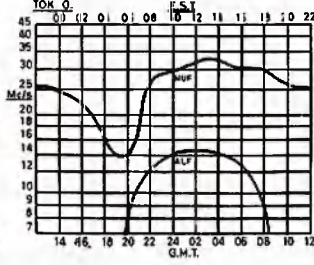
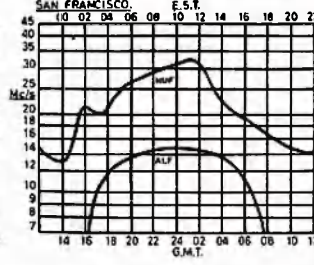
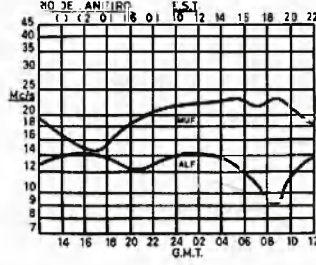
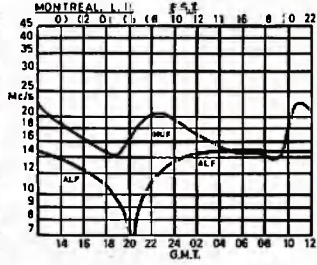
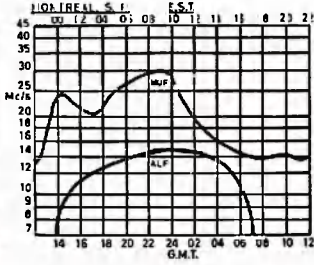
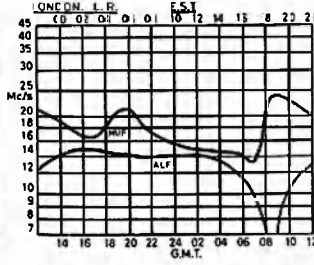
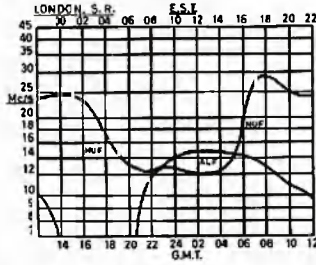
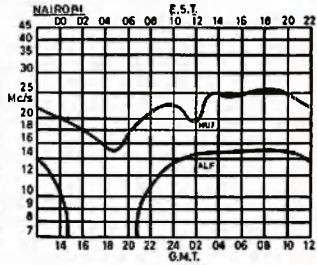
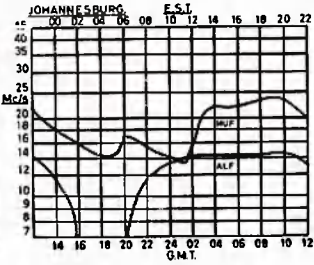
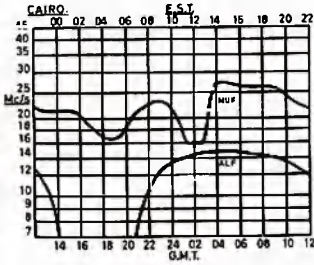
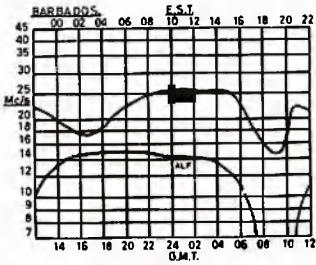


AEGIS PTY. LTD.

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P.O. BOX 49 Thornbury, Vic., 3071
Phones: 49 1017, 49 6792

PREDICTION CHARTS FOR NOVEMBER 1968

(Prediction Charts by courtesy of Ionospheric Prediction Service)



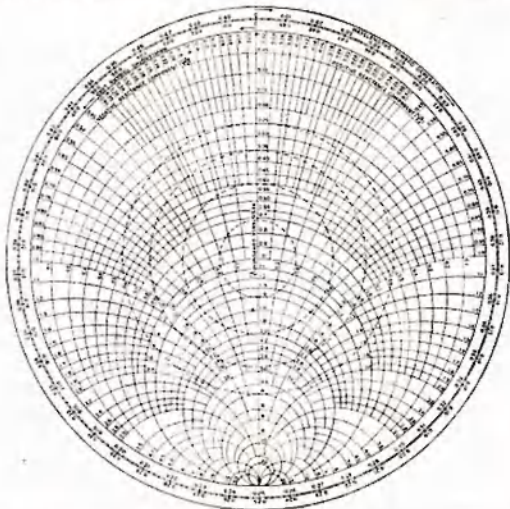
AUSTRALIAN RADIO AMATEUR

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1968-69 EDITION

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Other features which can be added (and some are incorporated in the finished design) are rx a.g.c., tx a.l.c., S meter, external v.f.o., external crystal lock, rx calibrator or a.m. noise limiter. A good simple noise limiter has not yet been found by the writers.

Thus the total design makes it possible to start with a simple basic receiver, get it going on one band and add modules as time and money permit to expand, first to a multiband receiver and then to a multiband transmitter.

It is further possible to use the modules to "tailor" a specific requirement. For example, by using a simple crystal oscillator in place of the injection chain (12, 13, 14) one could produce a single fixed frequency receiver, or transmitter, or transceiver for W.I.C.E.N. or other net use. Provision has been made for such external injection as well as for a second v.f.o. to permit split frequency working.

Table 1 shows some of the possibilities inherent in the modular approach by listing various "end products" and the functions necessary to achieve them. The table is by no means complete and (within reason) the number of possibilities is limited only by the imagination. The writers will be pleased to talk over other possible combinations with anyone interested.

FEATURES

Frequency ranges:

- (i) 1.8 to 2.3 Mc.
- (ii) 3.5 to 4.0 Mc.
- (iii) 7.0 to 7.5 Mc.
- (iv) 14.0 to 14.5 Mc.
- (v) Provision made for optional addition of 21.0-21.5, 28.5-29.0 Mc. or any other two 0.5 Mc. bands.

I.f. Frequency: 9.0 Mc.

V.f.o. range: 5.0 to 5.5 Mc.

Tuning: 0.5 Mc. per band. All bands tune in the same direction at the same rate.

Generator type: Filter uses a Pye 9-0A crystal filter.

Tx output: 15 watts p.e.p. into 50 ohms. Sideband selection: Automatic. Other sideband selectable.

Power supply: 12v. d.c. (or 230v. a.c. with suitable power pack).

Rx audio output: 1.3 watts into 8 ohms.

Rx sensitivity: Better than 0.5 microvolts, 30% a.m. modulated.

Rx noise figure: Better than 3 db. at a bandwidth of 2.8 Kc.

Drift: Better than 50 cycles per hour.

Other features:

- (i) Provision for external v.f.o.
- (ii) Provision for crystal lock.
- (iii) A.m. noise limiter.
- (iv) Uses Eddystone dial but will accept less exotic ones.
- (v) Rx vernier tuning.

is of either American or Japanese origin. Both of these countries use a d.c. input method of rating sideband transmitters and the specifications (and advertising!) refer only to d.c. input. Depending on the particular mode of operation in which the p.a. is run, the peak output of commercial gear may be as low as 30% of the d.c. input. Thus a transmitter rated at 100 watts peak d.c. input may well only give 30-35 watts of peak r.f. at the antenna.

Thus the 15 watts peak output capability of the present design is not insignificant and is about half the power one would get from valve equipment using a single tube in the p.a.

It is certainly possible to get more than 15 watts from a single transistor, but for multiband operation (as distinct from single spot frequency operation) the problems of matching a transistor output impedance of a quarter ohm or so into a 50 ohm antenna are rather frightening. An attempt to work out the circuit constants (and switching) for a four-band h.f. rig giving 50 watts of output and running off a 12 volt rail will soon indicate the size of the problem.

The 15 watts output level was finally chosen because—

- (a) It simplifies matching problems.
- (b) It is quite adequate for "bare-foot" operation.
- (c) It is more than sufficient to drive an AB or AB2 valve linear to the full allowance of 400 watts peak output.
- (d) It allows safe operation of the p.a. transistor even with the antenna disconnected.
- (e) It can readily be obtained from available transistors off a 12 volt rail.
- (f) It is—in general—compatible with the concept of portable equipment.

DESCRIPTION OF MODULES

Receiver Audio Module

(Function 8, Fig. 1)

The audio end of any transistorised equipment is—on the face of it—the simplest.

However, quite a number of circuits were tried before settling for that shown in Fig. 2. This circuit is essentially the one described in the Fairchild Applications Brief No. A002, the only additions being the transistor associated with the base circuit of the AY1121 driver. Full acknowledgment is made to Fairchild for the use of this circuit.

Under quiescent conditions the emitters of the output pair are held at approximately half rail potential. On positive excursions of the input signal the AY6108 conducts and drives the speaker through the 250 uF. capacitor. The AY6109 drives it on negative excursions. At very small signal levels an appreciable portion of the power delivered to the load passes through the 560 ohm resistor. The AY1120 and AY1121 form a high gain direct coupled voltage amplifier to drive the output pair. 100% feedback through the 2.2K resistor accurately establishes the quiescent point of the output pair.

The 470 ohm resistor between the AY6108/AY6109 emitters and ground reduces cross over distortion at low

End Product	Function Used
Four-band receiver	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14
3.5 Mc. receiver	1, 2, 13, 3, 4, 5, 7, 8, 9
3.5 Mc. transmitter/receiver	1, 2, 3, 4, 5, 8, 9, 7, 13, 15, 16, 17, 19, 20
3.5/14 Mc. transmitter	15, 16, 7, 3, 4, 17, 13, 19, 20
Spot frequency receiver	1, 2, 14, 3, 4, 5, 7, 8, 9, 10
"Front end" for an existing rx	1, 2, 12, 13, 14
9 Mc. s.s.b. generator	15, 16, 7, 3, 4
QRP c.w. transmitter (v.f.o.)	12, 13, 14, 17, 19 (+ 20)
"Q5er" back end	5, 6, 8
A.m. modulator pre-amp.	15

Table 1.—Function Combinations.

The grouping of functions on to printed circuit boards is as follows:

- (a) Rx r.f. amplifiers and mixers—Functions 1, 2.
- (b) 9 Mc. filter unit—Function 3.
- (c) Rx i.f. amplifier and a.g.c.—Functions 4, 9.
- (d) A.m. detector, a.m. N/L, prod. detector—Functions 5, 6.
- (e) Rx audio, squelch, C/O relay—Function 8.
- (f) V.f.o. (in die cast metal box)—Function 13.
- (g) Injection oscillators and mixers—Functions 12, 14.
- (h) Tx audio—Function 15.
- (i) B.f.o./balanced modulator—Functions 7, 16.
- (j) Tx mixers, pre-amplifiers and a.l.c.—Functions 17, 18, 19.
- (k) Tx p.a.—Function 20.
- (l) Rx crystal calibrator—Function 11.

Having covered the general concept of the design, and shown some of the possibilities inherent in it, the description will now become more specific. Comments in all cases refer to the completed unit.

With the exception of the v.f.o. and tx p.a., all printed circuit boards are $4\frac{1}{2}$ " x $2\frac{1}{2}$ " and used a glass epoxy substrate. $\frac{1}{16}$ " is left uncoated at each end for mounting purposes.

The completed unit is contained in a metal cabinet approximately 15" x 8" x 11" deep. If sufficient interest is shown, consideration will be given to organising a supply of the metalwork.

Wide use has been made in the circuitry of Motorola MPF102 single gate FETs and R.C.A. 3N140 dual gate FETs. These are obtainable from Cannon Electric and Radio Parts respectively. Other transistors used are either Mullard or Fairchild. All other components are standard items and can be obtained in Australia.

The specification of an output power of 15 watts peak may cause some comment. It is certainly worthy of some.

In Australia, although sideband transmitters are rated on output, there are still a very large number of Amateurs who still use the older d.c. input terminology. The reasons for this are understandable since most of the commercial equipment sold in this country

signal levels, while the 150 ohm resistor in the AY1121 emitter/ground path establishes the sensitivity of the unit.

The 0.1 uF. condenser across the supply rails prevents oscillation if the impedance of the supply is excessively high (e.g. dud batteries).

The unit can be operated at rail voltages of between 9 and 20 volts without modification although of course the power output will also vary.

At 12 volts and using an 8 ohm speaker load, the output is 1.3 watts for an input voltage swing of 1.0 volt peak to peak. No heat sinking is required

for the output pair under these conditions, but if the rail voltage is raised to 20 volts to take advantage of the 3.5 watts of output, then available heat sinks are necessary.

The transistor in the base circuit of the AY1121 is an optional feature. It is used in the completed unit as a muting switch.

9 Mc. Filter Module (Function 3, Fig. 1)

The performance of the Pye 9-0A crystal filter is—for its price—the best obtainable on the Australian market. Other 9 Mc. filters are obtainable which

have marginally better performance, but they are usually much more expensive and, being imported, are subject to supply variations. Accordingly, the decision was made to use a 9 Mc. i.f./s.s.b. generator system which used the Pye 9-0A.

Fig. 3 gives the circuit diagram and, with one small exception, is as recommended by Pye for use with their filter.

The exception is the use of fixed capacitors of 120 pF. and 100 pF. at the input and output of the filter instead of the part fixed/part variable capacity recommended by Pye. There was no discernable difference in the performance of the unit due to this change.

The input amplifier (BF115) gives some gain but its main purpose is to match the input to the 150 ohms presented by the filter. The output transistor (also a BF115) is used as an emitter follower to give the board a low output impedance. The RFC and associated 0.01 uF. capacitors in the +12 volt line are to prevent coupling between input and output via the feed line. No adjustments of any sort are called for and, providing the components are mounted correctly, it will work first time.

Tx Audio Module (Function 15, Fig. 1)

This module includes not only the voltage amplification required but also incorporates pre-set automatic audio level control. To a certain extent this latter feature achieves the same end as the more conventional r.f. derived a.l.c. Fig. 1 indicates that provision has been made for both forms in the overall design. Fig. 4 gives the circuit diagram.

A two-stage RC coupled pre-amplifier using Motorola MPF102s takes input from a 50 ohm dynamic microphone. The amplified signal is fed to gate 1 of an R.C.A. 3N140 dual gate FET. Output from the 3N140 is again amplified in a third MPF102 whose output is split two ways. One output goes to the balanced modulator (to be described) while the second output is again amplified and then rectified to give a control voltage which is applied to gate 2 of the 3N140.

The only critical adjustment on the board is the 1.8K resistor in the drain of the 3N140 and the value of this resistor may have to be adjusted in extreme cases.

The value of 1.8K shown has proved satisfactory on four developmental models. When the correct value is used for the drain resistor of the 3N140 the drain voltage under no signal conditions should be 4 volts. This voltage should rise to 8 volts at maximum speech input. At average input levels the voltage should be around 6 volts.

The 20K audio level control is mounted external to the board and connecting pins are provided on the board to make the necessary lead anchor points. These pins also provide connecting points if an external microphone pre-amplifier (mounted in the microphone case) is used. It is the writers' opinion that such a case mounted pre-amplifier is most preferable to prevent r.f. getting into the audio system. However, in this

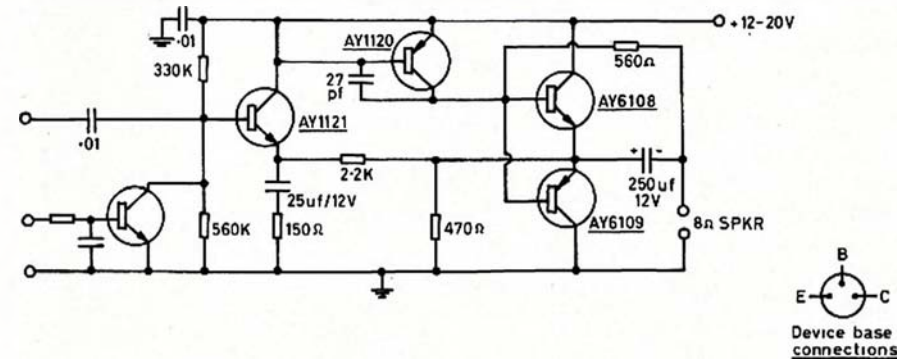


FIG. 2 - 4-BAND TRANSISTOR TRANSCIEVER - AUDIO SECTION-RECEIVER.

NOTE: The .01 uF. capacitor across the supply rail in Fig. 2 should read 0.1 uF.

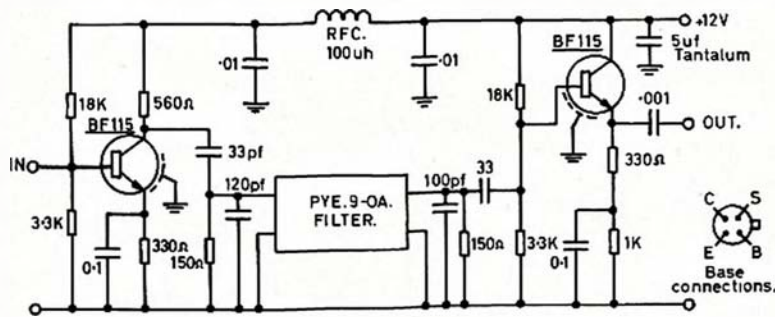


FIG. 3 - 4-BAND TRANSISTOR TRANSCIEVER - FILTER SECTION.

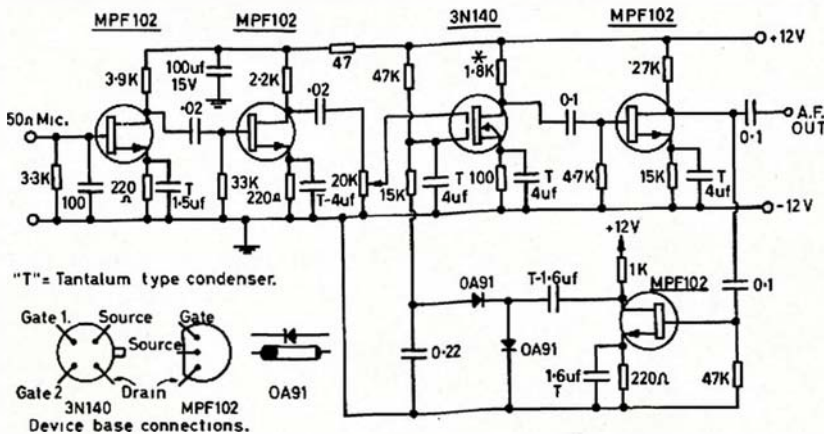


FIG. 4 - 4-BAND TRANSISTOR TRANSCIEVER - TX AUDIO SECTION.

design lack of knowledge of the type of microphone that would be used prevented this being done. For those who wish to fit a pre-amplifier in the microphone case the circuitry of the first two stages in Fig. 4 are perfectly applicable.

Two pairs of connecting pins are provided on the p.c.b. as anchor points for p.t.t. connections.

AVAILABILITY

As for all the designs published in "A.R." over the past two years, provision is being made to make available full kits of parts, printed circuit boards or p.c.b.'s plus full instructions and diagrams.

Twelve or so boards are involved and in the case of the finished job the same board has been used several times. A four-band transceiver for example uses 21 boards in all.

The aim has been to keep the average cost of each board to around \$12-\$15 but of course this must vary from module to module according to its complexity.

The receiver audio kit will cost \$12 less speaker.

The transmitter audio kit will cost \$25 complete.

The filter kit will cost \$30 complete. All of the above prices include all components, p.c.b., diagrams and instructions.

P.c.b.'s alone will be \$2 each, while P.c.b.'s plus diagrams and instructions will be \$3.

Anyone interested in taking part in this project is invited to write to one of the writers—3AFQ—at 4 Elizabeth St., East Brighton, Vic., 3187, for additional information on supplies of kits or p.c.b.'s.

(To be continued)

Magazine Review

"BREAK IN"—JUNE 1968

A Double Sideband Transmitter: Five band d.s.b. rig beginning with a Franklin v.f.o. and having a pair of 6DQ6s in the final. Uses disposals parts and tubes readily available in Australia.

Oscilloscope Notes: Information on using the VCR97 disposals c.r.t. in a simple oscilloscope suitable for checking s.s.b. transmitters, etc.

The Minlcheck: A small device which turns an ohmmeter into a transistor checker and permits lead identification, etc.

Integrated Circuits: General dissertation on purpose and manufacture of these devices and the promise they hold out for more sophisticated and less expensive consumer products.

B/C Converter for 80 Metre Transceivers: Describes a simple one transistor converter to enable broadcast stations to be received on an 80 metre transceiver.

"BREAK IN"—JULY 1968

Four-Band S.s.b. Transmitter: A phasing rig beginning with 9 Mc. generator and followed by the usual stages to a TT21 final, uses many disposals components and readily available tubes, etc. For a power input of around 150 watts d.c. peak. The unit has built-in v.o.x. and a.l.c. all in one cabinet.

Hertz Cycles and Seconds: Describes the origin of the term "Hertz" for "cycles per second" and explains the relationships between frequency and time and the different time scales in use throughout the world. A good article of general interest without diagrams.

The Lazy L.A.D.S.: A design for a light actuated dip switch. Simple circuitry using three transistors and an L.D.R.

Wind Speed Indicator, from parts around the Shack: Short article describing how ZL1IM built himself a wind-speed indicator from a small permag. motor and a multimeter.

"BREAK IN"—AUGUST 1968

Grinding and Etching Crystals: Cliff Dixon, ZL2FT, and P. J. Rogers, ZL-3NH. Two short articles, one on each of these subjects by the above authors, grouped by the editor to acquaint Amateurs with the crystal working process, by which crystals can be adjusted to frequency.

An Eight-Valve QRP S.s.b. Transceiver: From a lattice filter made from FT241 crystals operating in the normal i.f. range to a 6AG7 used as the transmitter final and receiver a.f. stage on 80 mx. A small handy rig for car, field day or home QTH.

Oscilloscope Notes, No. 2: Continuing the article commenced in June "Break In".

Effects of Stray Capacitance on L and C Measurements: Explains how to make reasonably accurate measurements of L and C using simple equipment and how "strays" affect accuracy.

Transistor Breadboard and Power Supply: An experimenter's approach to solid state techniques.

Linear Amp. for the D.s.b. Tx: Describes a linear designed for the d.s.b. tx described in June "Break In" which increases the input power to about the N.Z. legal limit of 300w. d.c. peak using an 813 or a pair of TT21s. E.h.t. about 2,500v. for 813 and 1,100v. for TT21s.

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Repeater Technical Group Meeting

Convened by the Wireless Institute of Australia, this meeting was held at the Scout Hall, Bandianna (near Wodonga), Vic., over the week-end of 21st and 22nd September, 1968. The following minutes represent, I believe, an accurate record of the resolutions adopted at the meeting.

Whilst it has been impossible to record the many technical sidelights leading to the formulation of these proposals, it should be understood that the recommendations reflect the depth of technical discussion which took place in and outside the limits of this meeting.

The proposals have not been agreed to lightly, and embody an awareness of present and projected requirements compatible with existing equipment and the technical knowledge of those who will have to do the work.

It was unfortunate that the VK6 Division was unable to personally express a view, but as mentioned in the minutes, they must feel free to avail themselves of help to explain any angle not clear or not adequately dealt with in depth in this reporting.

The decisions of the meeting are, of course, not binding on Divisions. However, the Federal Executive is now preparing a series of policy motions which will be sent to Divisions in the near future. If the Divisions decide to vote in favour of these motions, which will represent the substance of the decisions reached at Wodonga, then the Divisions will formally adopt the conclusions of the meeting as Federal Policy.

SATURDAY AFTERNOON

Chairman: M. Owen, VK3KI, Federal Vice-President, W.I.A.

Secretary: P. Williams, VK3IZ, Federal Secretary, W.I.A.

Apologies received from Federal President, J. Batrick, VK3OR; VK6 Division.

Present (and status):—

Tim Mills, VK2ZTM, VK2 Councillor and V.h.f. Group.

Andrew Davis, VK1DA, Canberra R.S. John Gardiner, VK1ZOO, Canberra R.S. Paul Smith, VK2ZSA, V.h.f. Group.

Andrew Dean, VK2ZTO, V.h.f. Group. Geoff. Cralke, VK2ZJT, VK4 Observer.

Jim Mayland, VK3AJM, N.E. Zone. Bob Knaggs, VK3AJN, Wangaratta R.C., N.E. Zone.

Les Jenkins, VK3ZBJ, Australis. George Crisp, VK3ZJQ, Vic. Div. Tech. Rep.

Ken Nesbit, VK3AKK, Vic. Div. Tech. Rep. Dr. D. Blackman, VK3TX, VK3 Federal Councillor.

Don Haberecht, VK2RS, S.W. Zone Rep. Art. Phibbs, VK2EU, S.W. Zone Rep.

John Rufus, VK2ZJQ, V.h.f. Group. Chris. Jones, VK2ZDD, VK2 V.h.f. Translator.

Peter Dowde, VK7PD, VK7 Div., VK7 Repeater.

Ian MacKenzie, VK2ZIM, VK2 W.I.C.E.N., Orange R.C.

Pierce Healy, VK2APQ, VK2 Fed. Councillor.

Arthur Lock, VK3AUL, N.E. Zone. Geoff Taylor, VK5TY, VK5 Fed. Councillor.

Col. Christenson, VK2BCC.

Jim Linden, VK3AXB, N.E. Zone.

The meeting opened at 1.35 p.m. and representatives were welcomed by A. Lock, VK3AUL. The Chairman thanked VK2ZDD for the work in initiating the meeting.

The Chairman explained the role of F.E. which is merely to co-ordinate the activities throughout the country. Minutes of this meeting will be circulated to all Divisions and will show the origins of any resolution.

The Chairman then asked that the form of the meeting be approved.—Unanimous.

The Chairman then gave the background to the P.M.G. negotiations, indicating that the Department and Mr. Carroll had adopted a liberal view, but emphasised that there should be standardisation.

P. Healy, VK2APQ, asked whether formal rules of debate applied and the Chairman indicated that this would not be so—every representative would be given the opportunity to present his point of view.

The Chairman then called for the status of each Division with respect to repeater development and future propositions.

VK2APQ FOR N.S.W.

Repeaters were discussed at Council on 16th August and it was resolved that standardisation be sought with Chris. Jones, VK2ZDD, as co-ordinator. VK2 Division had stated that VK2APQ would be general spokesman, with VK2ZTM representing v.h.f. interests and VK2ZIM representing W.I.C.E.N.

Mr. Healy also stated that there were problems of distance in N.S.W., but on evidence to date were in general agreement with other Divisions.

VK3TX FOR VICTORIA

Dr. D. Blackman reported on the problems with the presently used repeater of Australis origin—these were mainly technical and involved coverage. He also stated that over 100 stations were using the present system, but was concerned with the longer term problem of linking country and intrastate users.

VK2ZJT FOR QUEENSLAND

Mr. Cralke advised that Amateurs in this State wished to abide by the systems created by their neighbours, viz. VK2.

VK5TY FOR SOUTH AUSTRALIA

Mr. Taylor said that experimental operation had been allowed with a site on the Adelaide hills.

VK7PD FOR TASMANIA

Mr. Dowde, representing two committees from the north and south, stated that there were some amendments to the previously circulated letter. Their need for repeaters came from the requirements of general communications between north and south and the desire to provide intrastate communications.

He felt that the meeting should decide frequencies, made and suggested operating procedures, with different frequencies for varied areas.

Technically, operation can take place on either side of existing channels, with 100 Kc. separation feasible.

WESTERN AUSTRALIA (A Taped Telex by VK6KM)

This Division felt that:—

1. Standardisation should be universal.
2. Federal Executive should be involved in the discussion.
3. Separation should be 1 Mc.
4. The frequencies chosen should be arrived at after close engineering study and be presented to all Divisions after the meeting. There should be no rushing into a compromise.

He also reported that approximately ten stations were operating in W.A. on 146 Mc.

VK1DA FOR CANBERRA R.S.

Mr. Davis agreed to the general outlines as presented by the N.S.W. Division.

TECHNICAL DISCUSSION

In opening the technical discussion, C. Jones, VK2ZDD, noted that the following points had to be resolved:—

1. Frequency allocations—the spacing of allocations and the deviation to be employed.
2. Whether the input was on the high or low side of the band.
3. To determine the necessary frequency separation and find minimum and maximum limits of this separation.

Subsequent discussion indicated that two types of repeater relays should be considered: (1) A simplex repeater where a signal was repeated within a band, and (2) A translator, where a signal was heterodyned to another frequency or usually to another band.

VK3AKK pointed out that the existing Australis system was not designed for general communication and could therefore be designated "experimental".

VK2ZDD, in answer to a query on coverage, said that service or simplex repeaters could be linked and this system could carry all traffic. This, however, was a domestic problem for individual States to solve.

VK3TX drew the attention of the meeting to the question of frequency separation and suggested that 1 Mc. would suffice.

However, VK2ZIM indicated that 240 Kc. channel separation had been used and that 500 Kc. still falls within manufacturers tolerances of readily available surplus equipment.

VK3AKK agreed with this statement up to a point, but asked how many groups would be able to provide the physical separation of transmitter and receiver. He felt there would be little degradation of performance if the separation was 600 or 700 Kc.

VK3AJM asked if equipment can be put on the one mast with this separation and receive technical assistance when necessary.

VK5TY said that 146 Kc. has been used with no desensitisation but co-axial filters have helped the situation.

VK3NS pointed out that conservation of frequencies was a prime requirement and stated that between 145.6 and 146.9 Mc. twelve channels could be accommodated, although it was pointed out that there could be no usage of existing net frequencies.

With seeming agreement of all representatives on the separation of input and output frequencies, the Chairman called for a motion.

1.1 Moved VK2ZDD: "That the separation of input and output frequencies for service translators shall not exceed 500 Kc." Seconded VK3AUL.

In speaking to the motion, VK3ZBJ was opposed to it on the grounds that it was simple for operators to take steps to increase the bandwidth with no ill effects. With input Q of 300, circuits can be loaded to accept a greater bandwidth.

VK5TY offered an amendment to add the words after "500 Kc." "from the most further removed corresponding mode on Channels A, B and C." Seconded VK3AKK.

Further discussion indicated that there was some confusion as to the meaning of service translators. It was also apparent that the relationship of channel separation for repeaters, the frequencies they would use, and their separation from existing net frequencies had not been clearly defined in the minds of delegates.

The Chairman thought that time should be allowed for a clarification of these points.

VK3ZBJ moved, VK3ZJQ seconded, that discussion on motion and amendment be deferred until the situation was clarified.—Carried unanimously.

After a 15-minute recess, the definitions of a Service and Experimental Translator was put to the chair.

1.2A Moved VK3ZBJ, seconded VK2ZDD, "That a Service Translator is a translator designed to be used by current mobile equipment using Channels A, B and C and with the intention of extending the range of similar operation."—Carried unanimously.

1.2B. "An Experimental Translator is a translator for experimental purposes for use by specially designed equipment and not intended to provide a use for normal operation."

Discussion on the deferred motion and the proposed amendment resumed, and with the approval of his seconder, VK5TY withdrew the amendment and VK2ZDD withdrew the motion with approval of seconder.

1.3. Subsequently, it was moved VK3AKK "That Service Translator input and output frequencies shall be between and including 145.6 and 146.4 Mc." Seconded VK2ZDD.

During discussion, it was apparent that allowance had not been made for future channels on a specific basis.

VK2ZDD stated that 100 Kc. separation is adequate for successive input and output frequencies, whilst maintaining the 500 Kc. separation between channelled inputs and outputs. In addition, 100 Kc. separation can be easily observed with a crystal calibrator. He therefore proposed that the following frequencies for Service Translators be accepted:—

(1) Input—146.1 Mc.	Output—145.6 Mc.
(2) " 146.2 " "	" 145.7 " "
(3) " 146.3 " "	" 145.8 " "
(4) " 146.4 " "	" 145.9 " "

VK3TX said that trouble would be caused to Channel C and the Australis Channel if the frequencies were used.

However, VK2ZDD said that a service was already operating on one of these.

VK7PD had no objection and VK3TX asked

whether the two channels under question could be deleted from any motion.

VK2ZDD therefore proposed that Channels (2) and (3) be not listed as immediate priority Channels, although he felt that the occasion would soon arise when they would be used.

Motion 1.3 was withdrawn and it was subsequently moved VK3TX, seconded VK2ZDD:

1.4. "That the Primary Service Translator frequencies be 146.4 Mc. input and 145.6 Mc. output, and the second channel be 146.1 Mc. input and 145.6 Mc. output with the frequencies of 146.2 Mc. input and 145.7 Mc. output, and 146.3 Mc. input and 145.8 Mc. output, reserved for future expansion, subject to national agreement of Service Translator facilities."—Carried unanimously.

It was also agreed that deviation used be compatible with existing facilities.

VK2ZDD raised the question of national co-ordination of a simplex channel. After little discussion, it was moved VK2ZDD, seconded VK2ZIM:

1.5. "That the Primary Simplex Frequency be 146.00 Mc. and that new operators be encouraged to commence on this frequency."—Carried unanimously.

1.6. Moved VK3AKK, seconded VK3ZBJ, "That 438 Mc. be accepted as a standard f.m. net frequency."—Carried unanimously.

On the subject of Experimental Repeaters, VK3ZBJ said that these can be set up by those who wished to cover greater distances.

As the work involved is experimental, this precludes the use of commercial equipment. He proposed the use of 145.76 Mc. input and 147.76 Mc. output with deviation of plus or minus 15 Kc.

VK2ZDD thought that there would be problems with other translator channels.

1.7. Moved VK3AKK, seconded VK3ZBJ, "That the frequencies of 145.76 Mc. in and 147.76 Mc. together with the frequencies of 420.739 Mc. in and 431.50 Mc. out with a deviation of plus or minus 15 Kc., be set aside for Experimental Translators on a national basis."—Carried unanimously.

Meeting then adjourned.

SUNDAY MORNING

The Chairman called for any further business and VK2ZDD suggested that it would be appropriate to consider a national net frequency for 6 metres.

1.8. Accordingly, moved by VK2ZDD, seconded VK3AKK, "That the national 6 metre f.m. net frequency shall be 52.525 Mc. though it is noted that it is not intended to preclude the use of 52.656 or 53.950 Mc. as alternative State channels."—Carried unanimously.

The following recommendations were also agreed to by the representatives:

1. Further discussions can be held on the linking of Interstate stations on 432 Mc. It will be desirable in the near future to suggest frequencies.

2. VK2ZDD suggested that it would be desirable to keep a national record of progress and problems during the establishment and running of these repeaters.

On the suggestion of VK3AXB asking that all Divisions form technical committees to assist with technical problems. VK3ZBJ continued by stating that State groups act in an advisory capacity and liaise with the Department.

1.9. Moved VK3TX, seconded VK3ZBJ: "That the VK2 Division act as the Secretariat for the co-ordination of v.h.f. net frequencies."—Carried unanimously.

VK7PD stated that his Division had asked that seven or eight channels be made available for Interstate working but felt that the agreements reached would be satisfactory. However in the light of experiment or necessity, he felt that it should be open for Divisions to submit plans to the VK2 Secretariat. The meeting agreed that this was the case, and the Secretariat agreed to co-ordinate all aspects of repeater installations. VK3AUL asked that if and when State repeater committees are formed, representation be allowed from country areas.

VK3TX, Federal Councillor, noted these remarks and stated that it was necessary that those people proposing to install a repeater should seek the guidance of their State committees. The matter would be discussed at State Council level.

The meeting also noted that where repeaters were proposed at State border areas, that the closest co-operation exist between the respective Divisions and technical committees and the Secretariat.

In conclusion, the Chairman thanked all those present for making the effort to attend this meeting. The presence of VK2APQ, VK3TX and VK5TY as Divisional Federal Councillors was particularly valuable, as well as the technical representatives from Divisions.

He stated that apart from circulating these minutes to all Divisions, notification would be given to Divisional Councils on those matters which could well become Institute policy.

He also thanked the VK6 Division for the comments which had been given due weight during the discussions and suggested that this Division write to VK2 for clarification on any technical points.

VK2ZDD thanked the Chairman and Secretary for their work and was appreciative of the presence of Federal Executive on this occasion.

VK3ZBJ, in his remarks, stated that he was very impressed with the calibre of the people present and felt that this augured well for future developments.

Finally, the Chairman thanked Arthur VK3AUL for his work in organising accommodation and the dinner.

The meeting was officially closed at 1008 hours, Sunday, 22nd September, 1968.

— . . . —

V.H.F. NOTES

Well it's news time again and still no reports from other States. If any Interstate correspondents have news for the Dec. issue and can get it to me before Thursday, 5th, I can include them on this page January "A.R." notes should be in before 2nd Dec. And now some news on beacons:

VK5VF—144.800 Mc.

VK6VF—52.000, 145.000 and 432.580 Mc.

VK7VF—144.8 Mc.

ZE1JZA—144.016 and 432.048 Mc., both with 100 watts input 15 db. gain antennae and operate continuously.

Do you know of any other v.h.f. beacons? If so, please let me have full details so as the details can be published in Dec. "A.R."

—73, Cyril, VK3ZCK.

VICTORIA

The VK3 V.h.f. Group held its annual Convention in Bendigo over the week-end 12th and 13th Oct. We hope that all those who attended had a very enjoyable time. Thanks should go to the Bendigo group for their help and hard work that made the week-end successful.

6 Metres: Neville VK3ZPN and John VK3ZWL have been spending a large amount of their spare time during the winter months building tunable mobile transceivers for six metres, so that they can take their t.v.i. away from the QTH area and work the summer DX in peace. Robert VK3ZUE is active every week-end on a.m. with about 15w. and a beam and a ground plane, while Geoff VK3AMK has appeared again after an absence of quite some time. Jim VK3ZHF, now back from G-land, is active again and is often heard on both the a.m. and f.m. nets. He can also be found lower down the band with ample power from an 820B.

Yours truly has arranged several skeds with W6 and KH8s for the coming season, while W6 reports that he has a half mile long rhombic beamed on Sydney. He transmits at 0700 E.A.S.T. using a c.w. and one kilowatt and then listens for any VK call. Dates, times and frequencies will be given in "A.R." and Divisional broadcasts when they become available.

2 Metres: Activity is on the increase due to the presence of stations from central Victoria. Bill VK3ZEF in Bendigo is being worked regularly by Melbourne stations while Bill VK3AMZ has finished his high power s.s.b. rig which uses a 4CX250B and the full legal power. Bill has also re-built his beam as the previous one became unserviceable.

70 Centimetres: No reports have been received for this band and this can be rectified only by the regular operators sending in details. An extra v.h.f. field day to those listed in last month's "A.R." has been announced. Easter Sunday is a field day but there will not be one over the New Year holiday period. Anyone in VK3 with news for this column should send it to Robert VK3AUR (Always UnReliable), c/o. Vic. Division.

73, Robert VK3AUR.

— . . . —

W.I.A. V.H.F.C.C.

New Members:		Confirmations
Call		52 Mc. 144 Mc.
48	VK3ABA	119
49	VK3AOT	105
50	VK3EF	110

Amendments:		Confirmations
Call		52 Mc. 144 Mc.
44	VK3AMK	132
46	VK3ZNJ	138
47	VK3ZNJ	230

160 Mx Transpacific Tests

The Trans-Pacific Tests which were so successful last season are to be repeated this summer, and dates and times are as follows:

Saturday, 30th November	1330-1600z.
" 14th December	" "
" 28th	" "
" 11th January	" "
" 1st February	" "
" 15th	" "

Frequencies: W/V West Coast 1975-2000
W/V East Coast 1300-1810
JA 1307.5-1912.5
ZL 1876-1880.

Call: CQ-DX-TEST in five-minute periods, listening between calls. W/VEs lead off first period on the hour. All others lead off on the next five-minute period. Keep to periods unless in QSO.

Special JA sunset tests will be held on the same dates, but at 0730-1000z.

January 25/26 will almost certainly be the date for the "CQ" W.W. 160 Mx DX Contest, which has provided good openings in the past. More about this later. (Courtesy L6042)

— . . . —

PROVISIONAL SUNSPOT NOS.

AUGUST 1968

Dependent on observations at Zurich Observatory and its stations in Locarno and Arosa.

Day	R	Day	R
1	58	16	174
2	91	17	160
3	92	18	160
4	94	19	144
5	94	20	122
6	95	21	138
7	100	22	155
8	113	23	126
9	98	24	108
10	90	25	86
11	104	26	77
12	116	27	67
13	142	28	49
14	178	29	64
15	172	30	63
		31	63

Mean equals 110.9.

Smoothed Mean for Feb. 1968: 102.7.

—Swiss Federal Observatory, Zurich.

V.H.F. U.H.F.

Interested in what European Amateurs are accomplishing on these bands. Commencing January 1969, the authoritative German v.h.f. u.h.f. magazine UKW-Berichte will be published quarterly in English. 60 pages of the latest techniques, detailed construction articles on v.h.f. u.h.f. gear and antenna written by top Amateurs in Europe.

Annual subscription \$4.50
AIR MAILED direct from the German publishers. Send a cheque/money order to the Australasian representative of UKW-Berichte, G. Clarke, VK-2ZXD, 2 Beaconview St., Balgowlah, N.S.W., 2093.

A LIMITED number of sample copies of the German edition are available free for inspection.

DX

Sub-Editor: PETER NESBIT, VK3APN
32 The Grange, East Malvern, Vic., 3145

BAND NEWS

3A Mc.: CT2AS reported on 28590 at 2315z. This is an interesting country for those who delve into propagation, because CT2 is very close to the opposite side of the earth from VK2/3 and signals could arrive from any direction.

8P6AY—Barbados. Gordon operates 28800 around 2140z.
9K2BJ 28553 at 19z. QSL to P.O. Box 8419, Kuwait.

MP4BGX—Bahrain Isl. 28015 at 11z. If QSLing direct, send to R. E. Gregory, 3 A.C.C., Hamala, B.F.P.O. 63.

21 Mc.: PX1UP 21300 at 2043z. Tony and Konrod. QSL via HB9UP.
5Z4KO 21338 at 1930z. "Fred". QSL via WA1GIA.

VR8TC 21357 at 2245z. QSL direct.
9X5AA in Rwanda reported on 21317 at 22z. QSL goes via W1YRC.
ZS3D 21288 at 19z. "Pat", and ZS3LU 21271 at 1830z. ZS3D's cards can go to P.O. Box 1205, Windhoek; and ZS3LU via W2CTN.

9K2CB 21275 at 1345z. 9K2BV reported at 18z on 21440, but probably the wrong time for VK.

VQ8CC is very active, 21036 at 14z. VQ8CJ is also active.
PY0QC ex K8NWU will be active from Fernando de Noronha for about a year. He will be on 21 Mc. c.w./s.s.b.

ZD8Z activates 21030 at 13z.
W4UDF/AP is reported active on 21305 at 14/18z. QSL goes via WA8KMD.

CR3KD uses 21095 at 1230z. He hopes to have s.s.b. going very soon.
TN8BG has been reported on various different frequencies, 21038 to 21085, at times between 1145 and 2140z.

ZD8DG 21350 at 1330z. Dave. His QSLs can be sent c/o. B.B.C., Ascension Island, South Atlantic.

CT2AR on 21368 at 22z with QSLs via WA4WIP; CT2AS 21310 at 20z with cards via K2AGZ.

CPIHW 21300 around 03z. Address is Gerald H. Kangas, Box 260, La Paz, or else via K7DVK.
CE0AE is QRV 21325 around the 20/22z mark.
3A2CN mainly 21300 Saturdays/Sundays 18z. VE0MD 21045 at 14z.

14 Mc.: VP2AW on 14213 at 0022z (Antigua). ZD8CC 14198 2132z. Cards should be sent via ZD8AR.

V55TJ 14209 at 1550z. Also skeds WASEFL every Monday about 1300-1330z on 14210. QSL via Box 308, Brunel Town, Brunei.

CR4BH 14206 at 01z, "Mary". QSL to Box 90, St. Vincent, Cape Verde Isl.
TL8GL 14212 at 2130z, "Gilbert". QSL to VE2DCY.

F2WS/FC on 14210 at 14z requests cards to his home QTH.
FB8WW is still active on 14036/018 at 0845 and 1130z.

CE0AC on Easter Isl. is active 02-07z. He uses 14120.
9R1M is active week-ends on 14190 around 04/05z; cards via K2GGN.

CE9AT 14190 20/23z, also 14063 at 02 and 13z. Raul skeds his QSL manager CE3ZN Fridays at 21/22z on 14185. ZE1AE and WB6GFJ may be able to help arrange skeds.

FL8AO 14115 at 20z. His address is Roland Rabaud, B.P. 91, Djibouti, T.F.A.I.
FY7YM skeds his QSL manager (in French), VE1KG, on 14160 at 02z.

O8AAAA reported on 14102 at 0646 and 14125 at 0648z, is a special call used by the Iquitos Centenary station; cards can be had via Box 183, Iquitos, Loreto, Peru.
FP0DM 14173 at 2230z; QSL via VE3FEC.
FP0MD 14193 at 03z with cards via VO1FB.

HQ2GK on 14178 at 08z, also 22z. Operator is HR2GK who says QSL via VE1ASJ with s.a.e. and IRC.
IP1DK Pantelleria Isl. 14110 at 0830z. QSL manager is IT1ZGY.

ZK1AA has been quite active on various frequencies between 14200 and 14280 between 04 and 08z.
SV0WN in Crete 14034 at 23z.
LJ2X is QRV most days in the 14332 international YL net, try 20z.

TU2AK daily on 14130 at 1830z. TU2CF 14218 at 0740z.

YA2HWI 14020 at 22z is K9HWI who will be there for two years. Cards can go via W9FLG; if direct, please SAE/IRC.
FR7ZG usually works around 14190/210 and has been reported at 12 and 18z. For an air mail reply, send 3 IRCs to Guy Langlios, Box 592, St. Denis, Reunion Isl.

7 Mc.: CR6LV heard on 7008 at 2155z.
9J2MX "Den" 7003 at 2120z. He hopes to be active 80 mx soon.
4S7AB "Sunil," worked at 2110z on 7005.
VP2KF 7070 s.s.b. at 2157z. QSL via VE3DLC.
ZD9BE 7062 at 22z.

9V1IK reported on 7005/15 at 23z daily. He will make skeds for 40/80 mx. Write to R. L. Halls, 12-B Robin Rd., Singapore.
9M2NF works s.s.b. on 7070/7088 around the 18/21z mark.

3A2CN, Pierre, sometimes operates 7060/65 at 22/24z. His manager is DL7FT.
KC4USM on 7010 at 1050z.
CT1MU on 7030 c.w. at 23z.
8R1R worked on 7026 at 2330z.

Gene W4RRB worked VQ8CC on 7002 at 1130z—long path—local time in VQ8 land would have been 3.30 in the afternoon! Gene says that 40, like 10, is often more open than the usual listener realises. (40 always seems more closed to me; I'm sure there's a permanent one way skip zone hovering around here.)

3.5 Mc.: 9M2NF is sometimes active 3695/3700 around 18/21z. He will go QRT sometime in December.
ZSSJM worked on 3505 at 2050z; also ZS5QU again at 2020z.

1.8 Mc.: On 21st Sept., Harry VK3GU worked W1BB on 1805 at about 1010z. Stew's signals were up to S5 at times until they dropped out at 1035z. W1BB intends to be on often from 10 to 11z.

ZL1PL has been contacted by several VKs; he uses approx. 1883 and had a very nice signal here at 1125z. George runs 150w, to a top loaded vertical (actually an 80 mx window).
W6QII will be on 160 mx every Friday from 1st Oct. at 1330/1400z looking for VK QSOs. He has already worked JA, 9V1 and 8F on this band.

W0VXO is planning 160 mx operation from the West Indies shortly.
Others active: E19AW/P 1827 2224z. GD3XJR 1828 2206z. GM3UCG 1875 1930z. HB9T 1875 2150z. G3LSF/LX 1878 2200z. (This should give some idea of European activity.)

ASSORTED
As from 1/1/89, stations in the Netherlands Antilles will change their prefixes to the following: PJ2 Curacao, PJ3 Aruba, PJ4 Bonaire, PJ5 St. Eustatius, PJ6 Saba, PJ7 Sint Maartin, PJ8 issued to visitors to isls. in zone 8, PJ9 issued to visitors to isls. in zone 9. PJ1 and PJ0 will be used for special contest and DX-pedition operations. PJ stations will also be allowed to use 160 mx, which they have previously not been able to use.

FP0 is a prefix used from St. Pierre by visitors in lieu of the FP8 used by local residents.
Next February, W6BPO is going to Norfolk Isl. and will operate s.s.b. under the call of VK2BPO/9.

Gentlemen! It appears that in the Sept. DX Notes I committed the Dastardly Deed of the Year by calling ZF1DX a pirate. A very genuine looking QSL from ZF1DX for a 20 mx s.s.b. QSO arrived courtesy of VK4UC; was my face red! The original report appeared in an overseas DX bulletin. (Incidentally, the reason for reproducing the original item was simply to save people the time and money in QSLing direct for non-existent QSOs.)

A2 is the prefix allotted by I.T.U. to Botswana (formerly Bechuanaland). The new prefix is sported by A2CAH (ex ZS9H) and A2CAQ (ex ZS9Q).

VE6S AJT, APV are at present on a DX-pedition of Pacific areas including VR1, 5, ZK1, ZM7 and 5W1. QSL via VE6AO.

Do not interrupt V55TJ's private skeds or he will go QRT. He will be there 18 months, so there is plenty of time to work him.

Due to the political situation in Togo, 5V stations are off the air for some months. DX-crs are advised not to send any cards to Togo or to QSL managers who are unable to obtain logs.

Questionable validity surrounds 5X5HH, whose alleged QSL manager knows nothing about it. Better check the beam on this one—he may be operating from Cray Island. 'FLADXA'!

Roger Baines, ex MP4TBO, will be operating G3YBO 20 mx s.s.b. as from December and looking for VK contacts.

W9WNV and K7LNU cards are handled by W0BN 8713 Charlton Lane, Afton, Mo., 63123. Cards will be returned directly if enough IRCs plus SAE (or SASE) are included, otherwise via the Bureau. A list from W0BN gives the following calls for which he is manager:

BY4SK	VQ8CBR	W9WNV/KS6
FR7ZF	VQ8CCR	W9WNV/MM
G5AEW	VQ8CHR	W9WNV/XU
G5AEW/ZS	VQ8AA	W9WNV/ZK1
K11MP/KC4	VQ8AA/A/C	W9WNV/ZM7
K7LNU/KC8	VQ8AA/D/F	W9WNV/8F
K7LNU/HS	VQ8AA/MM	XW8BF
K7LNU/TI9	VR25W	XZ2TZ
K7LNU/3W8	VR5AB	YJ8WW
PY0XA	VU2WNV	ZK2AF
VK2ADY	W8WNV/	W8WNV
VK2ADY/9/0	Blenheim	1G5A
VQ8CB	W8WNV/F08	1M4A
VQ8CB/A	W8WNV/	1S9WNV
VQ8CBB	Geyser	5R8BA
VQ8CBN	W8WNV/HK0	5W1AD

The log for FW8ZZ was lost, so no cards are available for this one.

ACTIVITIES

After several weeks off the air, David VK-3QV is back again. He says conditions are on the up and up and at the end of Sept. very good on the s.p. to U.S.A. from 2045z. Africans rare, but Europeans beginning to appear about 18z. Latest contacts include: DJ4OQ, G3OHP, KA9ME, TG9CD, UA3KBO, VE3GGK, 9M2RH, UV3AAM, VE7EO, UJ8KAJ, VE7PAR, UP2ER, VR2FR, JA1. 2, 3, 4, 5, 6, 7, 8, 0, JH1, and all W/K call areas several times over (all 28 Mc. s.s.b.). (Thanks Dave—Peter.)

From Barry VK45BS: Latest 20 mx contacts are EA8CF, HK4LE, F8FE/P, F8JH, G3FIM, QZ2X, plus numerous Ws and VEs. On the 160 mx front, worked ZL3GQ, ZL3BC, have heard W1BB, a W0 and an unidentified "something" which called me on 1806. (Perhaps your long path signal coming back?). (Many thanks Barry, Peter.)

Chas VK4UC has been having fun with a new rig for several weeks. In 21 days, 102 countries on 14 Mc. s.s.b. were worked with a ground plane! These included: ZD7DI 0730z, 6Y5DW 1200, AP2MR 1200, SK6AB 1330, PJ2M1 1000, UP2LR 0730, P21BW 1000, KW6AA 0900, EA8FF 0730, UA1CK 0830, LA1K 0700, CR5SP 0700, OA8V 1200, OZ3Y 0700, ZS5FF 1230, VS-5TJ 1200, 801GB 1130, OX3DJ 1300, LX1SK 0730, ZB2AY 0600, ON4DY 0400, EP2DA 1330, PA-0STU 0600, 4U1TU 0630, UA2KBD 0430, 5W1AR 0430, HP1JC 0700, UF6CW 0400, WF0TU 1330, GC2FNV 0700, EFSREL 1330, CR6LF 0630, 5Z4JH 1330, YN1GLE 1200, IS1TDW 0630, HBAIC 0630, VE7R/YB1, 9H1M, 2200, CO2FA 0700, IS1RUA 0730, PA0VER 0700, 5N2AAX 0630, plus the rest! (Could there be much more? Thanks Chas.—Peter.)

Ron VK3ARV has found 14 Mc. variable lately. An interesting contact was made with OM3AKQ who gave his QTH as Usti (Czechoslovakia). Also heard but not worked was OM3YD. Does the new prefix imply UA influence? More news as it comes to hand. Best QSLs of the month include KR8EA, UA-0JT, UA0VL, DJ6SI, and others. Ron's country total now stands at about 260. (Thanks Ron.—Peter.)

From W.A. comes a letter from George Allen, L6042, who has been busy on 160 mx. Recently heard: 1805: VKs 3ACH, 3APN, 3GU, 3NW, 5KO, 5RO, 5BS, 7MZ, All c.w. 1825: VKs 3ACH, 3APE?, 3GU, 3XJ, 5RO. All phone. 1880: ZL-3GQ c.w. 2045: KPH, 12 dates in Aug. 2048: WNU, 1 date in Aug. (Thanks George, Peter.)

SOME QSLs
WFO1TU—K0YKJ
SV0WI—K4AVD
PY0APS—PY7APS
ZF1DX—K0KDS
GC5AGA—K4II
GSAGA—K4II
PY0BLR—PY4BK

CO2FA—XE1AE
EA6BC—W4SYL
HP0A—HP1AC
PX1RG—DJ6AR
YA8MH—DL8MH
TT8AN—W5LEF
OX3DX—OZ3FD

SUMMARY
Acknowledgments to the following for kindly supplying news for this month's column:
LIDXA, FLADXA, G3UGT, ZL2AFZ, G. Watts News Sheets, VK3QV, VK4UC, VK3ARV, VK-3AUT, VK5BS, L6042, W0BN, VK3GU.

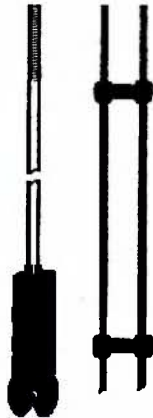
Deadline for news is the end of each month, so please send any items to the address at the top of the page. 73, Peter.

BULAWAYO 75th ANNIVERSARY AWARD

1. Period.—Contacts to be made during the period 1st to 30th November, 1968, inclusive.
2. Contacts to be made with at least three Bulawayo stations.
3. Made to be two-way c.w. or phone.
4. Any Amateur band.
5. Claims for the Certificate, in the form of a certified log extract, together with three I.R.C.s, must be sent to: Matabeland Branch, Radio Society of Rhodesia, P.O. Box 1372, Bulawayo, or R.S.R. QSL Bureau, P.O. Box 2377, Salisbury, and must be post-marked not later than 31st December, 1968.

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Book Review

MULLARD SEMICONDUCTOR INTERCHANGEABILITY LIST

This book is the successor to eight editions of the Mullard Transistor Interchangeability List. The title has been changed in keeping with its wider scope. The new issue has been enlarged to include, in addition to transistors, direct Mullard equivalents and comparable types for small signal diodes, zener diodes, rectifier diodes, thyristors and semiconductor photoelectric devices. The book, which contains 31 pages with over 4,000 entries, is available from Mullard-Australia Pty. Ltd., cover price \$1.

NOTES ON SOLAR FLARE WARNINGS FOR SUPERSONIC TRANSPORT AIRCRAFT

This booklet makes available information about the aspects of the work of the Ionospheric Prediction Service Division, Bureau of Metrology, which may be of some interest, but would not normally be published in any scientific or technical journals. Apart from the introduction, the booklet contains five sections covering a summary of the problem, solar activity and proton flares, forecasting of solar events, existing warning systems and an outline of a possible warning system for supersonic transport aircraft.

Although not directly connected with Amateur Radio, the information is interesting, especially for anybody interested in radio astronomy.



HINTS AND KINKS

TRANSCIVER RELAYS

Some transceiver owners have reported that replacement relays are difficult to obtain and are expensive.

Many imported transceivers use relays similar to the Siemens "Cradle" type. Relays for various coil voltages and up to four change-over sets are available from Siemens or Relays Pty. Ltd.

Associated Controls Pty. Ltd., Padstow, N.S.W., and their Victorian agents Eastern Instrument Pty. Ltd. in Melbourne can supply Allied or Varley relays with six sets of change-over contacts with heavy duty contacts for those critical positions.—VK3ASC.



NOVEL MAINS TESTER

A pocket size neon lamp indicator suitable for testing a.c.-d.c. voltages from 100v. to 500v. is now available from Radio Parts Pty. Ltd., Melbourne.

Known as the Stuart brand, this handy tester has flexible leads with prods marked positive and negative (red-black), and is fitted with vest pocket clip. Insulated alligator clips can be supplied also to fit the prods. Trade price for neon tester: 60c each; insulated clips: 10c each; 15% sales tax applicable.

FEDERAL QSL BUREAU

Divisional QSL Managers are advised that there is no official Bureau for FR7 Reunion Island and cards should be sent either direct to the station concerned or via R.E.F., Paris. This information comes from FR7ZG.

Information on the DX Contest staged by I.A.R.U. Region 2 (Americas), on October 12 and 13 was received too late for prior publication. Anyone interested may obtain all information re scoring and logs from this Bureau.

Congratulations to Al Manwaring, VK2QK, of Cootamundra, on achieving CHC100 High Honors award. All CHC members will realise the ability and work involved in qualifying for this honor.

W3VVP, George Clough, of Cordova, Maryland, U.S.A., is desirous of arranging a s.s.b. sked with a VK station over the period Dec. 13 to 18. The purpose of the desired sked is to receive information on the progress of the London-Sydney marathon car race in which his friend, Sidney Dickson, is a competitor. Sid is the only U.S.A. participant in the event, the Australian section of which is due to leave Perth on Dec. 13 and to arrive in Sydney on Dec. 18. Your scribe has offered c.w. skeds to W3VVP, but as he is a s.s.b. addict it is suggested that any s.s.b. station willing to co-operate should contact George at Box 34, Route 1, Cordova, Maryland, 21625, U.S.A.

K8BX, founder of CHC, advises of the 1st CHC International C.W. DX Contest scheduled for 0001z, Saturday, Dec. 7, to 2400z, Sunday, Dec. 8. The contest is open to all Amateurs whether CHC members or not. The contest

is sponsored by the International C.W. CHC Chapter 73. All Amateur bands may be used and the usual six-figure exchange is employed commencing with RST plus 001, etc. Awards are trophies for world highest, single operator, club station, and portable stations and certificates for the three highest scoring stations in each VK division. Printed slips regarding scoring, logs, etc., may be obtained from this Bureau.

Congratulations to the Victorian Division on the success of their recent unusual 160 metre contest. The provision of cross-mode and cross-band contacts made for a wealth of interest to all participants. A word of thanks is also due to the Interstate and ZL stations who contributed to the success by participating in the event.

—Ray Jones, VK3RJ, Manager.

FEDERAL AWARDS

AUSTRALIAN D.X.C.C. COUNTRIES LIST AMENDMENTS

Deletions:

VS9H—Kuria Murla Is. Only contacts prior to 29/11/67 will be credited. From 30/11/67 VS9H counts as MP4M—Muscat and Oman.

ZC6—Palestine. Only contacts prior to 2/7/68 will be credited.

Additions:

Blenheim Reef, Geysir Reef. These two countries will be credited if contacts were after 4th May, 1967.

Nelsons Is. will count as Chagos and is not a separate country. This also will be credited after 4th May, 1967.

Where cards for the above additional countries have been forwarded for credit prior to this time they have been noted. The countries have now been credited and members' totals amended accordingly. In the case of the deleted countries, all members who have claimed them have had their scores amended as necessary. Space does not allow a full list of all amendments.

UNACCEPTABLE OPERATIONS FOR D.X.C.C.

QSLs from the following will not be credited for D.X.C.C.:

K7LMU/HC8E—Ebon.
K7LMU/T19C—Cormaran.
K1IMP/KC4—Navassa.
VU2WNV—Laccadives.
VQ9AA/C—Chagos.
FY0YA—St. Peter & St. Paul's Rocks.
VK2ADY/0—Heard Is.
IB9WNV—Blenheim Reef.
IG5A—Geysir Reef.

OVERSEAS AWARDS

The Federal Awards Manager advises members of the W.I.A. that the following awards may be obtained without the necessity of forwarding cards overseas. Cards will, where necessary, be checked in VK. Application forms, rules, etc., may be obtained by forwarding a s.a.s.c. size 9 x 4 inches, to the Federal Awards Manager, W.I.A., Box 2611W, G.P.O., Melbourne, Vic., 3001.

"CQ" Awards: "CQ" magazine issues the following awards: Worked Prefixes—WPX; Worked All Zones—WAZ; S.S.B. DX Award.

J.A.R.L. Awards: AJD—All Japan Districts; WAJA—Worked All Japan Prefectures; JCC—Japan Century Cities.

I.A.R.U. Award: WAC—Worked All Continents.

—Geoff Wilson, VK3AMK, Manager.

Publications Committee Report

The Committee met on 7th October, when correspondence was received from VK5MY, VK5WA, VK5QX and VK3UG, the last two named, also submitted technical articles, as did VK2ASL. Official acknowledgments have been sent to these authors.

The Committee had hoped to review our financial position following the publication of the October issue, but this was not possible as printing and mailing accounts had not arrived, hence no decision could be reached regarding the size of the November issue. This will be decided before going to press.

Production of the Call Book is progressing and by the time this appears in print the publication will be available from all the usual sources.

All the information sought by the sub-committee appointed at the last Federal Convention has been collated and passed to them, and we understand the final report is now being completed ready for submission to the

Federal Councillors. The outcome of this report is eagerly awaited by the Committee, as the future of "A.R." depends very much on the results.

The Committee considered and reached final agreement on the form of the questionnaire which had been under consideration for several months. This questionnaire will be found in the centre pages of this issue and we request all readers to complete it and return it immediately.

CONTEST CALENDAR

Until 31st Dec.: Concorso Mexico 1968 (L.M. R.E.).

9th Nov.: International OK DX Contest.

9th/10th Nov.: 7 Mc. Phone Contest (R.S.G.B.).

23rd/24th Nov.: "CQ" W.W. DX Contest (c.w.).

14th Dec. 1968 to 13th Jan. 1969: Ross A. Hull V.h.f. Contest (W.I.A.).

1st/2nd Feb. 1969: John Moyle Memorial National Field Day (W.I.A.).

1st/2nd Feb. 1969: A.R.R.L. DX Test (phone section).

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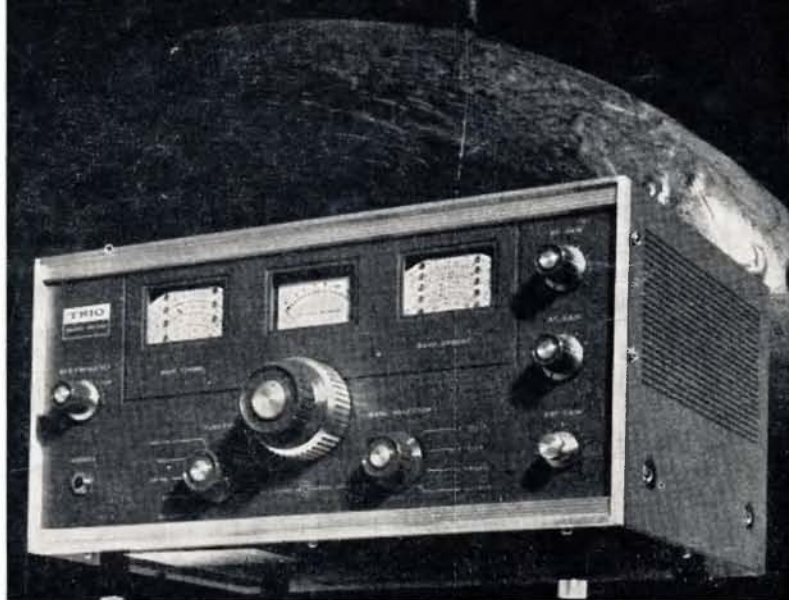
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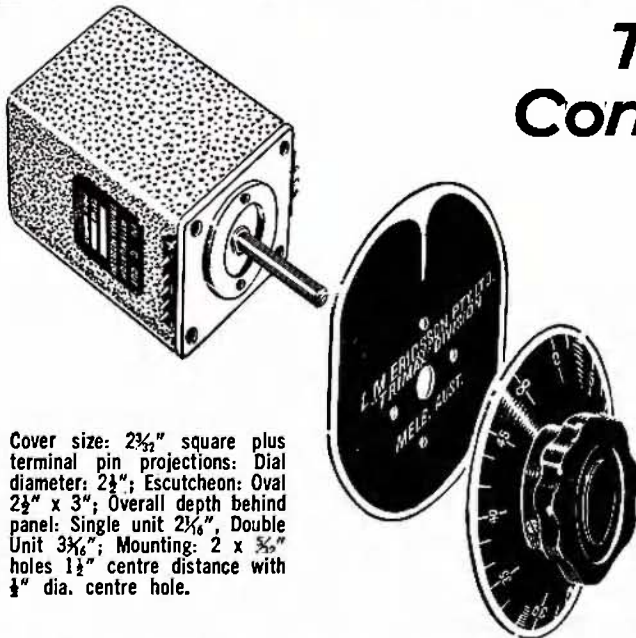
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A panel switch enables selection of the built-in crystal heterodyning oscillator (VXO), tuned by varicap diodes; or the VFO (FV-50B) for full band coverage. The VFO includes the facility of "off-set" tuning, enabling a limited variation of receiver tuning, approximately ± 5 Kc., without altering transmitting frequency, very useful for net operation, etc. Crystals, optional extra.

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 Spurious radiations: Down at least 40 db.
 Antenna output impedance: 40 to 100 ohms unbalanced.
 Sensitivity: SSB, CW, better than 0.5 μ v. for 10 db. S plus N/N ratio; AM, better than 1 μ v. for 10 db. S plus N/N ratio.
 Selectivity: Plus or minus 2 Kc., -40 db.; plus or minus 1.2 Kc., -6 db.
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 Audio output: 1 watt.
 Power source: AC—234v. 50 c/s., Transmit 0.7a., Receive 0.5a.; DC—12v., Transmit 10a., Receive 6a.

Size: Height 6 in., width 13 in., depth 10½ in.
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Vol. 36, No. 12

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0.012	600v.	19c	0.0027	600v.	18c
0.015	125v.	13c	0.0033	400v.	12c
0.015	600v.	19c	0.0033	600v.	14c
0.018	600v.	22c	0.0039	400v.	12c
0.022	125v.	13c	0.0039	600v.	18c
0.022	400v.	14c	0.0047	400v.	15c
0.022	600v.	24c	0.0047	600v.	22c
0.027	160v.	14c	0.0056	400v.	15c
0.027	400v.	15c	0.0056	600v.	15c
0.027	600v.	22c	0.0068	400v.	15c
0.033	125v.	14c	0.0068	600v.	15c
0.033	400v.	15c	0.1	125v.	15c
0.033	600v.	22c	0.1	400v.	18c
0.039	125v.	14c	0.1	600v.	27c
0.039	400v.	14c	0.2	400v.	20c
0.039	600v.	28c	0.5	400v.	20c
0.047	125v.	14c	0.12	125v.	25c
0.047	400v.	14c	0.12	600v.	20c
0.047	600v.	14c	0.15	125v.	15c
0.056	125v.	14c	0.15	400v.	15c
0.056	400v.	14c	0.15	600v.	20c
0.056	600v.	18c	0.18	125v.	17c
0.068	125v.	13c	0.18	400v.	17c
0.068	400v.	14c	0.22	125v.	15c
0.068	600v.	18c	0.22	400v.	22c
0.082	125v.	20c	0.22	600v.	24c
0.082	400v.	22c	0.27	125v.	22c
0.082	600v.	28c	0.27	400v.	25c
0.001	125v.	15c	0.27	600v.	28c
0.001	400v.	15c	0.33	125v.	25c
0.001	600v.	18c	0.33	400v.	28c
0.001	5Kv.	45c	0.39	160v.	22c
0.001	Feed Thru	29c	0.39	400v.	40c
0.0012	uF.	400v.	0.47	125v.	28v
0.0012	600v.	15c	0.47	400v.	35c
0.0015	200v.	15c	0.47	600v.	40c
0.0015	600v.	15c	0.68	125v.	35c

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PT2065	115	150	6.3CT	6	\$13.60	
	tap 105					
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				tap 5 2		
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FEDERAL COMMENT

The Year in Review

As mentioned in last month's issue, the development of Region III activities has probably been the highlight of the year. Since the Federal President's comment we have now received agreement to the Region III interim constitution from the Philippines. In a letter from Emilio DUIEA, a further amendment is made to the status of the Amateur Radio organisation in that country, and we can do no better than quote the relevant section:

"In view of the establishment of a new organisation of Radio Amateurs in the Philippines, viz. 'Philippine Amateur Radio Service Inc.' (P.A.R.S.), the other Societies—P.A.R.A. and P.A.R.L.—are now only chapters of P.A.R.S. The P.A.R.S. will now replace P.A.R.A. for purposes of membership with the I.A.R.U., and is the only organisation, of which I am the President, recognised by the Philippine Government".

We congratulate Emilio and note with interest his last point.

Our domestic scene can be viewed in the light of progress, too, and arising from the Federal Convention discussions last Easter, a committee was formed to investigate all aspects of "A.R." By the time this is read, copies of the report should be in all Divisions and you are urged to read it and become informed of the many problems confronting the Editor and his Committee.

Nearly all matters arising from this Convention have been dealt with, although a proposal that some sort of code proficiency test be run is still being worked out in conjunction with the VK7 Division.

We also saw the very liberal provisions by the Postmaster-General's Department in reply to our request to use v.h.f. repeaters, and in the subsequent enthusiasm resulting in a conference at Wodonga, many plans have been made for operational repeaters. This Institute felt that the frequencies and modes proposed were worthy of adoption as policy and they are being considered by Divisions. There does appear, however, to be some aspects at variance with the Tasmanian group's thoughts on the matter and it is hoped that the VK2 repeater secretariat can assist in providing a solution.

Whilst speaking of v.h.f., we would refer you to the published statement, shown elsewhere in this issue, from the I.T.U. Administrative Council. Any comment from us at this stage would be pure speculation, but you should be aware that we are being kept informed of all and any developments. When a more specific agenda is available—perhaps during the middle of this coming year—we will know a little more, and can form a more specific judgment. Whilst our Amateur bands 144 Mc. and above are slotted into the part of the spectrum under review, the preparations to try and counter any inroads by other services are no less stringent than they would be for h.f. bands.

Your Federal Councillor and Division will be asking you for reports on v.h.f. activities and achievements, and we suggest that this information be provided as soon as possible. The significance of this information, or the lack of it, will be obvious.

It is interesting to note that in this country, the number of civil radio

communication stations between 148 and 174 Mc. amounted to 14,500 over twelve months ago. In nine months, the total number of stations in Australia increased from 93,000 to 102,000—so the commercial and civil users have their problems too.

Before leaving you with thoughts of holidays and/or the work to be done around the house, we should mention that you could find time perhaps to suggest ways of improving the national society that represents you, viz. the W.I.A., or the conditions under which we are allowed to operate.

Next Easter, the Federal Convention may be held in Canberra, but no matter where, all Federal Councillors will meet to consider and review past policies, up-date them if necessary, and introduce new ones.

Your suggestions are valued and your Division will be eager to consider all proposals put before it, no matter if it concerns DX, contests, regulations, finance or administration—so while dangleling that line or contemplating the beauty of your favourite holiday retreat, why not slip in the thought to do something positive when you return to civilisation?

In the meantime, our best wishes for a pleasant and relaxing Christmas season, with a prosperous 1969 in the offing. With 73 from Federal Councillors: Pierce VK2APQ, Deanne VK-3TX, David VK4DP, Geoff VK5TY, Neil VK6ZDK, Ted VK7EJ, and your Federal Executive: John VK3OR, Michael VK3KI, Peter VK3IZ, David VK-3QV, George VK3VX, Alf VK3IE, and Kevin VK3ARD.

PROJECT—SOLID STATE TRANSCEIVER

PART TWO

H. L. HEPBURN,* VK3AFQ, and K. C. NISBET,† VK3AKK

In this second part of the series of articles on a modulated transceiver, it is proposed to deal with the receiver "front-end" and the injection oscillator chain which is common to both receiver and transmitter.

RECEIVER FRONT-END

Reference to Fig. 1 in the November 1968 issue of "A.R." (included here for convenience of readers) shows that the front end of the receiver consists of Function 1 (receiver r.f. amplifier) and Function 2 (receiver mixer).

Fig. 5 in this article gives the circuit diagram for these functions, while Table 2 lists coil data for the usual h.f. Amateur bands.

Before proceeding with a detailed description of the circuit a general comment must be made.

One of the biggest problems involved in the design of multiband equipment, no matter whether receiver, transmitter or transceiver, is not an electrical one. In the authors' view the problem is mechanical—the physical layout of components associated with the conventional multi-wafer band switch. If, say, a four-band device is required, it is necessary **right at the start of building** to make provision for the correct number of switch wafers, coil forms, etc., to be in the right position to give minimum lead length. In all probability too, it is necessary to fit metal screens between the various sections. If, later, you want to add a band you are stuck with the original layout and metalwork and can only achieve your objective by recourse to extensive surgery.

In attempting—as this series of articles does—to present a completely flexible design—the need rigidly to fix the physical layout beforehand could not be tolerated. To a very large degree the problem has been overcome by eliminating the need for a complex switch.

The band switch for the whole receiver has been reduced to a single bank selecting the appropriate antenna coil coupling link (L1, Fig. 5) and the 10v. feed rail to each front-end board. This switch bank is physically removed from the boards and connected thereto by co-ax. The outputs of all boards are connected in parallel and are not switched at all.

To eliminate completely any slight puzzlement that may have been caused by reference to front-end boards in the plural, let it be emphasised that there is one complete set of semiconductors and coils for each band covered.

Whilst it is admitted that the approach used is slightly more expensive than the conventional one, it is the only one, in the writers' view, that could be used if the completely flexible modular principle was to be upheld.

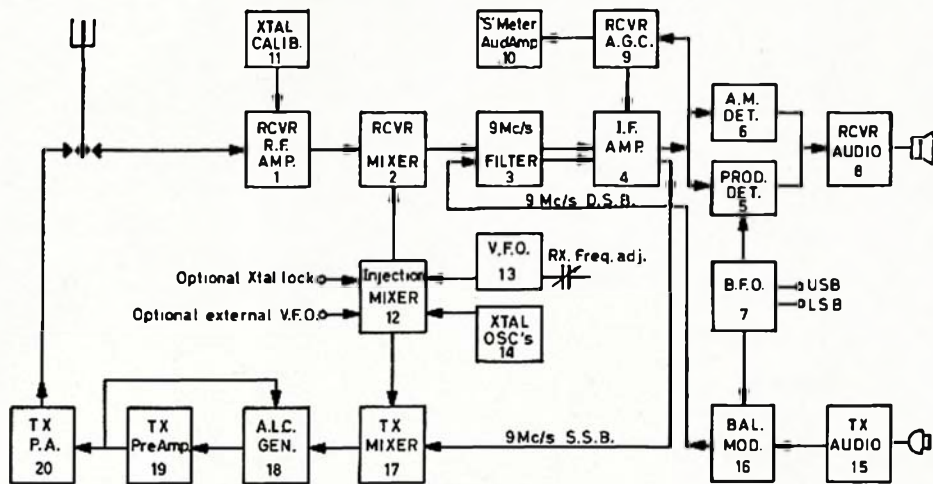


FIG. 1. - TRANSISTOR-4 BAND-TRANSCEIVER - BLOCK DIAGRAM.

	L1 Input	L2, 3, 4, 5 RF/Mixer Tuned	L7, L8 Oscillator Input	C1, C2 C3, C4	C5, C6	C7	R* RF Source
Band	Link	Circuits	Filters	pF.	pF.	pF.	Resistor
160	10t., 39g.	80t., 39g.	38t., 28g.	470	47	470	Nil
80	10t., 39g.	50t., 39g.	30t., 28g.	150	47	470	Nil
40	7t., 28g.	34t., 28g.	25t., 28g.	150	47	470	Nil
20	7t., 28g.	34t., 28g.	34t., 28g.	33	100	1000	Nil
15	5t., 28g.	20t., 28g.	20t., 28g.	33	47	470	10.0K
10	5t., 24g.	16t., 24g.	25t., 28g.	33	22	220	3.9K

TABLE 2.—RECEIVER FRONT-END COIL DATA

Notes on Table 2 and Figure 5:—

- L6 is 38 turns of 28 gauge B. & S.
- All coils close wound on Neosid Type 722/1 bakelite coil formers.
- All coils use Neosid F29 tuning slugs.
- L2/3, L4/5, and L7/8 are mounted 15/32 inch apart to form band pass coupled pairs.
- L1, the antenna coupling link is close wound over the earthy end of L2.
- All coils are wound with specified gauge of B. & S.

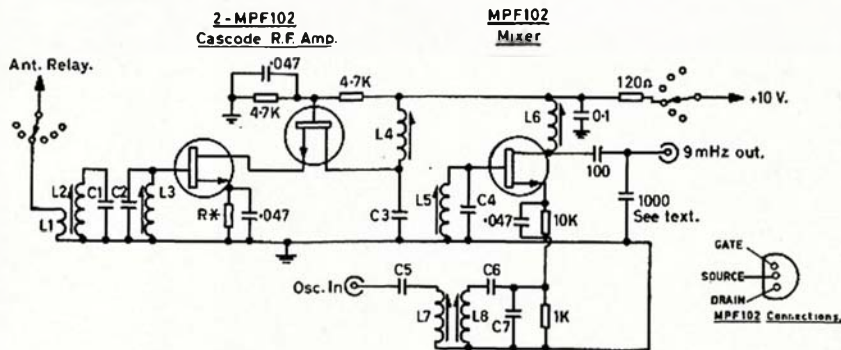


FIG. 5.—4 BAND TRANSISTOR TRANSCEIVER - RX FRONT END.

* 4 Elizabeth Street, East Brighton, Vic., 3187.
† 25 Thames Avenue, Springvale, Vic., 3171.

Each front-end printed circuit board is "wired" for two bands so that the four bander as designed uses two p.c.b.'s. It is possible to extend the coverage of the unit up to eight bands if desired simply by adding further boards. No mechanical alterations are needed.

The circuitry for each band is shown in Fig. 5.

A fixed tuned, mutually coupled, pair of coils (L2/L3) feeds the gate of the "bottom" half of a cascode r.f. amplifier using Motorola MPF102 single gate FETs. The source resistor marked * on the diagram has the primary purpose of keeping the gain constant from band to band. For 160/80/40/20 metres, it is not needed at all.

The gate of the "top" half of the cascode is maintained at half rail potential by the two 4.7K resistors and earthed for r.f. by the 0.047 uF. capacitor.

The r.f. drain coil (L4) is mutually coupled to the mixer gate coil (L5) and proper adjustment of these and the r.f. amplifier coils enables the correct band pass to be achieved.

C5/L7 forms a series tuned circuit on the required injection frequency which is mutually coupled to L8. This latter coil is parallel tuned by the combination of C6 and C7 in series. The low impedance output required by the source method of injection into the mixer is obtained from the junction of C6 and C7.

The reason for the inclusion of L7/L8 is to ensure a pure injection waveform. This is covered more thoroughly in the section following.

The mixer proper is a third MPF102 with a 9 Mc. tuned circuit in the drain. This coil (L6) is tuned by the series combination of the 100 pF. and 1,000 pF. capacitors. Output at low impedance is taken from the junction of the two capacitors. Note that the 1,000 pF. is only needed on the first board made.

Since all board outputs are in parallel, this single 1,000 pF. will effectively be in series with the 100 pF. capacitors on the individual boards. It is of course necessary to re-peak the various L6s when adding more bands because there is some slight interaction between them.

A.g.c. is applied by varying the d.c. applied to the h.t. rail. The method of deriving a supply voltage which varies inversely with signal will be discussed in a later article. Provision is also made for a manual r.f. gain control by the same method of varying the h.t. rail.

INJECTION OSCILLATOR CHAIN

The three component parts of the oscillator chain are the functions marked 12, 13 and 14 in Fig. 1. They are detailed in this article in Figs. 6, 7 and 8 with the coil data being given by Tables 3, 4 and 5 respectively.

In general, the higher the operating frequency of the v.f.o., the simpler it is to prevent spurious responses. However, there are some obvious difficulties in constructing a really stable v.f.o. at frequencies in the 40-50 Mc. region and, after considerable experiment, the method adopted has been to operate the v.f.o. on 10-10.5 Mc., heterodyne this with a fixed crystal oscillator to

56-56.5 Mc. and then heterodyne down to the required injection frequency with a series of high frequency crystal oscillators.

With a fixed i.f. of 9 Mc. the injection frequencies needed for the various Amateur bands (and the heterodyne crystal frequencies needed to come down from 56-56.5 Mc.) are given in Table 6. Note that in all cases the b.f.o. operates on the u.s.b. crystal and that the correct sideband for the band in use is automatically selected if the specified heterodyne crystals are used. The "other" sideband is available by using the l.s.b. crystal in the b.f.o.

Note, too, that since the same injection frequency is used for both transmit and receive, there can be no offset. If the receiver is tuned to a signal on any band the transmitter comes up on exactly the same frequency and sideband. In many cases, such as participation in round tables, this may be a disadvantage and provision is made for

a received frequency offset facility. This will be described later in the series.

The apparent complexity of the injection train needs comment. However, closer scrutiny will show that there are only a couple of additional stages over the complement of stages normally found in a transceiver. The v.f.o. and crystal heterodyning stages and their associated mixers are common to all current designs. The one vital addition is the 46 Mc. oscillator and its mixer in the v.f.o. generator. This takes the virtual output of the v.f.o. up to 56-56.5 Mc. The reason for this can be summed up in one word . . . "birdies".

Rather than plough through the mathematics involved, a description of a practical test may be simpler.

The writers carried out a series of tests on four popular commercial sideband rigs and one very good "home brew" job. The test was simple and was as follows:

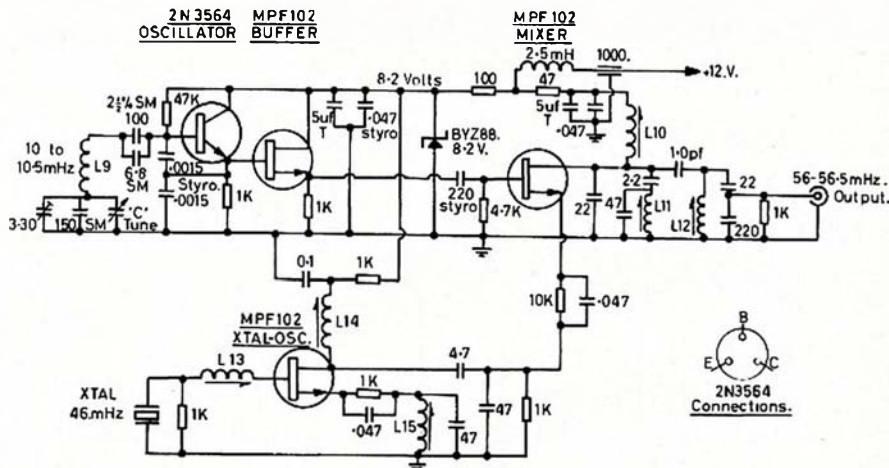


FIG. 6-4 BAND TRANSISTOR TRANSCIVER - VFO GENERATOR.

Coil	Freq. Mc.	Turns	Wire Gauge B. & S.
L9	10-10.5	22	20 approx.
L10	56-56.5	12	20
L11	46 (trap)	12	20
L12	56-56.5	12	20
L13	—	10	28
L14	46	20	28
L15	30-32 approx.	15	28

TABLE 3.—VFO GENERATOR COIL DATA

Notes on Table 3 and Figure 6:—

- All coils close wound on Neosid Type 722/1 bakelite formers.
- L9 is $\frac{3}{8}$ diameter, 16 turns per inch, "Willis" air wound inductance No. 3-16 (or B. & W. No. 3011), obtainable from William Willis and Co. Pty. Ltd., 430 Elizabeth St., Melbourne.
- The tuning condenser C_{TONE} is an Eddystone No. 585 4.5 to 91 pF. single section variable.

The receiver under test was set to 14.2 Mc. and a signal of 10 mV. fed to the antenna terminal. Note that 10 mV. is (roughly) equal to a "S9 + 40 db." signal. The equivalence may not be exact, but is quoted to indicate that 10 mV. is a large, but not unlikely, signal.

The signal generator was then swept over the range 8-25 Mc. (keeping the 10 mV. input constant) and the number of audible beats counted. There is nothing magical about the range chosen—it just happened to be the range with 14 Mc. approximately in the middle.

On all the units tested there were between 10 and 18 spurious responses in the receiver of strengths varying between less than S1 up to S6.

Each one of these spots represented a frequency, which, if occupied by a powerful signal, would give an unwanted "stranger" in the 14 Mc. Amateur band. (Are you absolutely certain that strong teletype signal really is on 20 metres)

In general the possibility of spots can be traced to the use of low frequency heterodyning techniques and the difficulty, at lower frequencies, of removing harmonics from the injection chain.

In this design nearly all the mixing is done at frequencies in excess of 40 Mc. and considerable attention has been paid to the filtering of the injection signal to ensure waveform purity.

Perhaps the real worth of the technique is best demonstrated by mentioning that when the test outlined above was applied to this receiver no spurious responses were detected at all.

VFO GENERATOR

The circuit diagram is given in Fig. 6 with the associated coil data set out in Table 3.

A 2N3564 bipolar transistor is used in a series tuned Clapp type circuit and covers 9.95-10.60 Mc., i.e. the usual 500 Kc. plus a bit of overlap. The reason for the extra 100 Kc. at the h.f. end will be detailed later. Output from the oscillator is taken from the emitter via a MPF102 source follower to the gate of a second MPF102 mixer. The h.t. to the oscillator and buffer is regulated by an 8.2 volt zener diode.

A third MPF102 acts as an overtone crystal oscillator at 46.0 Mc. The drain coil L14 is tuned by a series combination of 4.7 and 47 pF. capacitors with a low impedance output being taken from the junction of the two capacitors into the source of the MPF102 v.f.o. mixer.

The mixer drain coil L10 is tuned to 56-56.5 Mc. while L11 is a trap set to 46 Mc. to remove any oscillator voltage present. L12 is a second 56 Mc. parallel tuned circuit and uses 22 pF. and 220 pF. capacitors in series to give the low impedance output necessary for the heterodyne mixer section.

The whole generator is contained in a die cast metal box for mechanical and thermal stability. H.t. voltage is fed into the box via a 1,000 pF. feed through capacitor.

THE HETRODYNE OSCILLATORS

The circuit diagram is given in Fig. 7 with associated coil and crystal data for all bands being set out in Table 4. Only one crystal oscillator is shown, but there is one required for each band. All outputs are paralleled and switching is by application of h.t. to the board required. Once again this technique has been adopted to simplify band switching and to avoid mechanical alterations when adding bands.

One circuit board is used and is "wired" for four bands. Simple mounting of additional components is all that is required to extend to other bands.

The four oscillators on their common board are again contained in a die cast box which is mounted on the chassis directly behind the v.f.o. box. If required another four oscillators can be accommodated in a second die cast box bolted to the lid of the first.

The output frequency of each oscillator may be varied slightly by means of L19 to ensure precise band edge alignment and thus a common dial calibration for all bands.

The drain coil (L20) is tuned by the series combination of the 8.2 pF. capacitor shown in Fig. 7 and the 100 pF. capacitor in the source circuit of the 3N140 injection mixer of Fig. 8.

All outputs are connected in parallel so that, as in the case of the r.f. stages, only one 100 pF. capacitor is needed.

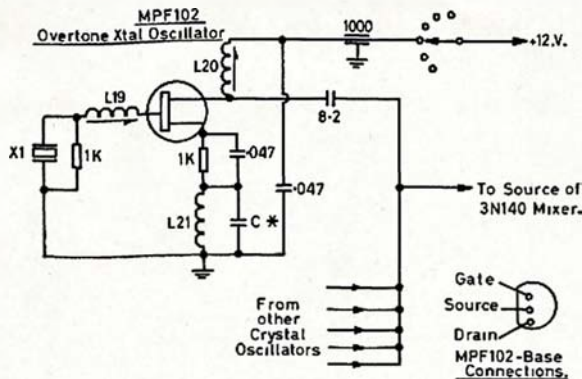


FIG. 7.—4 BAND TRANSISTOR TRANSCEIVER - HETRODYNE OSCILLATOR.

Band	L19 Series Coil	L20 Drain Coil	C* pF.	Xtal Freq. Mc.
160	10t., 28g.	11t., 28g.	47	45.20
80	10t., 28g.	11t., 28g.	47	43.50
40	10t., 28g.	11t., 28g.	47	40.00
20	9t., 28g.	11t., 28g.	100	51.00
15	10t., 28g.	11t., 28g.	100	44.00
10	15t., 28g.	20t., 28g.	100	36.00

TABLE 4.—HETRODYNE OSC. COIL DATA

Notes on Table 4 and Figure 7:—

- L21, the source coil, is the same for all bands and consists of 20 turns of 28 B. & S. close wound on a 330K ½ watt Ducon resistor (0.125" diam. x 0.375" long).
- Coils L19 and L20 are close wound on Neosid Type 722/1 bakelite coil formers.
- All coils are wound with specified gauge of B. & S.

INJECTION MIXER

A 2N3564 bipolar transistor amplifies the v.f.o. generator output to the level required for the 3N140 dual gate FET mixer. L16, together with the capacitive divider formed by the 22 and 220 pF. capacitors, resonates at 56.25 Mc. The collector coil L22 is parallel tuned by a 22 pF. capacitor and is top coupled by a 2.2 pF. capacitor to L17, also resonant on 56.25 Mc. L18 is a series tuned trap to remove any last vestige

of 46.0 Mc. component that might escape from the v.f.o. box.

Excitation from the crystal heterodyne oscillators is applied to the source of the 3N140 mixer. Gate 2 of the mixer is biased by the 10.0 and 3.9K resistors across the supply rails.

The drain circuit of the 3N140 has an untuned 2.5 mH. RFC as its load and an MPF102 source follower is used to provide a low output impedance.

The whole mixer chain is contained in a small diecast box which is bolted to the top of the v.f.o. generator box.

(Continued on Page 14)

Coil	Freq. Mc.	Turns	Wire Gauge B. & S.
L16	56-56.5	12 (tap 3)	20
L17	56-56.5	12	20
L18	46 (trap)	15	20
L22	56-56.5	12	20

TABLE 5.—INJECTION MIXER COIL DATA

Notes on Table 5 and Figure 8:—

- All coils close wound on Neosid Type 722/1 bakelite formers.
- The RFC in the 12 volt supply line to the VFO amplifier consists of 30 turns of 28 B. & S. wire on a 1 watt 100K resistor.

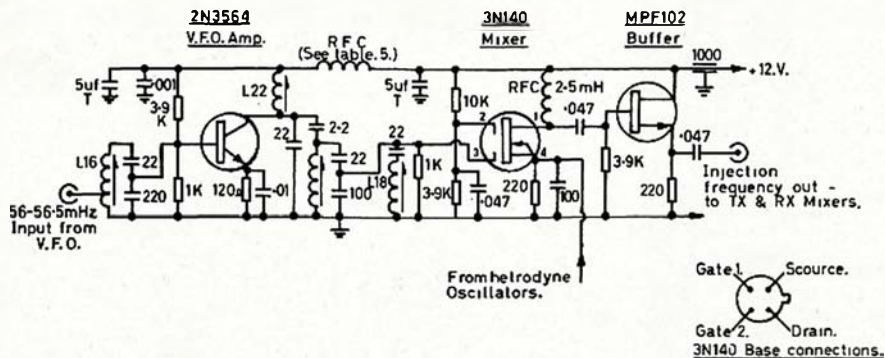


FIG. 8.—4 BAND TRANSISTOR TRANSCEIVER - INJECTION MIXER.

ROSS HULL MEMORIAL VHF/UHF CONTEST, 1968-9

The Federal Contest Committee of the Wireless Institute of Australia invites all Australian and Overseas Amateurs and Short Wave Listeners to participate in this annual Contest which is held to perpetuate the memory of Ross Hull whose interest in v.h.f./u.h.f. did much to advance the art.

A Perpetual Trophy is awarded annually for competition between members of the W.I.A. in Australia and its Territories, inscribed with the name and life work of the man whom it honours. The name of the winning member of the W.I.A. each year is also inscribed on the Trophy. In addition, this member will receive a suitably inscribed certificate.

OBJECTS

Australian Amateurs will endeavour to contact as many other Amateurs in Australia and Overseas under the following conditions.

DATE OF CONTEST

From 0001 hours E.A.S.T., 7th December, 1968, to 2359 hours E.A.S.T., 12th January, 1969.

DURATION

Any seven calendar days within the dates mentioned above, not necessarily consecutive. These periods are to be at the operator's convenience. A calendar day is from 0001 hours E.A.T. to 2359 hours E.A.T.

RULES

1. There are two divisions, one of 48 hours duration, and one for seven days. In the seven-day division, there are three sections:—

- (a) Transmitting, Open.
- (b) Transmitting, Phone.
- (c) Receiving, Open.

2. All Australian and Overseas Amateurs may enter for the Contest whether their stations are fixed, portable or mobile.

3. All Amateur v.h.f./u.h.f. bands may be used, but no cross-band operating is permitted. Operators are cautioned against operating transmitting equipment on more than one frequency at a time, particularly when passing cyphers. Cross-band operation to assist contest working is prohibited.

Such operation will be grounds for disqualification. Cross mode contacts will be permitted.

4. Amateurs may enter for any of the transmitting sections. The seven-day winner is not eligible for the 48-hour award.

5. Only one contact per band per station is allowed each calendar day.

6. Only one licensed Amateur is permitted to operate any one station under the owner's call sign. Should two or more operate any particular station, each will be considered a contestant and must submit a separate log under his own call sign.

7. Entrants must operate within the terms of their licences.

8. **Cyphers:** Before points may be claimed for a contact, serial numbers must be exchanged. The serial numbers of five or six figures will be made up of the RS (telephony) or RST (c.w.) report plus three figures, commencing in the range 001 to 999, for the first contact, and will then increase in value by one for each successive contact. When a contestant reaches 999 he will then commence again with 001.

9. **Entries must** be set out as shown in the example, using only one side of the paper. Entries must be post-marked not later than 10th February, 1969, and clearly marked "Ross Hull Contest" and addressed to Federal Contest Manager, Box N1002, G.P.O., Perth, W.A., 6001.

10. **Scoring** for all sections will be based on the attached table. Distances must be shown in the log entry as shown in the example. Failure to make this entry will invalidate the particular claim. Some typical distances are given in the attached table.

11. **Logs:** All logs shall be set out as in the example and in addition will carry a summary sheet showing the following information:

Name Call Sign
Address Division
..... Claimed Score

SCORING TABLE

Distance in Miles	52	144	432	576	Higher
	Mc.	Mc.	Mc.	Mc.	
Up to 25 Miles	1	1	2	2	20
26 to 50	1	1	10	10	50
51 to 100	2	5	25	30	100
101 to 200	5	10	50	60	200
201 to 300	15	15	75	85	250
301 to 500	10	20	100	125	300
501 to 1050	5	25	200	200	350
1051 to 1500	10	50	250	250	400
1501 to 2500	20	100	300	300	450
2501 to 3500	35	200	400	400	500
3501 to 5000	50	300	450	450	550
5001 and over	100	400	500	500	600

Operating Dates (7 cal. days)
Highest Score over a 48-hour period
was points.

Operating period:
from hrs. E.A.T. / / 6
to hrs. E.A.T. / / 6

Declaration: I hereby certify that I have operated in accordance with the conditions of my licence and abided by the Rules of the Contest.

Signed
Date

12. Entrants not abiding by the Rules of this Contest will be disqualified.

13. The ruling of the Federal Contest Committee of the W.I.A. will be final. No dispute will be entered into.

14. **Awards:** Certificates will be awarded to the winners of each section in each VK and Overseas Call Area. The VK contestant who returns the highest score in the transmitting section and who is a financial member of the W.I.A., will have his name inscribed on the Trophy which will be held by his Division for the prescribed period. A Certificate will be awarded to the contestant who shall not be the Trophy winner, and who returns the highest scoring log covering a period of any 48 consecutive hours.

Also, Certificates will be awarded for operating in the Ross Hull Contest and breaking any Australian v.h.f./u.h.f. distance record.

RECEIVING SECTION

1. Short Wave Listeners in Australia and Overseas may enter for the Contest, but no transmitting station may enter.

2. Contest times and logging of stations on each band are as for the transmitting sections, however there is no 48 hour sub-section.

3. To count for points, logs will take the same form as for transmitting sections, but will omit the serial number received. Logs must show the call sign of the station heard (not the station worked), the serial number sent by it, and the call sign of the station being worked.

Scoring will be on the same basis as for transmitting stations, i.e. on the distance between the Listener's station and the station heard. See the examples given. It is not sufficient to log a station calling CQ.

4. A station heard may be logged only once per calendar day on each band for scoring purposes.

5. **Awards:** Certificates will be awarded to the highest scorer in VK and Overseas countries.

EXAMPLE OF TRANSMITTING LOG (Brisbane Station)

Date/Time E.A.S.T.	Band Mc.	Emission Power	Call Sign	RST/No. Sent	RST/No. Rcvd.	Dist. Miles	Points Claim.
24th Dec. 0100 E.A.S.T.	52	A3(a)	VK7ZAI	59001	59004	1110	10
0110 E.A.S.T.	52	A3(a)	VK4NG	58002	57051	330	10
0230 E.A.S.T.	144	A3	VK5ZK	56003	55043	990	25
0235 E.A.S.T.	144	A3	VK3ZJO	45004	46021	850	25

EXAMPLE OF RECEIVING LOG (Perth S.w.I.)

Date/Time E.A.S.T.	Band Mc.	Call Heard	RST/No. Sent	Station Called	Dist. Miles	Points Claimed
2nd Jan. 1000 E.A.S.T.	52	VK5ZDX	59221	VK8KK	1330	10
1025 E.A.S.T.	52	VK2ZCF	58195	VK6ZAA	2040	20
1110 E.A.S.T.	432	VK6ZDS/8	57061	VK8LK/8	60	25
3rd Jan. 0500 E.A.S.T.	144	VK5ZHJ	44102	VK6ZCN	1330	50

S.S.B. Transmitter—An Amateur Engineering Project

PART THREE

H. F. RUCKERT,* VK2AOU

SECOND MIXER AND CRYSTAL OSCILLATOR

The second mixer is basically identical to the first one. One can use a balanced mixer with a twin triode, and different valves and a variety of operating conditions were tried, or a mixer valve like the 6AJ8, etc., with screen grid shielding to prevent the oscillator signal appearing at the plate may be tried as the writer did.

The following problem occurred: The linear p.a. was on a separate chassis and no tuned grid circuit was provided. The driver tank employed caused, on 10 metres, a substantial downward drive voltage transformation, due to the ratio of driver plate capacity to p.a. grid capacity. Changing the L-C ratio at the driver plate circuit did not help much due to mismatch.

The 12BY7 driver used at the time was already working in class AB1 and could not take a higher grid input voltage (or grid current would occur, causing flat-topping) to obtain more drive on 10 metres. The gain, using a 6BA6 pre-amplifier with wide band damped tuned circuits, was only about 4, and the second mixer 6AJ8 gain was 1.5 to 2 with a similar tuned circuit. This mixer could not be driven harder without causing distortion here or in the first mixer. A further difficulty was encountered due to the crystal oscillator being remote in the nearby standing receiver, operating at the 1-2 volt level required for the receiver 6U8 mixer valve. Less than 1v. r.f. was left at the end of 18 inches of co-axial cable at the transmitter second mixer.

The mixer input signal should be no higher than 10% of the oscillator voltage, which means that under these conditions the placement of stages made it impossible to obtain sufficient drive for 15 metres and the two 10 metre ranges. At this stage one can either scrap the design, pull everything to pieces and start with a new chassis again—if one feels like it—or solutions have to be found which can easily be incorporated. There was no space for additional valves and tuned circuits with band switches.

It was found that a ferrite balun transformer with 4 x 8 turns (the type used as t.v. $\frac{1}{4}$ " x $\frac{1}{2}$ " aerial balun) gave a voltage gain of 4 over the required range from 8 to 33 Mc. and matched the 300 ohm co-axial cable between receiver and transmitter mixer. This balun was a most efficient wide band amplifier.

The second mixer was slightly modified to suit the available 8-10v. oscillator voltage, making it possible to use 1v. s.s.b. input signal. The output of 2v. s.s.b. signal was twice that delivered by the 6AJ8 mixer. It would have been a great help if the published equipment descriptions had shown the d.c. and r.f. voltages and d.c. currents.

The crystal oscillator circuit is usually used with overtone crystals like those

here employed for the 15 and 10 metre operation (25.45, 32.45 and 32.95 Mc.), but works just as well on the fundamental frequency of the other crystals. Band switching is so very much easier than with the circuit recommended by the crystal manufacturer. A 6AM6 triode connected is employed in the oscillator. A 6AK5 pentode connected buffer stage is used, which gave more output than a cathode follower which was also tried. This was a matching problem. The grids of cathode followers must not be driven into grid current, as sometimes insufficient voltage is obtained also due to unity gain of these stages. Next time the c.o. will be placed close to the second mixer.

Trying to use surplus crystals which were etched or lapped to the frequencies required was only a disappointing experience. With these the receiver had many more spurious beat notes than those precalculated, and the output was too low on overtones or harmonics. The new locally manufactured crystals were perfect in every respect. They were the only expensive item the writer had to buy to build this transmitter. The 10 pF. and 7 pF. series capacitors pull these crystals to the required frequency.

PRE-AMPLIFIER AND DRIVER

To be able to step up the drive power the 6BA6 pre-amplifier was replaced by a 12BY7, and the 12BY7 driver was replaced by a 6BQ5 pentode. These valves with their higher plate current operating in class AB1 match better the damped wideband tuned circuits. Plenty of clean drive is now available on all bands.

Using valves with relatively high grid 1 to plate capacity may call for neutralising. In this case, good shielding between stages, a small earthed plate between grid and plate valve pins, stray field preventing Q2 ferrite slugs in the coils (not in driver plate coils), grid stopper resistors, ferrite stopper rings at grid 1 and plate of the driver, the driver loading by the final space charge capacity effect, and the anyhow necessary damping resistors parallel to tuned circuits kept things under control without neutralisation.

With the different L-C ratio of the tuned circuit and damping resistors, these two stages are able to deliver uniform drive power at 55v. r.m.s. to the final at all operating frequencies between 3.5 and 29.0 Mc. Minor deficiencies can be compensated with the drive control (5K ohm) in the cathode of the 12BY7 (ratio 1:3 at the most). The pre-amplifier tuned circuits are tuned to a frequency 10% higher than the lower band edge, and the second mixer plate tuned circuits are set to a frequency 10% below the upper band edge. Under these conditions the 12BY7 has a gain of up to six and the 6BQ5 achieves a gain of six at 10 metres and 20 at 80 metres after pi filter transformation (measured at the grid

of the final) with the driver plate circuit tuned to the exact working frequency.

LINEAR POWER AMPLIFIER

This transmitter occupies a quarter of the volume the a.m. rig it replaces, and the weight is also down to 30%. On the other hand, there were no plans to build a minibox without leaving air space inside to fit in the glove box of the car. It should be possible to run the final at full legal power all day and not just for 30 seconds as recommended by some transceiver manufacturers (tune-up condition) to prevent the glass of the final valves from softening. Using a 200w. capability exciter followed by a 400w. linear does not appear very economical either. The final valves were to be operated close to the manufacturer's class AB1 specifications.

There were still the 25 years old but very modern looking all glass Telefunken radar valves, Type LS50, in my collection. Their size is similar to a 6146 but plate dissipation is 40w., which is ideal for the experiments intended to carry out. Their plate current was only half that of the 6146, but by using three valves in parallel with slightly higher screen and plate voltage the legal power max. of 400w. p.e.p. output with double tone input and zero grid current could be obtained with 55v. r.m.s. as drive potential.

The total valve capacities were similar to 1 or 2 more modern valves:

For three valves in parallel—

Input C: 45 pF.

Output C: 30 pF.

Grid-Plate C: <0.27 pF.

gm: 12 mA./V.

The valves require little filament power, being 12.6v. x 3 x 0.75a.

There is not much wrong with certain older valves, and I am grateful to DL1FK for a few more valves of the same type.

Also the three valve holders of the linear p.a. are mounted above the chassis. Their connecting pins (except grid 1 and plate) are soldered to tubular 1,000 pF. feed-through capacitors. 0.01 μ F. disc (marked) capacitor are soldered parallel to the 1,000 pF. capacitors—just in case. A shielding strip runs across the valve holder and through a slot between grid 1 and plate pin. $\frac{1}{4}$ " wide sheet copper strips have been used to wire r.f. carrying components.

At first no v.h.f. plate suppressors were used when the transmitter worked only on 80, 40 and 20 metres. Some instability was observed on 15 metres, and something had to be done before 10 metres could be used. The usual 50 and 100 ohm resistors with a few turns of wire wound around the resistor as a choke were working fine on 20 and 15 metres, but on 10 metres these resistors went up in smoke. It was found that more than two turns caused such

a r.f. voltage at the 50 ohm 1 watt resistors that they were overloaded.

Finally two turns of 1/8" wide silver plated copper bands were wound around the 1 watt 50 ohm carbon resistors. This method had the desired effect without reducing the output on 28-29 Mc. Q1 ferrite rings were used before; they were effective as suppressors, but caused a loss of power above 21 Mc.

R.f. power measurements with a 52 ohm dummy load (resistor in oil filled container) and r.f. amp. meter showed that the output at 21 Mc. and especially at 28 to 29 Mc. fell off too much compared with the performance at 3.6, 7.1 and 14.2 Mc. A few calculations (A.R.R.L. Handbook) made it clear that the total pi filter input capacity at 28 Mc. should be 40 pF. for the plate load of 1,500 to 2,000 ohms and a loaded circuit Q of 12.

The output capacity of the three valves, the substantial stray capacity from the band-shaped leads and other connected components, and the tuning capacity of the variable air capacitor had each about 30 to 35 pF. This means that on 10 metres the C was two to three times too large and the resulting L was just as much too small. The L/C ratio was four to nine times too low.

With nearly half the L distributed as leads between components and switches the tuned circuit had radiating losses, and it presented a mismatch for the valve (generator). Series tuned tanks are used at 2 metres and a similar technique is employed in recent transmitters where up to 10 t.v. line output valves are operated in parallel (mobile tx, etc.). Between the hot end of the pi input capacitor and the high voltage end of the pi coil is, at 21 Mc., a 95 pF. and at 28 Mc. a 55 pF. capacitor series connected to bring the total effective C (parallel to the pi coil) to about 62 pF. at 21 Mc. and to about 40 pF. at 28 Mc. The correct L can now be used and the L/C ratio and circuit Q now reach the right values.

10 pF. and half a 10 metre coil turn more or less make quite a difference to the matching and r.f. output, the drive requirements and grid current starting point. As long as coils get hot (taps may even unsolder) and the valve plates turn red, one can be sure that

a mismatch caused it. The extra series tank capacitor and the input variable capacitor may both be a ganged variable unit. The series capacitor needs in this case a 30 to 40 pF. fixed capacitor in parallel. These capacitors must be able to take the very substantial circulating current at 29 Mc. and about half the r.f. plate voltage. I used fixed ceramic 1.5" diameter 10 kVA. NPO transmitter capacitors.

In order to increase the lumped L of the 10 and 15 metre coil, the lead inductance of the whole circuit had to be reduced. This is not easy with large components, the many switches and a certain front panel layout. It was achieved by using 1/8" to 1/4" copper band instead of round wires. Furthermore, the two 4" to 5" long leads from the switches to the two air capacitors (106 pF. and 450 pF.) were made of two parallel running copper bands which were only connected at the ends.

All these measures allowed to use 5 turns instead of only 3 turns for the 10 metre coil, which doubled the L value, solved the matching problem, 28-29 Mc. tuning, L/C ratio and Q. The r.f. output was markedly increased at 21 Mc. and especially at 28-29 Mc., reducing at the same time the dissipated plate power. The tuning range becomes too narrow and the power output drops again if the series capacitor is made too small.

At an earlier stage, two H1 ferrite rings were placed over the common grid lead of the p.a. valves. This step was later found to be unnecessary and quite wrong, because they prevented 80% of the 10 metre drive voltage from reaching the final stage, like a good low pass filter.

The usual neutralising via a partly by-passed lower end of the p.a. grid (or driver plate) tuned circuit could not be used in this case. R.f. with opposing phase is also available at the output end of the pi coil of the final tank. So a series connected 3 pF. and 3-30 pF. trimmer capacitor provides an effective neutralising loop, which was only necessary on 20, 15 and 10 metres.

To adjust the neutralisation, the transmitter was warmed up and tuned up on an aerial with less than 1:1.5 s.w.r. Next, plate and screen voltage was turned off. The remaining r.f.

voltage at the plate tuned circuit is measured with a r.f. probe v.t.v.m. with drive applied as before. The trimmer is adjusted until a minimum below 1v. is found. Detuning of the tank to an off resonance position or the use of an aerial with 1:3 s.w.r. will upset the balance, but with reasonable correct tuning, tank loading and low s.w.r., complete stability is assured.

Difficulties were earlier experienced when the transmitter was tuned up with an improvised dummy load consisting of two 200w. light globes. Even these two globes had in parallel 150 ohm impedance when running cool. Adjusting the transmitter and neutralisation with the unstable dummy loads (impedance depends on heat caused by the power applied) proved misleading and wrong. Depending on the accuracy of the driver tank tuning, regeneration occurred at modulation peaks after an aerial with low s.w.r. had been connected. This condition was also reported as audio distortion. No difficulties are observed with a 52 ohm Heath Antenna dummy load. This matching sensitivity of this form of neutralisation was also the reason why the multiband tank universal aerial coupler originally installed was later abandoned.

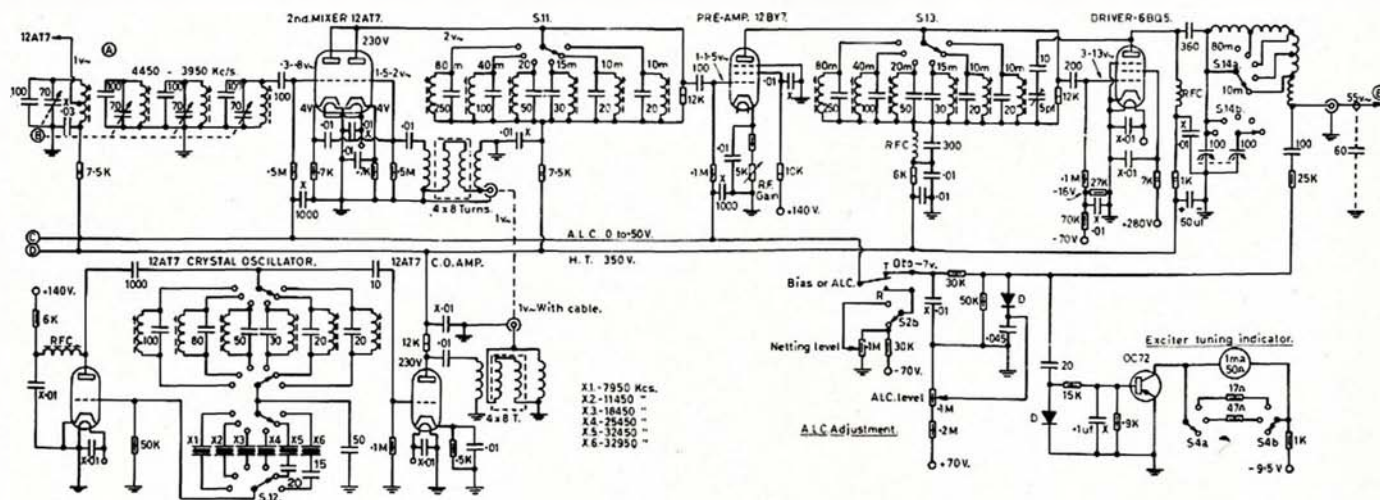
The final pi tank uses 1 1/2" diameter ceramic transmitter capacitors of 75 pF. and 270 pF. at the high r.f. voltage input end, and medium heavy mica transmitter capacitors at the output end to extend the values of the variable air capacitors.

S.W.R. METER

The s.w.r. meter is actually a double r.f. watt meter which reads practically frequency independent, and it can be adjusted for different load impedances, features few popular s.w.r. indicators have. It is important to note that the shielding braid of the co-axial cable going through the Q2 ferrite ring is only earthed at one end.

Adjustment: The output is connected to a true 52 or 75 ohm resistor capable of handling about 20 watts or more. With some power applied, one has to see which trimmer allows to adjust zero meter reading. The co-axial s.w.r. meter connections are now reversed

DL6QI. "DL-QTC," February 1965.



and the other trimmer is set to obtain zero reading. The resistance of the meter movement including shunts and dropping resistors represent the diode load and determine the diode characteristic and s.w.r. reading obtained. This meter was an r.f. amp. meter with burnt out thermo-cross. The meter scale figures are, at low s.w.r. levels, nearly the right s.w.r. values, as a calibration with various load resistors showed.

Forward reading four divisions, 52 ohms, 1:1 s.w.r.

Reverse Reading (Original Marking)	S.W.R.
1.6	1.5
2.25	2
2.5	2.5
2.75	3
2.9	3.5
3.15	4
3.3	5

The two Ge diodes should be matched. This s.w.r. and r.f. watt meter serves also as p.a. tuning indicator.

POWER SUPPLIES

Heavy filter chokes, large paper capacitors and the 866 rectifiers are now obsolete. The silicon diodes and high capacity electrolytic capacitors take their place.

Exciter and final p.a. have their own power supplies built in, providing also regulated negative bias and regulated lower B+ voltages. The mains switches S15 (a, b, c) and S16 (a, b, c) have four positions:

- (1) Off.
- (2) Filaments and negative bias on.
- (3) H.t. and lower B+ on, via 1K ohm resistor to limit voltage and current peaks and to slow down the charging of the electrolytics.
- (4) Shortening the 1K ohm resistor to reduce circuit resistance to improve h.t. regulation.

To be able to use the available 2 x 350v. transformer for the exciter supply without obtaining a too high B+ voltage, not to make dropping resistors necessary which cause extra heat, small charging electrolytics were only used. These 2 x 4 μ F. capacitors must be able to stand up to the so-caused high ripple voltage and current without exploding.

The 220v./2 x 800v. h.t. transformer has been re-impregnated after its first

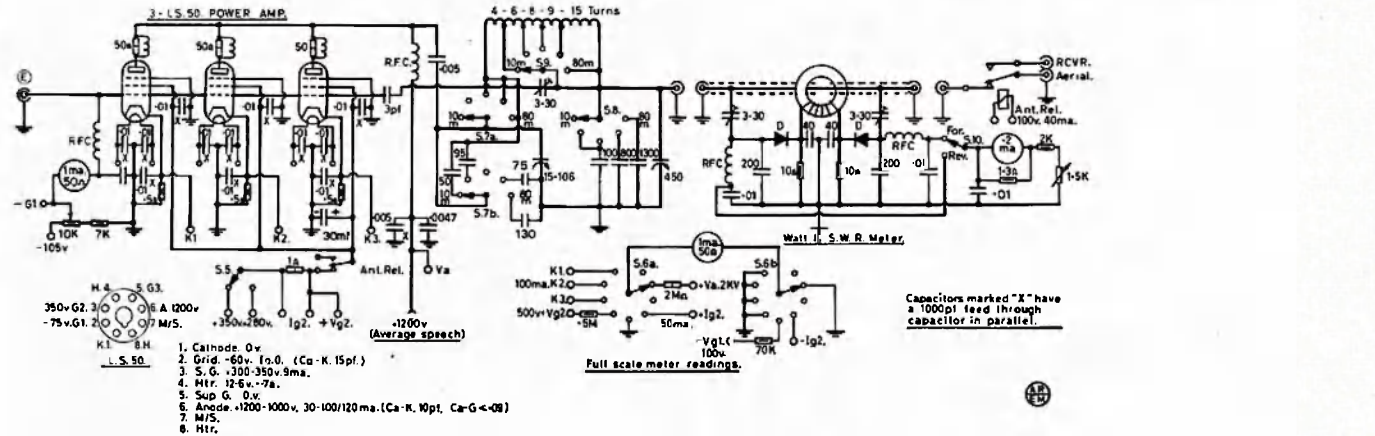
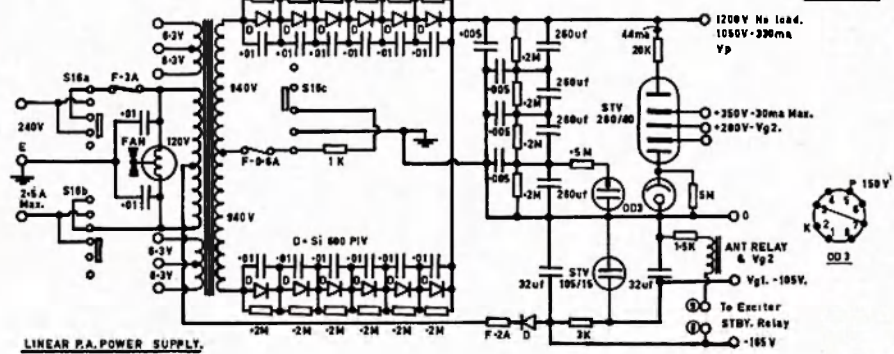
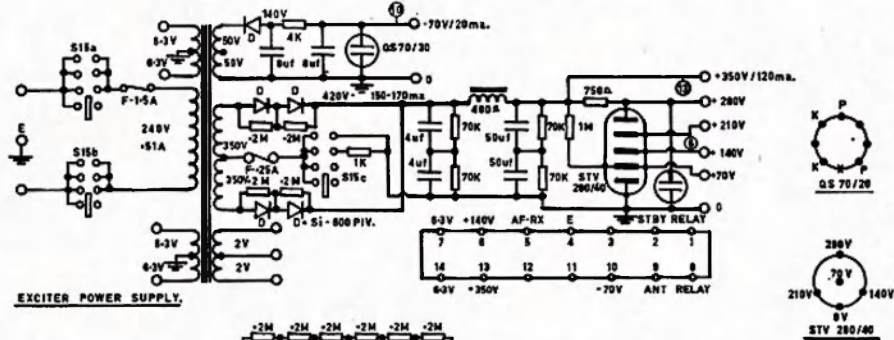
20 years of service which stopped some strange noises. With 240v. input, 2 x 940v. output are obtained. No filter choke, only a string of four 260 μ F. (200 μ F. nominal) electrolytic capacitors are used here. It may be vital to remember that the aluminium can is usually not insulated from the electrodes of the unit, no matter whether the positive and negative terminals are both available at the insulated base plate. Insulating sleeves are placed between can and clamp. Shrunk-on plastic sleeves some capacitors have may not be sufficiently safe, they can crack if the components become too hot. A red neon pilot light indicated the charge of the electrolytic capacitors.

The bleeding action of the resistor chains, VR tubes and the screen current drain is quite rapid. Two screen grid voltages are available with the switch S5 from two multi-section neon stabilisers. A 30 μ F. electrolytic capacitor provides the extra screen grid power for occasional loud voice and drive

peaks, without having to use larger stabilisers capable of holding the voltage at >10 mA. screen grid current per p.a. valve. The h.t. voltage fluctuates with speech (s.s.b. modulation) by not more than $\pm 3\%$. The transmitter power is limited by the allowable heating up of the h.t. transformer, the screen grid current the LS50 valves can take, and the regulation limitations of the U_g stabilisers.

A convenient source for the -80 volt bias and 100 volt/40 mA. for the antenna relay was found at the centre tap of the primary winding of the h.t. transformer. A separate 200 mA. fuse was used. At one stage an electrolytic capacitor had lost its capacity, and did not therefore act as a charging capacitor any more, and so the stabiliser for the bias voltage did not fire, causing high bias voltage of the wrong value and ripple. Strong carrier and distorted audio was reported. The large capacitors now used leave only a few mV. ripple voltage.

(To be continued)



Solid State Transceiver

(Continued from Page 9)

Overseas Magazine Review

Band	Signal Mc.	Injection Mc.	S.B. Generated	Hetro. Xtal Mc.
160	1.8-2.3	10.8-11.3	LSB	45.20
80	3.5-4.0	12.5-13.0	LSB	43.50
40	7.0-7.5	16.0-16.5	LSB	40.00
20	14.0-14.5	5.0-5.5	USB	51.00
15	21.0-21.5	12.0-12.5	USB	44.00
10A	28.0-28.5	19.0-19.5	USB	37.00
10B	28.5-29.0	19.5-20.0	USB	36.50
10C	29.0-29.5	20.0-20.5	USB	36.00
10D	29.5-30.0	20.5-21.0	USB	35.50

TABLE 6.—FREQUENCY DATA

Notes on Table 6:—

- In all cases the 9 Mc. sideband is generated on USB. On 160/80/40 this 9 Mc. USB is subtracted from the injection frequency to give LSB. On all other frequencies it is added to the injection frequency to give USB.

AVAILABILITY

As indicated in the previous article, kits and/or board and/or instructions will be made available at the following prices:

- VFO generator complete with crystal and die cast box, \$35.25 each.
- Injection mixer complete with die cast box, \$19.75 each.
- Hetrodyne oscillators—
 - 1st board, including board, die cast box and crystal, \$16.50 each.
 - 2nd, 3rd and 4th boards, components and crystals, \$9.50 each.
- Receiver front-ends—
 - 1st and 3rd bands, including boards, \$9.75 each.
 - 2nd and 4th bands, components only, \$7.75 each.

Postage on items 1, 2, 2a is 20c; on items 3b, 4a and 4b is 13c.

Please address enquiries to 4 Elizabeth Street, East Brighton, Vic., 3187.

ERRATUM

Would readers please note an error in the circuit diagram of the receiver audio section (Fig. 2, Nov. 1968 "A.R.").

A connection is shown between the collector of the AY1121 driver transistor and the 12-20 volt h.t. line.

This connection should not exist and the AY1121 collector is connected only to the base of the AY1120 device.



FORMER EDDYSTONE CHIEF HERE

Mr. Arthur Edwards (G6XJ), formerly managing director of Eddystone Radio (Stratton & Co. Ltd., Birmingham, U.K.), arrived in Melbourne on 4th December. An active Amateur, Mr. Edwards will stay in Australia for an indefinite period and will be operating call sign VK3AMM portable.

"RADIO ZS"

June 1968—

A De Luxe Mobile Power Supply: L. Uys and D. Brook. Using 2N3055s (four) to produce 650 volts at 160 mA. from 12v. battery. Efficiency about 80 per cent.

Do It With Diodes: C. de Souza. Discussion on using diodes to protect a number of electronic circuits.

July 1968—

The Ferrite Balun: J. Hugo, ZSISC. Describes a method of making a balun using straight ferrite rod 1/4 inch diameter. Loopstick pieces about three inches long should be suitable. 1/1 and 4/1 baluns can be made with this method.

Know Your Quad: H. Randall, ZS1HF. General dissertation on the origin of the Quad antenna and information on its characteristics.

Fast Erection Without Tears: T. Cust, ZS1-2C2. Describes a method of easily erecting a guyed mast using a gin pole.

August 1968—

No technical articles.

"OZ MAGAZINE"

August 1968—

Converter for 1296 Mc.: Flemming Rasmussen. Describes a transistor converter using trough lines.

Receiver with Ceramic Filter: H. Siellerup Rasmussen. Describes a solid state receiver for the Amateur bands using ceramic filters in the i.f. stages.

"SHORT WAVE MAGAZINE"

June 1968—

Six Band C.w. Transmitter. Described as "a modernised version of a standard design"—incorporating rx pre-amplifier, break-in and fully key controlled. Runs about 100w. to 6146.

V.h.f. Working by Meteor Scatter. Terminology, procedure, method, equipment and example.

Some Gekoso VFO/Exciter Modifications: Some suggestions for improving the stability, h.f. band drive and note of transmitters using these popular units.

Vertical Aerial Systems for the Communication Bands. Materials, methods of mounting and a co-axial dipole for ten metres.

July 1968—

Practical Two Metre SSB Transverter, Part 1. Design, circuitry, construction and alignment. 800v. on a QV06/40.

Testing Silicon Diodes. Tells how to determine peak inverse voltage, etc.

Basic VFO for Multiband Operation. At first sight it looks a little like a Gekoso. Tubes used are 6C4 and 5763. Clapp oscillator circuit is used.

Station Control System: Ideas for circuit arrangement, describing a practical case.

Notes on Joystick Operation. Loading up, use of a.t.u. and s.w.r. indicator. This should interest some of those who have bought Joysticks.

Small Transistor Tx for Two Metres. Describes a small unit with an output of about 100 mW.

September 1968—

Combined TX/PSU for Standby Operation: G'PG. Describes a small, 15w. two stage single band tx and 300v. 80 mA. power supply; for 1.8, 3.5 or 7 Mc.

Simplified Transverter for the Two Metre Band: G30JV. Author describes unit he built for 2 mx from an old low band mobile and suggests how it can be adapted for 4 mx. May appeal to 2 and 6 mx men.

"RADIO COMMUNICATION"

June 1968—

2 Mx SSB Phasing Exciter Using FETs: G3MNQ discusses the theoretical approach to the problem and then gives a practical solution. This article could be of major interest to v.h.f. s.s.b. addicts.

Reflectometers and Directional Power Meters: G3NJV goes into the theory of operation of these devices complete with the mathematics. He then describes a device which differs from the usual v.s.w.r. meter because it is not sensitive to changes in the operating frequency.

Make Your Own Cabinets: G2UJ describes a simple method of making acceptable cabinets from readily available components with the

tools which will normally be available to the average Radio Amateur.

The British Trans-Arctic Expedition: G2FLB describes the preparations for and problems encountered by the party which is at present attempting to walk across the ice from Point Barrow in North America to Spitsbergen. Previous attempts have failed to recognise that the ice is in constant motion and have walked against the current as it were. The present expedition is using the current to help them on their 3,800 mile journey on "Shank's Pony".

Technical Topics: In this issue Pat Hawker, G3VA, discourses on transistor repair jobs, thyristor control circuits and the interference they can cause unless the equipment incorporating the thyristor is properly "suppressed" and shielded. A new type of transistor mixer, patented by CFTII-HB is described. This is covered by British Patent No. 1,104,928. Common collector configuration is used and although the circuit has practically unity gain, it is said to be very low noise and is not nearly so lossy as diodes. The circuit is said to overcome the transistor saturation problem. "Another Crystal Oscillator" circuit operating in the parallel resonance mode on fundamentals between 1 and 20 Mc. is used.

Pat Hawker also discusses the articles which have recently appeared regarding some of the new developments in "Compact Aerials" such as "The Army Loop" described in "QST," March 1968.

July 1968—

A Simple Solid State Sideband Sender: W. B. Hartogg, G3IEJ. They've gone all Germanic in the title. A brief look indicates that this article contains some useful ideas for the man who wishes to "roll his own" in the face of all the opposition from the manufacturers.

A Selection of Co-axial Connectors: Mrs. K. M. Priestley, G3XIW. The authoress describes most of the inexpensive type co-axial connectors available on world markets and tells of the advantages and disadvantages of some of them.

Technical Topics. This month Pat Hawker talks of the advantages of Morse, simple product modulator, new monolithic filters, the latest development in the crystal filter field, "A Modern ECO", an active antenna and various types of recent v.f.o. circuits such as the Seiler and Vackar using FETs.

The Idea Behind GB2LO. GB2LO is the station the R.S.G.B. set up at the 1968 "City of London Festival". Sylvia Margolis discusses the concept and what is expected from the "advertising" that British Amateur Radio is receiving.

A Fresh Approach to the TVI Problem. Various ways of preventing spurious signals from being radiated are discussed and also methods for preventing "spurious Amateur signals" from being generated in various pieces of entertainment equipment.

September 1968—

Loop Aerials: G6NA. A discussion of loop aerial characteristics and their uses for transmitting and receiving.

A Simple Audio Oscillator and Pulse Generator: ZL2AMJ. Using parts of the type we can get in Australia, the author describes a sine wave oscillator with a frequency range of 15 cps. to 130 kc. output 5v. pp. sq. wave covers the same range and has a variable "mark-space" ratio.

Technical Topics: G3VA. This month Pat Hawker ranges from "Transverters to Modulated Light Communication", n.b.f.m. and a.f. filters are by the way.

"DL-QTC"

September 1968—

Multiband Quad: DJ4VM. A different sort of quad. The elements each consist of two triangular closed loops on each end of the boom and the whole thing is fed by tuned feeders from a matching unit. Both ends are driven. For 20, 15 and 10 metres.

"QST"

July 1968—

The M.A.B.A.L. Antenna: K1KLM. This looks like a reasonably practical version of the "Army Loop" applied to mobile. It is built of rectangular down pipe and looks like an overgrown packrack.

Digital Logic Devices: WA6KGP. Symbols, nomenclature and principles.

(Continued on next page)

Integrated Circuit Frequency Divider; K8CPZ. An application to the Amateur frequency standard.

The Clipboard; W6WYD. A simple experimental circuit board.

Some Ground Rules for Sweep Tube Linear Amp. Design; W1CER. Four 6KD6s as g.g. triodes with individual bias adjustment for each tube to avoid purchasing a "swag" and matching them. 860w. input with 800 volts.

The Double Baseoka Antenna; W8TV. Broad-band dipole using co-axial construction.

August 1968—

The Connecticut Bond Box; W1CER. Doug De Maw describes a solid state transceiver for 144 Mc. Super-regen. rx and tx running about 4w. input.

A 60 Foot Crank Up; VE2AES/W6. Quite a job for those who are really good with things mechanical.

Digital Counter with Teletype Print Out; W2RBN. ICs, etc., in a sophisticated piece of equipment.

The SSB Mark I.; VE2IB. A simple transistor transceiver for 20 and 75 (80) metre sideband.

A Transceiver Monitor using Transistors; W4BX. For those whose transceivers do not incorporate a c.w. monitor, this could be a handy gadget. Short and simple.

September 1968—

A Transistor Phone Rig for 1.8 Mc.; W1CER. Solid state tx for the "top band". Input power is 7-8 watts.

600 to 20,000 Metres; W1IKU. A simple transistorised converter for the v.l.f.

The C-Line Matcher; W3GKP/A3GKP. Simplified impedance matching on v.h.f.

A Tester for Crystals and Transistors; WINPG. The title describes it.

The Two Tailed Monster; W6ISQ. The recipe is to take one four element multiband quad and add tails to the boom to resonate it as a rotatable dipole on 40.

The 2T/2M; K6LZM. Running 1.2 watts a.m. a small transmitter for 2 metres.

Notes on the Vacation Special; W2YFM. Described as "a tunable filter for the BC454 and an improved 50w. transistor modulator for the BC696". There are still enough of the Commands around to interest VKs.

Inductance and Q of Modified Surplus Toroidal Inductors; W3NQN. Something for the r.t.t.y. boys.

A General Purpose VFO; W1CER. Solid state, of course.

Prefabricated Portable; W6YBT and W6ASF. Describes a portable made up from various modules which are readily available on the market.

Beware the Scrap Box; K2ENU. Describes some of the traps into which Amateurs can fall if they do not have proper test equipment to test the junk box and disposal items they propose to use.

"73 MAGAZINE"

July 1968—

Let's Build a Tower; VE1TG. Sturdy wooden construction tower.

Why Not a Tilting Tower?; W6DL. With this method why not?

40 Foot Non Conducting Skyhook; K7VBQ. Making the most of a phone pole.

Burn Protection; VE3BUE. A safe place for the hot soldering iron.

The Beam Pole; W7GEBJ. Another phone pole idea.

Tilt That Tower; W2AJW. Using the house for leverage.

Panel Gap Filler; Ives. Another idea to fill the holes.

IC Audio Amplifier and Oscillator; W7AKS. ICs are here to stay.

The New Tower; WA2GXT. Battling the tower inspector.

Some Audio Thoughts; W3KBM. Versatile modulator unit.

DB; W6ZPAP.

More on Crystal Etching; K8GKP. Using readily available chemical.

August 1968—

Terminated Grid Linear Amplifier; W1DIS. Extremely stable configuration. Two Eimac 4-400As for 2 kW. input. A little too large for Australians.

A Unique Transistorised DC/DC Converter; WA4JVE. Converter using a conventional transformer. This article describes a converter using a c.t. step-down transformer from 117 to 12.6v. to provide 300v. d.c. from a 12v. battery. The circuit used is a multivibrator amplifier arrangement which dispenses with the conventional saturated core type transformer. This technique would probably work to provide 600v. from a 240v. type.

Photographic Printed Circuit Process; W6AYZ. Printed circuit etching made easy. Now who is interested in making their own?

A Simple Method of DSB Conversion; K5LLI. An easy way to d.s.b. using a "balun" for broad-band feed. Seems good.

Basic HF Receiving Converter; WA4UZZM. Getting more from your h.f. receiver. Simple circuit using two twin triodes.

Three on 20 for 15; WA4YVQ. \$15 three element beam for 20 mc. Seems practical, uses bamboos and wire elements with some lightweight wooden members.

The Mini-Beam Quad; VE6FS. Efficient quad with spider array. Some handy ideas for an inexpensive easily made quad (three-band variety).

The Collinear Resurrected; WA1DVD. End fire array without sacrificing performance. A simple wire array for 20 mc with a gain of 7.7 db.

A Microphone Preamp. Clipper; W2EY/1. More speech power without distortion. Simple single transistor/diode affair built into a hand mike.

Review—The Heath IM-17 VTVM; W2TQK. A versatile piece of test equipment. The writer reviews the Heath battery operated solid state voltmeter.

Hamwriting; K6MVH. A veteran writer tells how. An article on how to write articles for Amateur magazines.

A Grounded Grid Linear Amplifier; WA6WUI. 3 through 30 Mc. in five steps. Circuit suitable for 4E27s or 813s. Cathode driven linear for 800 watts input.

September 1968—

Going VHF in the Mobile; W8HBF. Describes how to get the most out of both v.h.f. and Mobile.

Communicator Reborn; W8HGK. Double conversion of the Gonsat Communicator makes the unit more selective and useful.

432 Mc. Amplifiers; W6AJF. Although Frank C. Jones is an old timer, he describes solid state equipment using a FET for 432.

Quick Converters; W8NLT. Describes how you can use obsolete t.v. tuners to quickly assemble Amateur band converters.

So You Think You're on Frequency; K. Sessions. Methods of checking frequency on the v.h.f. bands are discussed.

Parallel T Network Design; Jim Kyle. Seems that this is a network which is very useful.

The VK8ATN Moonbounce Rhombic; W2NSD. Wayne describes some of the tricks Ray got up to, to make two-way moonbounce contacts with the U.S.A.

8 Metre Exciter; W1KNI. A handful of transistors and a 6CL6 on 8.

Six Metre Transceiver; W2AJW. Using transistor modules, junk h.c. rx and a few extras to produce a small solid state transceiver for 6.

Two Sidebands from the Two-er; W4KAE. Quick and easy d.s.b. on 2 mx.

"CQ"

July 1968—

Modulation Unlimited, Part 1; W3PHL. A two-part article which is completed in the "CQ" August issue describing methods of "super modulation", i.e. modulation which exceeds normal a.m. 100 per cent. figures on positive peaks but not on negative peaks.

Covers the principles and circuit techniques necessary to exceed 100 per cent. modulation without the production of undesirable side effects such as distortion and splatter. The modified final power amplifier circuit can be used for c.w., a.m., d.s.b. and s.r.c. modes.

Vertical Antennas, Part 2; W3JFM. Deals with theory and practice of this type of antenna which the author claims has never previously been covered in depth in an Amateur magazine.

The Drake Solid State VHF Equipment; W2AEF. Review of the equipment for v.h.f. offered to Amateurs by the Drake Co.

How Linear is a Linear Amplifier?; W2EY/1. Describes the various types of distortion met with in s.s.b. operation and equipment design problems, with special accent on intermodulation distortion (i.m.d.) which is rarely specified in Amateur equipment.

Improved FM Operation; WA8UIT. Describes how proper maintenance of two-way f.m. equipment can improve the number of contacts in mobile operation.

Solid State Coupling Methods; W2YKT. The why and whereofers of coupling circuits in solid state i.f. amplifier design.

FSK With Voltage-Variable Capacitors; K1EJ. Describes a method of using v.v.c.s for shifting the frequencies in f.s.k. work.

A Salute to Mr. One-Sixty; W2EQS. A run-down on Stewart S. Perry, W1BB, who has been on the air since 1912, mostly on 160 mc.

Using the Grid Dip Meter, Part 3; W2AEF. Describes how to use a g.d.o. for Amateur work.

August 1968—

The SST SERIES; K6AJ/2. A series of small "Solid State Transceivers" for 10, 6 and 2 mx. Using super-regenerative detector rx's operating at very low power levels to minimise radiation from the oscillating detector. Sensitivity is about 1 uV. This is followed by a commercial a.f. amplifier which is used also as the modulator. The transmitters run inputs of about 100 mW.

The DX-pedition. D. Miller, W9WNV. Part VII. of the Miller story.

The QM Keyer Monitor; W82CQM. A simple tube type keyer with a transistorised monitor incorporated.

By Permission of Her Majesty Queen Elizabeth II.; Sylvia Margolis. The publicity officer for the R.S.G.B. describes the special station sponsored by R.S.G.B. at the 1967 National Rally of the Caravan Club of Great Britain. Station operated under the call sign GB2CC.

Modulation Unlimited, Part 2. Describes modifications made to Heathkit DX100 putting ideas into operation.

The Heathkit HW-100 Transceiver; "CQ" Review. This is Heath's low priced £240 (US) five-band unit which according to this reviewer gives a very good account of itself. After reading this story, I feel I certainly wouldn't want to spend £360 (US) for the SB101.

Vertical Antennas, Part 3. Paul Lee continues his dissertation on this topic.

RF Feedback in Audio Compressors; K6SHA. Short article on elimination of r.f. feedback.

The Shoebox Symposium; W2EY/1. This author has described two "Shoebox" linears. The first in 1966 and Mark II. in "CQ" July 1967. This article describes methods of overcoming the various problems which have been encountered by builders of a linear which can be set to run inputs of from about 800w. to 2,000w. peak d.c. according to the number of 6HF5s used in parallel. The new 6LQ6, which has a special rating of 200w. for 30 sec., should be very suitable for this circuit. This tube and its competitors equivalents is now finding its way into many of the newer transceivers which are operated at 500w. input levels. There is a mistake on the circuit shown on p. 62.

SSB Reception With Signal Frequency Injection; VE7BRK. Seems to me like a new method of doing it the hard way.

A Home-Brew Broad-Band Transmitting Balun; W2EY/1. The balun described is made from a length of co-ax wound on a plastic tube. 50 ohm RG58 is used. Presumably the same technique could be used with 75 ohm cable to give 75 ohm balanced to 75 ohm unbalanced conversion.

A Wideband RF Pre-Amplifier; W8DYD. Describes a low noise broad-band FET/transistor amp. with a gain of 25 db. up to 15 Mc. with a roll-off to 12 db. at 40 Mc. Some people may be interested in this technique. My personal reaction is that one would lessen interference by using a tunable device.

Upgrading the SB-100; W8VHY. Modifying the Heath SB-100 to improve its a.v.c. system.



A TRANSVERTER

(Continued from Page 6)

say another 12BY7, and then have the 6CN6s in passive grid, or semi-passive grid.

No attempt has been made to use this transverter on 21 and 28 Mc. by bandswitching, but this should be fairly easy. The same crystal oscillator and buffer amplifier circuitry would be used, and the same crystal. You would have to switch the tuned circuits in the converter, the coil in the plate of the mixer, and the final tank coil.

All tuned circuits in the converter, the oscillator and the buffer are slug tuned. No coil data are given, except that all coils other than the final grid and final plate are on 7 mm. formers. Injection to the 807 is by 3 or 4 turns over the end of the 6AM6 plate coil.

I will be glad to answer any mail queries, provided that they are accompanied by a self addressed stamped envelope, and provided that you don't expect overnight service.

Publications Committee Report

At the November meeting correspondence was received from 9M2DQ, VKs 3AQ, 3UC, 3AMK, 5BI, 5RG, 7KJ, Nola Sturke, E. Foxon, W. Morgan, and L7051. Technical articles arrived from VKs 2JR, 2SA and 3ZNV. Due to the lack of figures, the financial position of "A.R." could not be ascertained accurately, but it was estimated that the position is reasonably satisfactory.

Efforts to increase advertising content are proving fruitful, the advertising representatives having already signed up a number of new advertisers and recovered some of those lost several years back. A major effort will be made in this direction during November.

A review of technical material on hand revealed sufficient available to see us through to the February issue, and extra material, particularly short articles, are badly needed.

Progressive results of the November questionnaire were discussed and a very good initial response reported. No replies had been received from VK2, but this was thought to be due to the postal strike in N.S.W. having delayed the delivery of the November issue. Over 200 replies were received within 48 hours of "A.R." being mailed. Initial sorting has commenced, but until many more replies are received, no attempt will be made to compile statistics.

At the suggestion of the VK3 Divisional Council, the committee gave consideration to making token payments for technical articles published. After lengthy discussion, it was agreed that although the suggestion held considerable merit, and in fact conformed to the wishes of the committee as outlined nearly three years ago, it would be better held over for a minimum period of six months, in order to see what additional income (if any) we can acquire. In the meantime, we will continue to make the annual awards for selected articles, as we have done in previous years.

The value of the monthly Publications Committee Report was questioned, and the general opinion was that the time compiling it could be better spent as it has to be done during our busiest time of the month. It was, therefore, decided that despite the fact that it has been produced as the result of a Federal Convention policy motion some years ago, the report would be discontinued as from this issue. Technical articles and correspondence will be acknowledged by mail in due course, with the exception of any correspondence published in the magazine, for which no acknowledgment will be sent.

All Call Book orders have been fulfilled. Any Division or club requiring additional copies should contact us, as we have a small surplus available.

SILENT KEYS

It is with deep regret that we record the passing of the following Amateurs:

VK1PI—Les Pitts
VK2AYA—G. A. Ahlstrom
VK2AYB—Sid Burton
VK3VO—Raymond Clark

TESLA EQUIPMENT IN AUST.

The internationally famous Tesla electronic equipment is now available in Australia through Charmac Industries Pty. Ltd., Eltham, Vic.

Founded in Czechoslovakia 60 years ago, the Tesla company now employs 75,000 people in 50 factories and manufactures heavy electrical and telecommunications equipment.

Charmac Australian sales manager, Les Baker, advised "A.R." that in addition to the range of Tesla tape recorders and audio amplifiers, they would distribute Tesla components, and Agfa tape which had been found most suitable for use with Tesla recorders.

An associate company, Audio-Lec of Australia Pty. Ltd., will distribute the Italian made "Incis" audio equipment.

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE

VK5MS	315/338	VK5AB	298/314
VK3AHO	312/326	VK4FJ	282/301
VK6RU	307/332	VK4TY	275/278
VK4HR	304/322	VK3TL	271/277
VK6MK	304/323	VK2APK	289/274
VK2JZ	303/320	VK2AAK	268/273

New Members:

Cert. No. 91 VK8WD 106/106
Cert. No. 92 VK3VK 152/152

Amendments:

VK4KS 288/283 VK4PX 178/179

C.W.

VK2QL	300/322	VK3YL	268/283
VK3AHQ	292/306	VK3ARX	268/275
VK3CX	289/312	VK6RU	268/289
VK4FJ	289/313	VK2APK	265/273
VK2AGH	282/296	VK3NC	264/277
VK4HR	276/299	VK3XB	263/277

Amendment:

VK4PX 102/108

OPEN

VK2AGH	311/331	VK4TY	301/315
VK4HR	308/333	VK4FJ	296/320
VK6RU	308/334	VK3ARX	289/298
VK6MK	305/324	VK3TL	287/293
VK2VN	304/321	VK2APK	286/296
VK2EO	302/325	VK3XB	286/274

New Member:

Cert. No. 114 VK3EU 107/107

Amendments:

VK4KS 274/283 VK4PX 200/205

World Admin. Space Radio Communications Conference

Of three resolutions published by the I.T.U., the following extract is worthy of note. Reference is made to this in Federal Comment (this issue).

"... The second resolution, which is no less important, calls for the convening of a World Administrative Space Radio Communications Conference to take place towards the end of 1970 or the beginning of 1971 for a duration of about five weeks.

"The agenda of this conference is to include in particular the following items:

1. To revise existing administrative and technical regulations and adopt such new provisions as necessary for the space radio services and the radio-astronomy service which will ensure the efficient use of the spectrum;
2. To consider, and revise as necessary, the provisions of the Radio Regulations pertaining to the Aeronautical Mobile and the Maritime Mobile Services and to navigation in so far as the use of space techniques is concerned;
3. To consider and provide as far as possible, additional radio frequency allocations for the space radio services;
4. To revise and supplement as appropriate the existing technical criteria for frequency sharing between space and terrestrial systems and establish criteria for sharing between satellite systems.

"In the same resolution, Administrations are invited to submit proposals on the agenda of this Conference. On the basis of these proposals, which will be presented in a report by the Secretary-General, the 24th Session of the Administrative Council will decide on the detailed agenda, date, duration and place of the World Administrative Space Radio Communications Conference."

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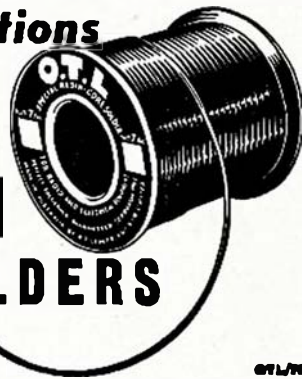
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DX

Sub-Editor: PETER NESBIT, VK3APN
32 The Grange, East Malvern, Vic., 3145

BAND NEWS

28 Mc.: From Don VK3AKN comes a very comprehensive rundown of conditions on 10 mx. Here goes: "At 0700 E.A.S.T. the band opens to the East Coast of the U.S.A. The opening moves across the States until 1100, when W6 peaks. The Ws generally fade out at about 1200. JAs and UOs start about 0800 and last until dark at 7 p.m. UA9 sneaks through about 1100, although I did work one once at 7 a.m. UL7/UL8, etc., start at about 1300, and UD6/UA3, etc., picks up around 1500. DM3IGY comes through about the same time. "Western Europe (DL, LA, SM, etc.) comes through around 1800. Africans start around this time, although sometimes as early as 1600. Gs, Fs about 7 p.m. and then general QRM from all over Europe. The band usually fades at 9 p.m. or so. If it stays open until 11 p.m., as it does sometimes, then Caribbean stations come through on long path and have worked KV4CI often at this time.

"Sometimes, when aurora is in effect, can work Eur./U.S.A. stations with the beam pointing due north. The aurora bounce often causes good T9 signals to change to T3, the effect sounds quite strange."

VQ8CC, who is active 15/20/40 mx as well, reported 28025 at 14z.

ST2SA 28040 at 18/22z. Has been active 14026 at 21z, also 28050 at 1237z.

TL8GL-28580 at 1930z. QSL via VE2DCY.

7Q7WW 28583 at 2010z. QSL to Box 453, Blantyre.

9L1KZ Sierra Leone 28517 at 19z.

AP2MR 28622 0943. Has gear for 80 mx. QSL via VE3ACD.

8N1MM, an s.s.b. veteran of 15 and 20 mx, 28555/576 around 09/11z. QSL via W3KVQ.

S7OWN from Crete 28587 at 1030z. QSL via K3EUR.

7F8AR 28620 at 14z. QSLs via W4BRE.

21 Mc.: YAIHD 21310 at 1220z; QSL via DJJHD. YAZHW "Peyton" (wonder if his last name is Place), 21295 at 12z.

VP2AA Antigua 21286 at 2235z. QSL via VE3ACD.

VP2DAI, DAJ, Dominica 21256/261 respectively at 2150z.

CE0AE from Easter Island 21336 at 23z.

6O1CB in the Rep. of Somal, 21400 at 1820z.

V5TJ active from Brunel, week-ends 21300 at 12z.

AP2DI and W4UDF/AP will be active 21305 at 12z.

FB8XK Kerguelen Is. 21075 at 0812 and 1310z.

TAXAR, "Lamar", KYSAD, QRV daily 21040 c.w. and 21355 s.s.b. 16-20z. Plans to stay there until Feb. next year. QSL via WA7GQA.

LAST Tromso Archipelago 21328 at 08z, 21310 at 12z.

LA1T Vesteralen Is., 21338 at 0832z.

LGL5G reported on 21085 at 12z. QSL via LA4YF.

EP2KB Ken is active 21355/270 at 0823/1148z respectively. QSL via W3HNK.

HS3ZZ, Chuck reported 21322 at 1316z. QSL via K3FYS.

TU2AX 21325 at 2215z. Box 4066, Abidjan.

5Z4KK on 21335 at 2206z. QSL via K1SLZ.

9K2CC 21313 at 1130z. QSL via K9CSM.

5A1TY from Libya, 21308 at 1130z.

LX1MH 21326 at 1329z. KM6CE 21292 at 02z.

5N2AAU 21283 at 21z, QSL via WA9UFV.

ZESJU 21276 2124z.

MP4MBB from Muscat and Oman. 21325 at 1200z.

CR3AD on 21095 c.w. at 1230z.

14 Mc.: OH0AA Aaland Is., 14045 at 0850z.

VP8DJ Antarctic 14202 at 02z. QSL CX2AM.

VP8KD and VP8KE on Falkland Is. Both 14202 at 02z. QSLs for VP8KD via K2JXY.

FO8AA 14030 at 0520z. FO8BX 14202 at 1135z.

Gibraltar: ZB2A on 14085 at 22z. ZB2Y 14205 at 2213z.

Guantanamo Bay: KG4AM, 14325 at 06z.

AP5HQ has been active on 14002 at 1245z.

AP2DI and W4UDF/AP both active from East Pakistan, 14050/205 12-14z.

French Guyana: FY7YM 14050 2230z, also on s.s.b. at times. QSL via VE1KG. FY7YK 14062 at 220z.

Seychelles: VQ9RF has been active 14048 at 21z. VQ9V 14188 at 13z.

ZK1AA, Stuart has been active again from Cook Is., 14218 at 04z.

JT1AH has showed up 14028 at 15z.

CR9AH is now back as VS6AG. CR9AK active 14195 16-18z.

FB8WW has been active from Crozet Isl., 14025 0615z.

V55TJ, Slim is still active, 14171/210 between 11 and 12z. QSL via Box 308, Brunel.

CR5SP and CR6IV are QRV for Pacific stations, 14170 Sundays 0530-0900z.

Victor CR6LF is also QRV for Pacific stations daily 14155 at 0600-0730z.

FR8CD uses 14125. Andre skeds FB8WW and 9U5BE daily at 1530z.

TAXAR 14030 c.w. and 14195 s.s.b. from 22z. Lamar expects xtals soon for operation on 14210 and 28660.

UA1KFT Novaya Zemlya, 14052 at 0745z.

F9IE/GW8 will be operating until Dec. 2 on 14 Mc. at 17-18z.

HB8ET/EA0 14004 0645z; QSL to HB Bureau. 9X5MF/EA0 14182 2123z; QSL via HB9MQ. Fernando Po is rumored to be breaking away from Spanish Guinea, so it is likely to have a new prefix soon.

OX5AP (Harry, WB6MJQ), 14220 at 21-23 and 03-05z. The lost logs of June 66-July 67 have now been recovered, so anyone who missed getting a QSL during this period, please send s.a.e. plus two IRCs to H. Leggans, Box 12, R.C.A.S.-B.M.E.W.S., A.P.O., N.Y., 09023.

OX5AY Scotty 14170 1837; QSL via WA3CUO. TF2WLC 14260 0815z, often QRV 21355 also. QSL via WA4FPD.

ZK1AA skeds KH6GLU 14270 Fridays at 0430z. 8R1J, Peter, 14075 at 0120z. P.O. Box 557, Georgetown.

BV2A, Tim operates 14028, usually 12-16z, hopes to be QRV during contests. His address is: Tim S. H. Chen, 6144 Hsin Sheng Road, Section 1, Taipei, Rep. of China.

HC8RS skeds WB6KRJ twice a week 14238 at 04z. QSL via SM5EAC.

ST5AD "Alban" is often active 14250 around 07/08z.

7 Mc.: DU1FH, Earl hopes to be QRV with 2 kw. and 2-el. 40 mx quad by Nov. and is trying for a D.X.C.C. on 40 mx and will be pleased to arrange skeds. Also hopes to work VK/ZL on 6 mx using an 11-el. yagi.

VU2LO has been active near the band edge 7001 with a good signal. Reported at 1225 and 15z.

KR8EA with a good signal on 7020 at 1530z working JAs.

T1ZFP, Jose is back on 40 mx after a temporary absence. Reported on 7010 at 06/07z.

H13PC is on almost every evening 7005-10 around 08-10z.

9Y4DS shows up occasionally, 7025 at 0745z. Name is Ram.

AP5HQ has been heard/worked several times recently. He stays very close to the band edge and knocks them off about one per minute. 7001 at 1230/1545z.

HM4EW 7013 at 1130z.

OM2BNZ heard calling CQ VK/ZL 7005 at 0725z (long path).

VU2JA, Joe requests QSLs via W2CTN. 7013 at 1450z.

OA4UO, Ted works 40-10 mx. 7015 at 1040z.

3.5 Mc.: ZK1AA, Stuart is QRV 3860 a.m. daily 0830z, with Harry ZK3AE.

GM3XPQ, Shetland Is. (north of Scotland), 3795 at 23z. Presumably he would come on earlier for skeds if requested.

8V1PA worked first of all on 40 mx, then transferred to 3508 where signals were S5 both ways at 1305z.

KA2RM 3520 at 0934z.

K56CN, who is on 80 mx now, says he hopes to be active on 160 mx very soon.

1.8 Mc.: GM3XPQ, George reported on 1876 s.s.b. at 2030z.

WOVVO is at present visiting the Carribeans and is an enthusiastic 160 mx man. So far he has been to KV4 and VP2, and plans many more good ones before he returns to the States. He usually uses 1824, but has rocks down to 1802z.

Other recent DX-peditions using 160 mx have been ZF1EP and PJ0MM.

Further to the subject of 160 mx trans-Pacific tests (see last month's "A.R.") there is a rider that the times given are not rigid. VK/ZL stations are advised to start around 1130z. Trans-Atlantic DX Tests are scheduled for Dec. 1, 15, 29; Jan. 12; Feb. 2, 16. Calling procedures are the same as in the trans-Pacific tests, with European stations calling during the odd five minute periods, 1905-10, 1915-20, etc.

ASSORTED

S.s.b. interference from Spanish speaking stations in the c.w. section of 20 mx has been increasing lately. Additionally several instances of "buzz saw" c.w. have been cutting freqs. to pieces. A.R.R.L. has a special section which would like to obtain calls, times and freqs. of such operations, so that action may be taken. The Canadian DX-pedition which is presently doing so well for itself under numerous Pacific calls, operates 14170 and 14197 from 0945 to 1600z; 21290-300 from 2200 to 2330z; and 28530 around 23z.

9K2BV hopes to be operating from the Kuwait/Saudi Arabia Neutral Zone soon, if not already.

FO8CB is a French Scientist attached to a nuclear testing station on Tuamotu Archipelago in the Pacific. 14105/115 0630/0730z.

CR9AK: s.a.e. plus five IRCs to Box 541, Hong Kong.

WC4GSC was a special station from Ogeechee Falls, Statesboro, Georgia. Special QSLs via W4DQK.

W4QVJ is not QSL mnnager for CE0ZI/MM, only for Ed's operation of CE0ZI Oct. 63.

Bruce VK3BM is reported to be erecting a 3-el. fixed quad on 80 mx, beaming to Europe!!! (Gulp!!)

Starting Feb 1, Gus W4BPD plans to set out on another world wide DX-pedition which may last up to five years, funds permitting, and run along lines to make the sport of DXing what it was a few years ago. Gus will operate c.w./s.s.b. 160-10 mx. All donations as soon as possible to QSL mgr. W4ECI, cheques payable to World-Wide Radio Propagation Study Association.

UIA: Special call sign allotted to a group of Leningrad operators for the "CQ" W.W. Test.

VK5XK states that he is not intending another trip to Lord Howe Is.

Next Feb. W6BPO is going to Norfolk Is. as VK2BPO/8.

VR3DY QSLs are now acceptable for DXCC credit.

Art VK4PX writes on licensing in Indonesia from information sent by YB0AR: "There is no QSL bureau in Indonesia and cards should be sent direct. There are only 18 international licensees at present using the prefix of YB. It is estimated that 1,500 others are interested in Amateur activities, but yet to be licensed. Avoid working YC and YD stations as these are not international and will not QSL. Until three months ago, there had been no legitimate Amateur activity. Any stations heard using PK prefix are pirates. The call areas are: YB0 Djakarta, YB1 West Java, YB2 Central Java, YB3 East Java."

ACTIVITIES

Don VK3AKN works a special one on 10 mx every morning, and submits the following sampling of a mighty three-week effort. 28 Mc. c.w.: KH6GQB, UL7AST XW8CS (via VEA0I), YA1ZC (Box 638, Kabul), UA3AJX, UA3GS, UR8KAD, UM8AP, ZE1AV, UA6KMY, UT5KDS, ON8RA, UW0BO, DL7AA, DJ2VK, HL8KQ, VE7BO, 9V1OT, LZ1AG, UC2AFC, UQ2KCS, HM0B (Seoul Radio Club), G8PB, DL6NP, DL8SC, UT5GP, UV3QG, UP2MB, OMIATX, OM1TA, UA1RF, SMSBNX, HB9DX and G3RHP who is a uni. student and very keen to QSO VK on r.t.t.y. (Thanks Don, Peter.)

Despite QRM from various other activities, Barry VK5BS managed to sneak in a few good ones on 14 Mc. c.w., including JH1EFS, PY-2SO, G5AI, F3AT, DJ1BJ, 11BVP, VE1ON plus numerous UAs, JAs and Ws. Best QSLs for the month: 1G5A, VR3DY, 5VZ8CM, VQ9B, TG0AA, HK4ALE. Barry has been listening around 160 mx; says conditions very poor, no signs of ZLs or other DX, but heard some Japanese shore to shore stations around 1880. (Thanks Barry, Peter.)

David VK3QV was active on 10 mx s.s.b. during the "CQ" W.W. Contest, and noted:

(1) OH2AM and OH5SM were loud and clear as early as 0520z (both days). (2) A CE3?? was heard at 0815z—no doubt via long path—the first CE ever heard here on 28. (3) FO8BS was on 28 but the Ws found him and that was that! It seemingly became impossible to raise a U.S. station—they were all calling the FO8. 28 Mc. contacts for Oct. include, s.s.b.: DJ2YL, 3JB, 5LU; DK2BW, DL2DW, 4HJ, 4PM, 7AA; DU1BN, 11K, 1UP; EP3G1, 2JP; FK8AU, BG; F57RT, G2, 3, 5, 6; HB9AD, AKJ, KB; HG2KRD, HL9US, WZ; HM1BB, H5IAF, MD, 3DR, TD, 11KN, KA7CS, W0LLI/KG6, KH6GEY, GPQ/6, KL7GLA, JDO; KP6KR, NR, RU, TAB; KX6DR, LA1H, 4NO; MF4BGX, OH1, 2, 3, 4, 5, 7; OM2DB, OZ1LO, 9SL, SM5, 7, 0; UA3A, 9, 0; UB3WE, UF6CR, UJ8KAJ, UP2ER, UV3AAE, 9PI, PP; UW1AB, 6MA, VES; VS6DR, VU2DKZ, Ws, XE1AAC, XW8CS, YV1LA, 9M2PO.

Cn 28 c.w.: DJ2XK, 2YL, 3WU; HB9UV, HL8KQ, JM1, 2, 3, 9; KA2RM, OH2OW, OK-1AHZ, SM7ANB, UA0KFG, Ws. (Thanks David.—Peter.)

SUMMARY

Due to lack of space, QSL information will have to be left to next month.

Acknowledgments to L1DXA, G. Watts, K3AUT, ZL2AFZ, VK3QV, VK5BS, VK3AKN, VK3UT, VK4PX, W4BRB.

Deadline for news is the end of each month. I would be glad to receive news over the air; yours truly is on 7015 at 12z every Monday night. All times GMT. 73, Peter.

V.H.F. NOTES

Well another year is rapidly growing to a close, the DX activity is on the increase, both on 6 and 2 metres, but alas, no reports of any activity on 432 Mc. Surely there is not the problem of t.v.i. on this band like there is on both 6 and 2 mx. Anyhow, enough of the moaning, now on to a few brighter subjects. First, the 1968-69 Ross A. Hull V.h.f. Memorial Contest starts on Saturday, 7th December, 1968, and continues until Sunday, 12th January, 1969.

Secondly, the Festive Season is near, so I would like to wish you all a Very Merry Christmas, a Very Prosperous New Year, and may your Xmas stockings be filled with some rare DX. 73, Cyril VK3ZCK.

P.S.—Many thanks to those who have contributed to this column over the past year and I hope that you will continue to do so in 1969.

VICTORIA

Reports indicate that this coming DX season will be one of the best experienced for some years.

Six Metres.—Band openings which took place in late October enabled all States to work JAs at very good strength. The number of stations using 52-53 Mc. will be interested to know that the KR6s also operate in this band and are anxious to work into VK, while the JAs usually use 50-51.5 with the main activity between 1500 and 2200 E.A.S.T.

Two Metres.—For those who are only on this band things are also looking up, with openings to VKs 1, 2, 5 and 7 being quite common, but the occasional opening to VK4 will increase the DX activity on this band.

The VK3 V.h.f. Project Group has almost completed the 2 metre converter, a companion to the very popular 6 metre one which was published in "A.R." about 12 months ago.

Don't forget the Ross A. Hull V.h.f. Contest which starts on 7th December and continues until 12th January, 1969. 73, Robert VK3AUR.

Gippsland.—During the recent C.F.A. exercise much use was made of the 2 mx f.m. channels, with the assistance of a 52.525 Mc.

f.m. link between Thorpdale and Mirboo North and h.f. and s.s.b. On the same week-end David VK3DY, from Maffra, and George VK-3ZCG, from Morwell, attended the V.h.f. Convention at Bendigo. This seemed to start the ball rolling as far as the DX goes, for since then some very good openings have occurred on 2 mx, mainly to VK5 and VK7, with a fair sprinkling of the northern VK3s.

WESTERN AUSTRALIA

The new committee of the West Australian V.h.f. Group are: President, John VK6ZGL; Vice-President, Harry VK6HP; Secretary, Edwin VK6ZAN; Treasurer, Cedric VK6CD/T; Committee, Neville Chamberlain, Wayne VK6ZDD and Tom VK6ZAF. Bulletin Editor, Harry VK-6HP; Technical Editor, Tom VK6ZAF; Bulletin Circulation, Roy VK6RY, Glen VK6ZFH, Bob VK6ZFY; Broadcast Officers, Kevin VK-6ZCB/T and Don VK6HK; Oscar Co-ordinator, Don VK6HK; QSL Officer, Laurie VK6ZEA; V.h.f. Records, Rollo VK6BO; Beacon Officer, Tony VK6ZDT; Press Correspondent, Percy VK6ZDC; Auditors, John VK6TU and Ray VK6KU.

The club station VK6VF is operated by D. E. Cook, VK6AW, and runs beacons on 52.006, 145.00 and 432.59 Mc. Another beacon should be in operation by the time these notes are being read. This is at Albany and will be on 144.5 Mc. with a beam on Adelaide and another on Perth. The power is about 60w. to a converted Pye base station and is sited on a 1,500 foot hill with a good path to the East.

Nets used in this State are: 52.586, 52.652, 53.8 and 52.020 Mc., all a.m., plus 52.656 and 146.00 Mc., both f.m. 73, Percy VK6ZDC/T.

NORTHERN TERRITORY

Activity from the Darwin area should be much greater this year now that active Amateurs include Doug VK8KK, Jim ex VK5ZSJ and myself (Bruce VK8AZ, ex VK3AZG). We are working on a Radio Booster Station at Cox Peninsula for Radio Australia. I hope to establish regular schedules on 20 and 40 metres with either VK3BA or VK3YO and possibly with VK3AZX, with all of whom I used to work. 73, Bruce VK8AZ.

NATIONAL FIELD DAY

The John Moyle Memorial National Field Day Contest, 1969, will be held from 0600 G.M.T., 1st February, 1969, to 0800 G.M.T., 2nd February, 1969.

The rules for this contest will be published in the next issue of "A.R."

STATE INTRUDER WATCH CO ORDINATORS

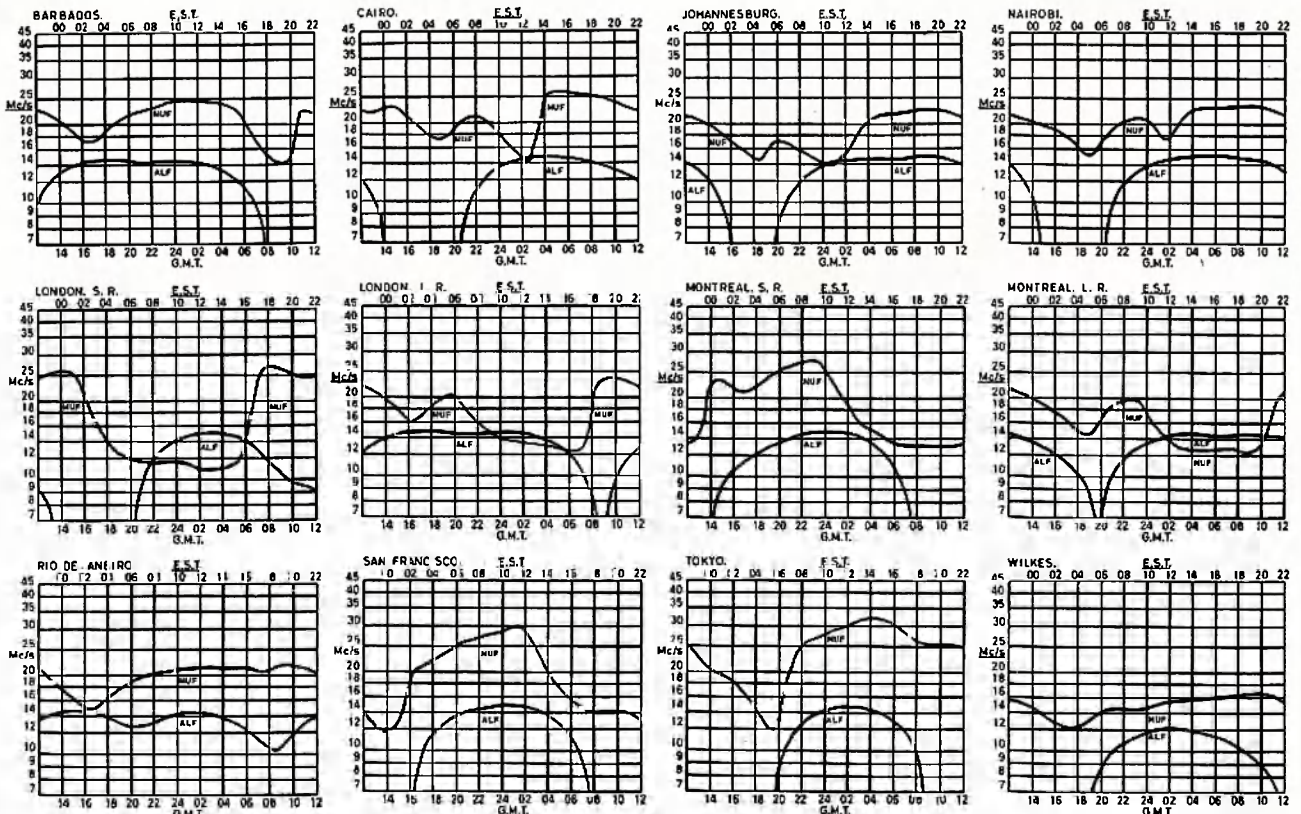
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South Australia—
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Western Australia—
G. Allen, 263 Amelia St., Balga, W.A., 6061.
Tasmania—
D. H. Kelly, VK7DK, 56 Upper Brougham St., Launceston, Tas., 7250.

CONTEST CALENDAR

Until 31st Dec.: Concorso Mexico 1968 (L.M.R.E.).
7th Dec., 1968, to 12th Jan., 1969: Ross A. Hull VHF Contest (W.I.A.).
1st and 2nd Feb., 1969: John Moyle Memorial National Field Day (W.I.A.).
1st and 2nd Feb., 1969: 35th A.R.R.L. DX Test (Phone Section), first week-end.
1st and 16th Feb., 1969: A.R.R.L. Novice Round-up (C.W. Section), first week-end.
15th and 16th Feb., 1969: 35th A.R.R.L. DX Test 1st and 2nd Mar.: 35th A.R.R.L. DX Test (Phone Section), second week-end.
8th and 9th Mar.: 32nd B.E.R.U. Contest (R.S.G.B.).

PREDICTION CHARTS FOR DECEMBER 1968

(Prediction Charts by courtesy of Ionospheric Prediction Service)



Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

S.W.R. INDICATOR CORRESPONDENCE

Editor "A.R.," Dear Sir,
In company with VK2JE (October issue of "A.R.") I thought that all who had gone beyond elementary electronics had discarded the belief that electrons rush along a conductor akin to the electric fluid postulated by very early scientists. Turning to page 34 of the October issue of "A.R." I read with amazement an advertisement for a Toroid Balun containing the statement "this device also prevents the wave which has been contained within the cable from tending to 'spillover' the extreme end and travelling back over the outer screen of the cable". Apparently there is still need to "labour the point" and carry the gospel of rational thought to the electronic heathens.

Listening recently to an Amateur station QSO I heard one remark that he was having trouble with reflected power, which, apparently having no other place to go on return from his mismatched radiator was dissipating itself on the plate of his final amplifier, causing considerable heating. Being so deeply immersed in the gobblydecock of standing waves and reflected power, this unfortunate station owner did not know that his badly mismatched transmission line was presenting so high a positive reactance that it had neutralised almost all of the negative reactance in the output of the final stage pi network, preventing it from tuning to resonance, hence the final valve heating. Missionary work must continue in attempts to dissipate the fairy tale fogs which cloud many Amateur minds.

The diagrams indicating diode current flow are for instantaneous conditions occurring with non-reactive resistive external loads for which the internal meter line terminating loads have been adjusted to balance magnetic and electrostatic (current and voltage) components so that equal magnitude potentials are generated at the diode terminals. When these are equal and opposite in phase, no current flows through the diode. If the external load possesses positive or negative reactance in addition to resistance, there will be a phase difference between magnetic and electrostatic components and the resultant two meter readings may be evaluated as indicating a reflected wave.

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In practical operation the meters indicate the summation of multi-million rectified pulses. The nominal directions of flow of current in the two diagrams cover only one cycle. When r.f. power passes through the instrument, the "calibrate" meter will always indicate. Only under conditions of resistive mismatch, and/or reactive loading will the meter in the so-called reflected power position give an indication.

Recently I had the pleasure of a conducted tour by VK2DO over the 350,000 volt three-phase distributing centre at Yass and stood beside three enormous 16,000 kva. reactors employed for correcting the leading power factor due to capacitance of the long line from Tumut power station. An amusing thought passed through my mind. Had the Snowy Mountain electrical engineers followed the orthodox philosophy of Amateur Radio station owners, the attempted solution of the line power factor problem might have been the construction of a Gargantuan sized S.W.R. meter and accompanying "Match-Box" at the Mt. Kosciusko end of the line!!!

Amateur Radio operators would be well advised to think in terms of power factor and reactance when dealing with transmission lines and equipment. The same principles as apply to 50 cycles engineering still hold true at millions of cycles per second if care is taken in handling the many more zeros in the calculation.

—J. G. Reed, VK2JR.

THE AMATEUR—HIS SKILL AND STATUS

Editor "A.R.," Dear Sir,

In reading the preface to the article on s.s.b. construction by our worthy brother VK2AOU, I feel disposed to give an answer to his questions about the Amateur and his skill and status. Not all have the skill or time of the writer, nor do they possess his flare for design and electronic engineering. The P.M.G. Dept. asks of the potential Amateur that he shows some knowledge of the art on theory, and sets him to work on no practical project that I have heard of. Until such demand is made on the part of the P.M.G., we shall have to be prepared to receive into our ranks hundreds of Amateurs who, while excellently equipped to discuss the theory of radio and electronics, are quite incapable of handling a soldering iron and side cutters. Proof of this is the fact that dealers in standard equipment are still in business, and for this service many Amateurs are grateful. Those who have the technical skill to "roll their own", as VK2AOU puts it, should not be too smug or self-righteous, but be prepared to recognise the hundreds of excellent Amateurs who have not the same ability at the bench.

I also presume that VK2AOU does not grind his own crystals, and is not above purchasing the component parts he puts together. Carry his argument to its logical conclusion, and he would scorn the assistance of all technical experts. Given another ten years, and what he is building today will be a crudity, and part at least of what he will build, will be constructed under a microscope. Technical advances will get far beyond the average Amateur and his workbench, and few Amateurs will have the technical ability to fabricate their own. Highly developed technical knowledge, however, will be quite another thing, and cannot be denied. The same might be said of today.

I am not one of the "new breed" mentioned, but look back to the days when all equipment had to be built in the shack and fixed condensers made from tinfoil and waxed paper, and spark coils had to be wound by hand. Today, however, there is a different situation, and what goes for a "roll your own" is merely the assembly of purchased components. But the old men of radio who lathed parts for their switches, and made all parts to the last detail do not scorn the men of today who fling prefabricated parts together. It is all a matter of comparison and a little charity.

To such men who have the skill, I say may their shadows never grow less, but by all means leave the less skilled Amateurs to enjoy their hobby as they know best.

—"Harry," VK2HT.

R.T.T.Y.

Editor "A.R.," Dear Sir,

On 6th October a group of enthusiasts met and formed the Queensland Amateur Radio Teleprinter Group, which is to be known as the "QART" group.

It was resolved to advise others who may be interested in or concerned with the group activities.

It is proposed to operate on a local net frequency of 144.53 Mc. and also on 14.075-14.100 Mc. and 21.075-21.100 Mc., at times scheduled for mutual convenience with overseas operators. Information of activity on other bands is sought.

Predominately British Creed page printers will be used on the American 60 speed standard.

Information on any r.t.t.y. equipment and parts is sought, particularly tape equipment.

Licensed operators in the group are VK4ZGL, VK4ZNP, VK4NP, VK4AI, and VK4PJ, all members of the Wireless Institute of Australia.

Communication with overseas and interstate r.t.t.y. groups is welcomed and overseas acknowledgments and comments are solicited.

For the group,

—Peter H. Brown, VK4PJ.

CONTACTS WITH VK

Selama Estate Group,
Serdang, Kedah, Malaysia.

Editor "A.R.," Dear Sir,

As I contact Australia fairly frequently I keep a check list of VK stations worked for the first time. I might say that by no means do I work exclusively to Australia, and due to never having enjoyed a proper 24-hour electricity supply at any time out here, my Amateur hours are often limited.

Thus it was with some surprise on checking up that I find that yesterday a QSO with VK5DO resulted in my 1,000th VK station worked on phone.

I thought this was pretty good and would interest your readers. Of course many of the stations may have now changed their calls or no longer on the air and many were in the old VS2Q a.m. days. But it has been a pleasant surprise to me to recently meet once again, now newly on s.s.b. so many of the older VK stations which I used to work on a.m.

The distribution works out as follows: VK1, 19 stations worked; VK2, 40; VK3, 28; VK4, 114; VK5, 138; VK6, 107; VK7, 22; VK8, 10; VK9, 42; VK0, 20; total of 1,000.

QSL cards received from just under 500 stations.

Thanks very much to all these Amateurs for so many splendid QSOs which have given me much pleasure and I hope that we will be able to work you all for many years to come.

—James C. Pershouse, 9M2DQ, ex VS2DQ.

P.S.—Any estimate of how many active VK stations there are on the h.f. bands? [Can anybody help.—Ed.]

HAMADS

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Advertisements under this heading will be accepted only from Amateurs and S.W.I's. The Publishers reserve the right to reject any advertising which, in their opinion, is of a commercial nature. Copy must be received at P.O. 36, East Melbourne, Vic., 3002, by 5th of the month and remittance must accompany the advertisement.

FOR SALE: Galaxy Accessories, AC Power Supply \$40; plug-in 100 kc. Xtal Calibrator \$7.50; Remote VFO, 5-5.5 Mc., 6AU6, 12AT7, \$30. McCoy 50 ohm Transmatch, with SWR bridge and RF voltmeter, \$8. Three xistor speech compressor, 6 in. speaker, h/phone o/p in 1 unit, \$6. Ron Sedunary, VK5KS, 9 Everest Ave., Morphetville, S.A., Phone 95-7939.

SALE: Special Receivers for SWL's (four). All equipped with Product Detectors, S Meters, Noise Limiters, etc., and in first class condition. Two at \$60, one at \$70, one at \$120. H. L. Roach, 28 Foster Avenue, Glenhenty, Vic. Phone 58-3757.

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WANTED: Circuit Diagram for AR88 Communications Receiver. If need be, will pay for circuit or return after copy made. Contact John Thornton, VK4ZJT, C/o. Telephone Exch., Pialba, Qld., 4655.

WANTED: Commercial or equivalent A.C. P.S.U. for the ANART13 Tx, also manual. Also an unmodified ARB Rx and a 122 Vibrator Power Supply. W. Babb, VK3AOB, Yarraville, Vic. Phone 68-4513.

WANTED: Teleprinter Tape Reperforator and Tape Transmitting Equipment. Prefer Creed, VK4NP, P.O. Box 81, Aiblon, Brisbane, Qld., or Phone 62-1351.

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V.H.F. U.H.F.

Interested in what European Amateurs are accomplishing on these bands. Commencing January 1969, the authoritative German v.h.f. u.h.f. magazine UKW-Berichte will be published quarterly in English. 60 pages of the latest techniques, detailed construction articles on v.h.f. u.h.f. gear and antenna written by top Amateurs in Europe.

Annual subscription \$5.50 AIR MAILED direct from the German publishers. Send a cheque/money order to the Australasian representative of UKW-Berichte, G. Clarke, VK-2ZXD, 2 Beaconview St., Balgowlah, N.S.W., 2093.

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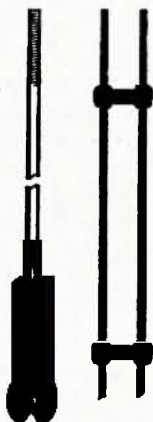
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Licensees of V.H.F. land and harbour mobile radiotelephone services, now operating in 30 kc/s channelling areas, are advised that if they have not already installed equipment which meets the Australian Post Office 30 kc/s channelling specification, they must do so before 30 June, 1969.

This requirement has been brought about by the growing demand for V.H.F. mobile radiotelephone services in city areas which is taxing the existing channels available. The change to 30 kc/s channelling will enable more radiotelephone services to be brought into operation as they are required.

However, some changes to existing equipment will be necessary and the following programme for conversion, which is designed to cause the least inconvenience to all concerned, has been adopted:—

As from 30 June, 1969, licensees of V.H.F. mobile radiotelephone services operating in 30 kc/s channelling areas within the frequency bands 70-85 Mc/s and 156-174 Mc/s* will be required to make necessary changes so that:—

- (i) All base station transmitter/receivers (both amplitude and angle modulated) employed in a base station installation shall be of a type complying with the relative Post Office specification and approved for 30 kc/s operation and shall be operated in accordance with the terms of that specification.
- (ii) All angle modulated mobile transmitters shall be adjusted to function with a maximum deviation of ± 5 kc/s.

*This excludes the International Maritime Mobile V.H.F. Radiotelephone and the existing Australian Post Office Subscriber Services.

Early conversion will assist manufacturers in meeting delivery dates for equipment.

**FURTHER DETAILS MAY BE OBTAINED FROM THE SUPERINTENDENT,
RADIO BRANCH, G.P.O., IN YOUR CAPITAL CITY.**

AUSTRALIAN POST OFFICE

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Nominal Frequency Range: 550 Kc. to 30 Mc.
Internal 500 Kc. crystal. VFO frequency coverage: 250-500 Kc. 2 Kc. dial divisions.

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Communication Receivers, Test Equipment, etc. Call, write or phone Equipment inspected and picked up at your convenience any night or week-end.

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2SD65

2T65

2T76

OC66

All at Bargain Price of **25 cents each.**

● STAR SR700 SSB AMATEUR BAND RECEIVER

Frequency coverage: 3.4-29.7 Mc. in 7 bands. Triple conversion, employs xtal locked 1st and 3rd conversion oscillators. Selectable USB or LSB. Selectivity variable, 0.5 Kc. to 4 Kc. 1 Kc. dial calibration. Three stages double locked geared dial mechanism, 30 Kc. per turn tuning rate. Vackar oscillator employed in VFO for maximum stability.

Price **\$461.50.**

● A111 9 Mc. SSB EXCITER

A fibre-glass printed circuit board, the finest German crystal filter, diode ring modulator, and solid state circuitry all contribute to make the A111 the finest SSB Exciter available. Specifications: Sideband suppression, 80 db.; carrier sup., 65 db.; audio freq. response, 350 to 3,000 cycles; mic. input, 1 mV. on 5K ohm load. Incorporates VOX amplifier and relay amplifier.

Price with KVG **XF9B** Filter, **\$120.**

● A112 5 Mc. VFO

Frequency coverage: 4950 to 5550 Kc. Frequency stability better than 100 c/s. over 12 hours long term; better than 8 c/s. over 10 minutes if enclosed in suitable box. Output: 350 mV. on 220 ohm load.

Price **\$22.**

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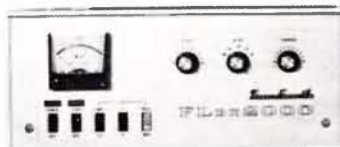
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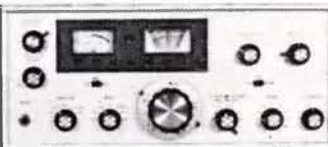
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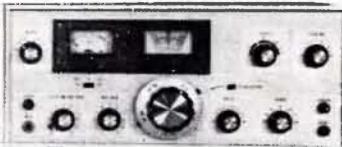
FLDX-2000 Linear Amp.
80-10 mx, AB2 G.G.



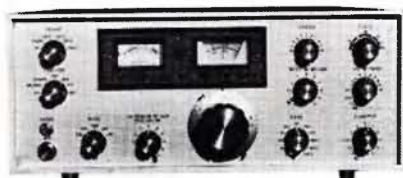
SP-400
Speaker



FRDX-400 Receiver
160-2 mx, WWV, C.B.



FLDX-400 Transmitter
80-10 mx, peak in. 300w.



FTDX-400 Transceiver
80-10 mx, peak inp. 500w.



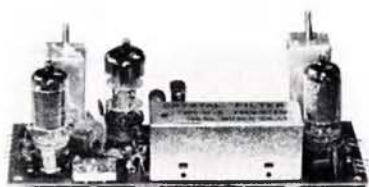
FTDX-100 Transceiver
80-10 mx, Transistorised, 150w.



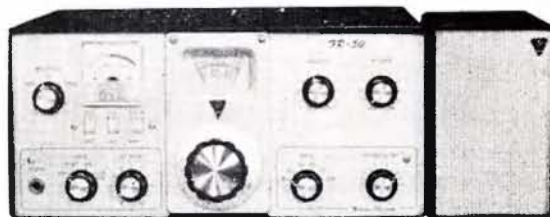
FT-50 Transceiver FV-50 V.F.O.
80-10 mx, peak inp. 100w.



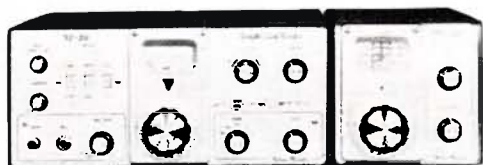
FF-30DX 3-Section L.P. Filter
For T.V.I. reduction



Type "F" S.S.B. Generator
Basis for Tx Construction



FR-50 Receiver SP-50
80-10 mx, WWV Speaker



FL-50 Transmitter FV-50 V.F.O.
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