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# AMATEUR RADIO



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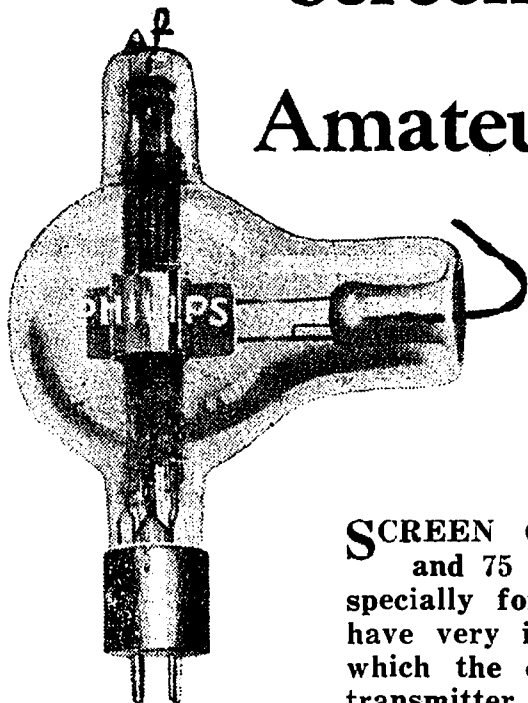
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**6<sup>d</sup>**

**JANUARY, 1935**

# Screen Grid Valves

For

## Amateur Transmitters



Types:  
QB2/75, QC05/15

quarter of actual size

**SCREEN GRID** Transmitting Valves for 15 and 75 watts have been designed by Philips specially for use by amateurs. These valves have very important properties, as a result of which the construction and adjustment of the transmitter can be greatly simplified. The control-grid and anode of these valves are screened from each other by a screen-grid, thus reducing anode-control grid capacity to a minimum. When used as H.F. amplifier or frequency multiplier in controlled transmitters there is practically no reaction of the anode circuit on the grid circuit, and self-oscillation is impossible with screening outside the valve. Neutralisation is unnecessary, so it is very easy to alter the wave-length at short notice. These screen-grid valves give greater amplification than triodes under the same conditions.

Table A shows the various electrical properties of the Philips amateur transmitting valves:—

### CHARACTERISTICS:

Table A. Type.	Screen Grid Valves	
	QC 05/15.	QB 2/75
Filament Voltage .....	4.0	10.0
Filament current* .....	1	3.25
Saturation current* .....	400	2,000
Anode voltage .....	400-500	2,000
Screen grid voltage .....	75-125	300-500
Max. anode dissipation .....	15	75
Anode dissipation on test .....	20	100
Max. screen grid dissipation .....	3	15
Amplification factor* .....	225	200
Mutual conductance (slope)* .....	1.4	1.4
Int. resistance* .....	160,000	150,000
Anode-grid capacity .....	.001	.02
Max. diam. of bulb .....	50	100
Max length .....	160	210

\* Approximate values.

# PHILIPS

## TRANSMITTING VALVES

# AMATEUR RADIO

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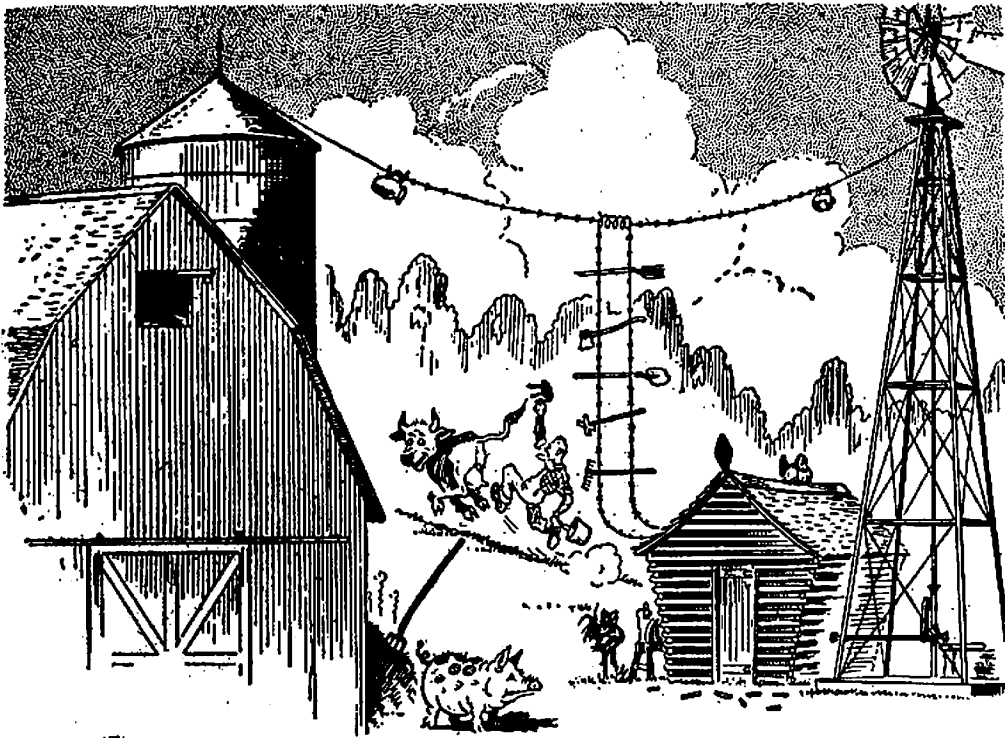
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## Editorial . . . .

# The New Year

As this issue of Amateur Radio is the first of the 1935 series the editorial committee has pleasure in wishing all members of the W.I.A., affiliated societies and general readers a very happy and prosperous New Year. There is no doubt that in organised amateur circles many successful contests, field days, tests, etc., were arranged during the last year. All these were the outcome of combined efforts on the part of people interested in a common field of experimentation. May 1935 be another year filled with progressive activities—more experimentation—more unity amongst amateurs throughout the Commonwealth. We leave it to you.

We are particularly grateful to those responsible in each State for their helpful and continued support during 1934. We as a committee know only too well the difficulties of increasing circulation, obtaining advertising contracts, writing notes and copy, etc., and can truthfully say that we are very thankful for all such support.

## ANNUAL CONVENTION

The month of January should be a great one for the W.I.A. throughout Australia. Many decisions and questions of policy will be settled in Hobart when the Annual Convention meets to consider those problems which arise to engage our attention each year. From the point of view of the general membership the outcome of an Annual Convention may appear to be somewhat hazy and difficult to define, nevertheless, it is only by such a conference, conducted in that spirit of good fellowship for which the "Amateurs" are renowned, that we, as a federated body representing some hundreds of opinions in each State, may combine our ideas for the common good. From such Conventions have come some of the basic rules and regulations which we regard as everyday privileges to-day, and we may be certain from the deliberations of this Convention many more will be established and adopted for the advancement of the good old game.

### PREFIXES FOR 1935 B.E.R.U. CONTEST.

Via E.L.S.

- No.
- 1—Ascension Islands.
  - 2—Australia—VK2, 3, 4, 5, 7, 8.
  - 3—Australia—VK6.
  - 4—Barbados, Leeward and Windward Is.
  - 5—Bermuda.
  - 6—British Guiana, Trinidad, and Tobago.
  - 7—British Honduras.
  - 8—British Is.
  - 9—Burma and Andaman Is.
  - 10—Canada—VE1, 2, and 3.
  - 11—Canada—VE4.
  - 12—Canada—VE5.
  - 13—Ceylon, India (South of Cancer).
  - 14—Egypt and Sudan.
  - 15—Hong Kong.
  - 16—India (North of Cancer).
  - 17—Iraq.
  - 18—Jamaica, Cayman, Bahamas, Turks, and Caicos Is.
  - 19—Kenya, Uganda, Tanganyika, and Zanzibar.

- 20—Malta.
- 21—Mauritius.
- 22—Newfoundland.
- 23—New Zealand and Chatham Is.
- 24—Nigeria, Sierra Leone, and Gold Coast.
- 25—Papua and British New Guinea.
- 26—Palestine and Transjordina.
- 27—Rhodesia.
- 28—Singapore, Borneo, and Malaya.
- 29—St. Helena.
- 30—Union of South Africa.

The rules for the 1935 BERU Contest will appear in the November "Bulletin." Numerous changes have been made, the most important being: (a) The transmitting contests will take place on alternative week-ends during February; (b) The receiving contest will take place during the first week-end of each transmitting contest; (c) The contests will run from 1700 GMT Saturdays to 1700 GMT Sundays; (d) Power has been limited to 250 watts in the senior contest; (e) One point will be scored for each contact with a station in another zone; (f) Thirty prefix zones have been recorded, and all points scored will be multiplied by the number of zones worked on both 7 and 14 m.c.

# Adjustment and Operation of Modulators

With Rectox and Thermal  
Instruments.

(By courtesy of Westinghouse Electric and Manufacturing Co., through Alan S. Duke Pty. Ltd.)

## Some Hints on Modulation.

Successful operation of an amateur 'phone transmitter does not depend entirely on the proper adjustment of the modulator and modulated amplifier. Mostly it is dependent upon the operation of the modulator within the limits determined by the adjustments. The necessity of observing this fact is demonstrated by the care with which the broadcasters carefully "ride gain," not only at the station, but at several other intermediate points. Care is taken to see that the gain used never reaches that required to modulate the transmitter 100% on peaks, in fact the limit seldom exceeds 90%. With the present day high quality broadcast transmitter having its modulated amplifier amply excited, and modulator capacity far in excess of that required for 100% modulation, excessive gain must be avoided. With the trend of the amateur 'phone towards Class B modulation with its high capacity, and the Class A modulator combined with the dropping resistor, and so on, the amateur is placed in a position where he must also "ride gain," or suffer the penalty of poor modulation.

Modulation in excess of 100% on peaks manifests itself in several ways, the most objectionable being distortion, production of harmonics, frequency modulation and instability, in the order mentioned. Distortion is not always noticeable on speech, but on music it is more easily recognised since it affects the quality, often causing a violin to sound like a clarinet or some similar startling change. Harmonics produce objectionable interference at other frequencies and the quality on them is usually poor. Frequency modulation, while present to a very slight degree in any modulated amplifier, will cause the carrier and sidebands to occupy a greater portion of the band than necessary, and on the present day high selectivity

receivers of the "single signal type," often produces a signal of low intelligibility. Instability, while usually associated with the modulated amplifier, is encouraged with excessive modulation. It produces a hash or smattering that may be detected at almost any frequency. A combination of these results of over-modulation will cause a carrier to occupy a wide band, the modulation changing to a hash extending many kilocycles on either side, often to the extent of occupying the entire 'phone band.

Every amateur operating a 'phone transmitter should install some sort of an indicator by which he may gauge the extent to which he is modulating, and then faithfully try to operate so that his transmitter emits a clean cut carrier with intelligible modulation. In a preceding folder, F. 8321, methods of determining the operating limits of a modulated amplifier were given. The next step is the adjustment of the modulator.

The modulator—whether it be Class A or Class B—must have sufficient capacity to fully modulate the amplifier. It must be capable of producing or causing a voltage change under load the peak value of which is equal to the unmodulated plate voltage of the amplifier. It must operate stably under these conditions and be free from distortion.

These are several things that will affect frequency response in a Class A modulator. The output choke affects the lows if it is not of sufficient impedance. It should be at least 20 henries, have a low d-c. resistance, and contain enough core so as to prevent saturation. The by-pass condenser across the dropping resistor should be large enough to pass low frequencies. Since this condenser is not subject to voltages more than double the drop across the resistor, it is unnecessary to use a high voltage condenser. Use of 16 to 20

microfarads will assure an impedance low enough to pass all frequencies down to 30 cycles. All other frequency response troubles lie somewhere in the audio system, preceding the modulator input transformer.

Use of a large r.f. by-pass condenser across the plate supply of the modulated amplifier will cause a loss of high frequencies. Ordinarily, this effect will not be noticed with the range of frequencies used by the amateur, but if he is interested in transmission of television or facsimile signals, the value of this condenser must be considered. Its impedance at the highest audio frequency desired should not be less than the load impedance offered by the tubes in the modulated amplifier.

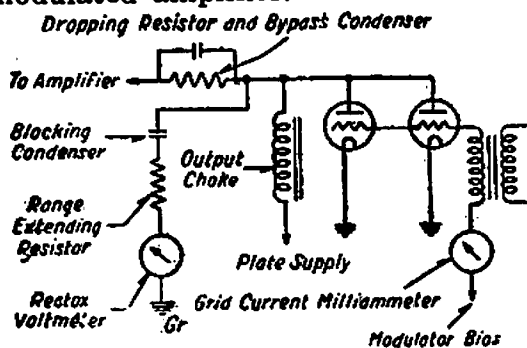


Fig. 1—Connections for Modulation Measurements with a Class A Modulator.

A properly designed Class B modulator with its driver stage, when operated under the conditions set by its design, will give little trouble.

### Modulation Measurements.

Measurement of the output voltage of a Class A modulator is made best across the output choke. Measurements of the Class B modulator can be made across the output transformer if the modulator is directly connected, or across the choke if indirectly connected. Fig. 1 shows the circuit used on a Class A modulator. Fig. 2 shows the circuit used on a Class B modulator, directly connected. Fig. 3 shows a Class B modulator, indirectly connected.

The voltmeter used should be of the high resistance type, either thermo-couple or Rectox. The Rectox type is recommended since it draws less than a milliamper, and will not detract from the accuracy of the reading taken. The error with the Rectox is negligible. Thermal voltmeters draw from 5 to 10 mils, while

the induction type voltmeter often consumes more power than the amplifier, and has considerable frequency error as well.

Since Rectox voltmeters are ordinarily not made to reach such high voltages as produced by the modulator, it will be necessary to extend the range of the instrument used. This is done by providing an external resistor, the value of which is determined by the sensitivity of the instrument used, and the voltage it is desired to measure. The selection of the Rectox instrument will probably be determined by its utility around the "shack" when not used for modulation measurements. The range extending resistor can be constructed of small wire wound resistors. These resistors should be so located as not

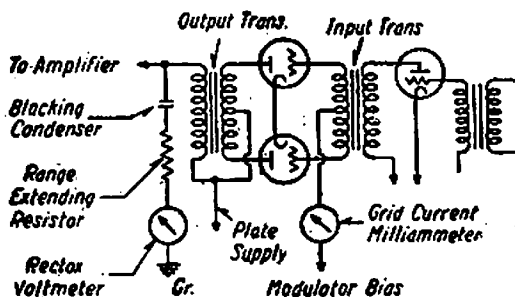


Fig. 2—Connections for Modulation Measurements on a Directly Connected Class B Modulator.

to be subjected to inductive or r.f. pickup from either the modulator or the amplifier. The frequency error is surprisingly small. The total resistance of the complete resistor should be determined accurately. It is suggested that the range of the Rectox be extended 10 or 100 times, since it can then be read directly. If it is not possible to do this conveniently, a curve may be plotted and the reading taken therefrom. The method of determining the value of range extending resistor required is as follows:—For the 1,000 ohms-per-volt type, add 1,000 ohms of external resistance for each volt the range is to be extended. For the 2,000 ohms-per-volt, add 2,000 ohms, and for the 5,000 ohms-per-volt type add 5,000 ohms. Example: To extend the range of a 10-volt, 1,000 ohms-per-volt type, to 1,000 volts requires 990,000 ohms. This may seem a large order, but the small wire-wound resistors are available in almost any size at reasonable costs from several reliable manufac-

turers. The range extension required depends upon the individual plate supplies used.

### Determination of Modulator Operating Limits.

The procedure for determining the operating limits of a modulator are as follows:—Measure the plate voltage at the modulated amplifier tubes. Remember that the chokes and transformers have resistance, and the voltage drop through them may be considerable if the current is high. Connect the Rectox voltmeter with its external resistor as indicated in either Fig. 1, 2 or 3 as your case may be. The condenser indicated should be from 2 to 4 microfarads, and of suitable voltage rating, since it is sub-

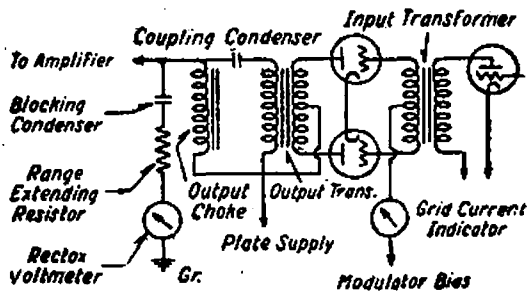


Fig. 3—Connections for Modulation Measurement of a Class B Modulator, Indirectly Connected.

jected to the plate voltage. Its purpose is to block out d-c. and isolate the instrument. By placing the instrument at ground potential, it may be switched to measure the level of the applied audio voltage at some convenient point, usually in the speech amplifier. It is often desirable to replace the instrument with an equivalent resistor when it is removed from the circuit, so as not to disturb the loadings of the circuit. By placing a sensitive milliammeter in the grid circuit of a Class A modulator, the point at which the tubes draw grid current may be observed. It is customary to employ a grid current indicator in the grids of a Class B modulator.

The speech amplifier usually associated with the modulator will ordinarily provide enough excitation for the test. An audio oscillator, either of the vacuum tube type or of the tuning fork type, should be used, since its output can be kept constant for taking readings. It is advisable to use 1,000 cycles, since this is near

the centre of the band normally used in voice frequencies.

After connections have been completed apply an audio voltage which gives a modulator output voltage equal to about 10% of the plate voltage, and then increase in 10% steps. Take readings of input and output voltages, and grid current for each change. In the case of the Class A modulator, do not continue to increase the input after grid current is indicated. Readings should be taken up to a point where the output voltage is equal to 78% of the unmodulated plate voltage. Plot these readings on cross section paper, plotting input against output and grid current. In making these tests from which data for the curve is obtained

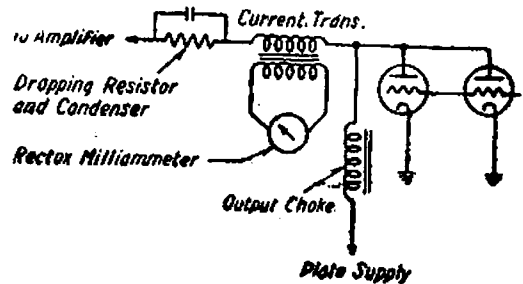


Fig. 4—Modulation Indication by Means of Measurement of Audio Component of Modulated Plate Current with a Current Transformer.

it is advisable to use a dummy antenna.

The Class A modulator should be able to deliver the required output voltage without evidence of grid current. If the curve plotted as the result of these tests is a straight line, and the modulator does not heat unduly, it will have sufficient capacity. If the curve flattens out, or the tubes draw grid current, the modulator is not large enough. It is then advisable to increase the number of modulator tubes used, or, if this is not possible, it is best to increase the dropping resistor used and thereby lower the requirements of the modulated amplifier. The plate current of the modulators should show no change when modulation is applied.

The curves for the Class B modulator will differ slightly.

No attempt will be made to discuss the design of a Class B modulator. It will be assumed that the amateur has followed the conventional methods in designing his transformers and is operating the tubes



in the manner called for in the design. Care should be taken to keep the tubes balanced. The plate power supply of the Class B modulator unit should be of high capacity and good regulation, since the direct current requirements fluctuate from almost zero, upward. Most of the difficulties arise in the driver stage.

Considering the parts of a Class B modulator and their functions separately will simplify matters. The input voltage-grid current curve has a direct bearing on the operation of the driver stage of the modulator. This curve indicates the operating characteristics of the driver stage, and it should be linear. Since the driver stage is usually operated Class A, except in a few high-powered

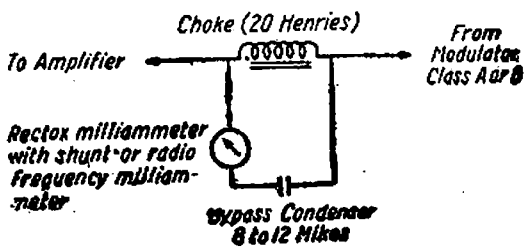


Fig. 5—Measurement of Audio Component of Plate Current with Choke and Condenser.

broadcast stations, its operation and adjustment are substantially the same as described in the preceding paragraph. It should be capable of delivering sufficient power to operate the modulator. Also, in order to keep distortion in the driver stage at the minimum, it must be worked well below its Class A undistorted output rating. Low capacity of the driver stage can be corrected by increase in tube capacity or an increase in plate voltage.

If the input voltage-grid current curve is linear, the output of the power stage of the Class B modulator should be found to be the same. The output voltage curve should be linear up to a point where it is equal to 78% of the unmodulated plate voltage applied to the modulated amplifier stage. If the curve should flatten out before this point is reached, it usually indicates poor regulation of the power supply, or low emission in the tubes. Proper steps should be taken to correct these difficulties. A few troubles encountered and their cause are as follow:—Too high a bias

causes modulation to be "sandy" or blurring. The microphone will appear to be insensitive on weak speech or room noises. Low bias often will cause the tubes to heat and the output usually will be lower.

### Modulation Indications.

Having adjusted the modulating system for proper operation, it is now advisable to install some indicating system so that the modulation always can be kept within proper operating limits. A number of circuits will be described and the final choice left to the amateur.

Measurement of audio component of the modulated plate current as fed to the modulated amplifier is probably

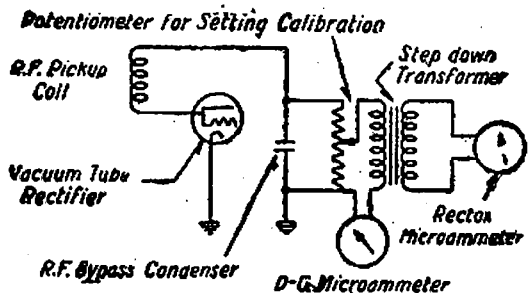


Fig. 6—Modulation Measurements by Means of a Rectifying Tube and a Rectox Microammeter.

the oldest method used. This makes use of a current transformer placed in the high voltage circuit, either in the positive lead or in the negative lead, if means of isolating the current drawn by the modulated amplifier are at hand. The transformer ratio is dependent upon the instrument used. If the range of the instrument used is equal to the plate current of the modulated amplifier, the ratio is one to one. The method of determining the transformer ratio is as follows:—Plate current divided by full scale reading of the instrument is equal to the ratio of the secondary turns to primary turns. The transformer is constructed with an air gap to prevent saturation. It should be wound with large wire.

This method often introduces some distortion. Since a thermal meter is somewhat sluggish, the use of a Rectox milliammeter is recommended. The range of instrument chosen depends upon individual requirements. See Fig. 4.

The audio component of the plate current may also be measured by inserting a high impedance choke of low d-c. resistance in the high voltage

lead, and by-passing this with a large condenser. The audio component will flow through the condenser and may be measured with a suitable meter. The full scale reading of the instrument should be equal to the direct current through the choke at least. This circuit will not introduce distortion. See Fig. 5.

A Rectox milliammeter can be used in this circuit, but it is necessary to provide a shunt for this type of instrument, since it is extremely sensitive. However, a large range of r.f. milliammeters are available and they are more suitable.

The use of a Rectox voltmeter of suitable range, placed directly across the line, somewhere in the audio system, is recommended if the system permits.

For those who use Class B modulation, the calibration of the grid current indicator in the grid lead of the modulator may prove satisfactory. See Figs. 2 and 3.

The method of employing a grid bias vacuum tube voltmeter, connected across the line at some suitable point, is another popular way.

The following methods make use of the modulated r.f. output, and are not highly recommended; calibration of the antenna ammeter so as to indicate a 22% increase with 100% modulation; calibration of an r.f. milliammeter and small coupling coil for 22% increase with 100% modulation.

A double rectifying device employing two tubes, one as an r.f. rectifier and the second as an audio rectifier, has proven quite satisfactory. An improvement on this scheme in which the last tube is replaced with a Rectox instrument, is shown in Fig. 0.

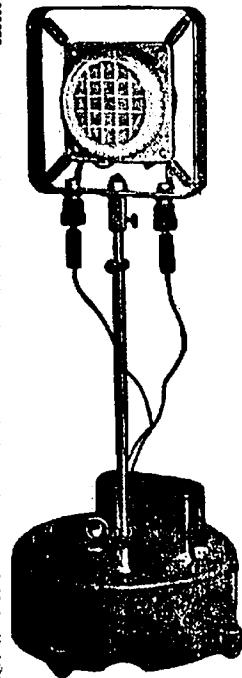
It is recommended that upon final installation of an indicating system, that it be calibrated by running an operating characteristic curve on the modulator.

The Rectox instrument is not subject to frequency error over the ranges of audio frequencies employed. It is almost instantaneous in response to modulation and in some cases will give peak readings. Thermo-couple instruments are available in a wide range of current ratings effected.

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# The R-S-T System

By VK3ML, with acknowledgments to the originator, W2BSR.

Like a bolt from the blue, we read, in October, QST and T & R, of a new system of signal strength reporting. As this code appears to be a new standard for the amateur throughout the world, we are publishing it below, in brief, for the benefit of our members.

It is only natural to expect any suggested alterations to the long-established amateur standards to be

we may all agree that our friend, the "T" system, has been seeking a successor for a long time, mainly because it did not accommodate certain types of signals, such as, crystal AC notes, etc. Why, in the name of amateur radio, has the "R" code not been left "as is"? W2BSR's signal strength code from 1-5 will take a lot of getting used to. Not only does the difference between R6 and R7 mean such a lot to the DX man, but there IS a

## "R," READIBILITY.

1. Unreadable.
2. Barely readable—occasional words distinguishable.
3. Readable with considerable difficulty.
4. Readable with practically no difficulty.
5. Perfectly readable.

## "S," SIGNAL STRENGTH.

1. Faint—signals barely perceptible.
2. Weak signals.
3. Fairly good signals.
4. Good signals.
5. Very strong signals.

## "T," TONE.

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. Extremely rough hissing note.</li> <li>2. Very rough a.c. note—no trace of musicality.</li> <li>3. Rough low pitched a.c. note—slightly musical.</li> <li>4. Rather rough a.c. note—moderately musical.</li> <li>5. Musically modulated note.</li> </ol> | <ol style="list-style-type: none"> <li>6. Modulated note—slight trace of whistle.</li> <li>7. Near d.c. note—smooth ripple.</li> <li>8. Good d.c. note—just trace of ripple.</li> <li>9. Purest d.c. note.</li> </ol> <p>If it appears to be crystal controlled, simply add an X after the appropriate number.</p> |
|--|--|

received with both approval and dissent. It was hard to make ourselves accustomed to the QSA code when it came into being, but, it eventually grew on us just as the "T" code did. Now we have to make a complete change and forget all we ever knew about them. From all accounts, the Ham was satisfied with the QSA and "R" reporting systems as, when correctly and intelligently used, could convey all one wants to know about one's signals. However,

difference, and that is between a good signal and a darned good signal. To be without the intermediate numbers will be like having a currency without a decimal or fractional coinage to go with it. To the scientific or experimental Ham, the "S" part of the R-S-T code is certainly weak, because an adjustment to a transmitter or an aerial array may increase the signal strength from R6 to R7 in the old code, but cannot be shown in the new one.

Nevertheless and notwithstanding the above objections, it is apparent that the attempt of W2BSR to attain a more definite object is a move in the right direction, and we must adopt and ratify our new standard right away, and here is how it is to be used.

"R" stands for "readability," and it is only the QSA code with the new handle. "S" has cut down the signal strength reporting code from R1 to R9 to S1 to S5 as per table below. "T" stands for the "tone" as in the past, but with considerable modifications. A report is sent in the order of R-S-T, and should never be deviated from. As an example: "Ur RST 347X QRM" would signify: "You're readable with difficulty; signal strength good; crystal controlled, near DS note—smooth ripple; interference." The "X" indicating crystal control of course. Other statements, such as fading, chirping, frequency creep, etc., must be indicated in full with the appropriate "Q" sign or plain language. In order to incorporate the extent of fading, one may combine the maximum and minimum signal strengths separated by the fraction sign. For example: "RST 3 5/2 8" shows that the signals fade from "very strong" down to "weak," making reading difficult, despite a good DS note. W2BSR suggests that after we have become used to the system, the letters RST can be dispensed with altogether, but, until it is universally adopted, they should be transmitted. Here, below, is the code, and we suggest you copy it out and hang it on the wall in front of you till its use becomes second nature.

## Correspondence

2 Park Lane, Hyde Park,  
Townsville,

December 5, 1934.

The Editor, "Amateur Radio,"

Dear Sir,—Referring to the "Operating and Experimental Section" by VK3WY in the November issue of "A.R.," in which the misuse of the "end of work" signal (SK) is discussed: I have always understood that the signal simply indicates the end of work between two stations, to be followed by the call sign of the station signing off.

The A.R.R.L. says that, after using SK, you should search the band for stations calling you before calling CQ or another station. According to this it is wrong to use SK unless in a position to search the band afterwards.

On the 7 mc. band it takes a couple of minutes to go through the band in the evenings, and to call any station on the strength of his signing SK seems to me to be a waste of time, and to cause unnecessary QRM. I should think that there is very little chance of a station using under 25 watts being called after his SK, unless there are very few stations on the band being used.

It is quite likely that the station signing SK is listening to the last over of the chap he is testing with, or that he has to leave his receiver for the time being. Perhaps the signal "CL," or something more appropriate, should be used when unable to listen after end of a QSO.

I have frequently followed the end of a QSO with a CQ call, and I can't see any harm in the practice, provided, of course, the call is sent in the proper manner, i.e., from 4 to 6 CQ's followed by call-sign, and repeated from, say, 1 to 5 times according to conditions and speed of sending.

Yours faithfully,  
R. L. BELSTEAD.

Clareville Avenue,  
Sandringham, N.S.W.,  
November 29, 1934.

The Editor, "Amateur Radio,"

Sir,—The notes by 2MY on page 26 of the November issue of "Amateur Radio" call for some comment in regard to the so-called encroachment of Semi-Commercial Stations on the 7000-7300 K.C. band.

It should be remembered that the so-called Amateur bands are really frequency allocations available for the use of licensed experimenters. It should also be remembered that call-signs such as VME and VMG, when used by experimenters who already have other call-signs, cannot cause any more interference than if they used it to grind out the eternal CQ. Bear in mind that these stations are doing work which, while interesting to themselves, also is useful and important.

I am, yours faithfully,  
A. G. HENRY, VK2ZK.

## Operating and Experimental Section

Conducted by VK3WY.

**DX CONDITIONS.**—There are not many reports to go on this month, but, from local observations, all the bands have been rather patchy, but improving; sometimes conditions have been definitely poor, and at others just as definitely good.

**7 MC.**—During the early mornings, European DX may be worked fairly reliably on this band, G, ON, D, and EA stations being about the most consistent here. The evenings have been a bit patchy, but on good nights far more than the usual number of VE stations have been worked, and both they and the W sigs. have reached remarkable strength. When working W6GRL the other night, he complained at only getting r8; said I was the only VK out of half a dozen worked to give him less than r9. He admitted having used one kilowatt, but wouldn't let on to more than that!

**14 MC.**—This has been the real DX band for the last month, and many hams' hearts have been gladdened by working S. America for their W.A.C. During the afternoon quite a few S. Africans have been worked, but the band gets particularly good from about 1700 to 2400. During this time, VP5, SU, CM, CX, LU, ON, and J have been worked. The S. Americans are more consistent than I have heard them for years.

**28 MC.**—It has been quite a while since we have been able to class this band as a DX band, but latterly the skip distance on this band has seemed to be lengthening out, and, during the last few weeks, quite a number of ZLs have been worked. We should be hearing old W6BAX again soon.

**KEYING.**—Here are a couple of hints which may be useful to those who have had trouble with clicks, etc. The first is a method which may be used by anyone using link coupling between stages. The method is extremely simple, and merely consists of placing the key in the twisted pair line between stages. Even in high power rigs, the actual current carried by these lines is very small. No click or thump filter is necessary about the key, nor is it usually desirable.

The second method may be used with CC rigs using a penthode as CO. Keying in the centre tap usually eliminates clicks, but this may be made more certain by keying in the auxiliary grid lead. If the CO is a tritet, however, the plate voltage should not be higher than about 350 volts, if complete cut-off is to be obtained.

### 28 AND 56 MC. SECTION.

(Conducted by VK3JJ.)

Tests with New Zealand.

VK 28 mc. enthusiasts are requested to log all ZL and VK6 stations heard and worked during December, January, and February, as tests in conjunction with the N.Z.A.R.T. are in progress.

The following schedule has been arranged for each Sunday during the above months:—

Commencing at 22.00 GMT (8 a.m. EST) and ending at 10.00 GMT (8 p.m. EST), ZL stations will call during the first ten minutes of every hour. VK2, 3, 4, 5, and 7 will call during the second ten minutes of every hour, and VK6 will call during the third ten minutes of every hour.

This leaves the second half of each hour free for random work.

Please forward logs to your U.H.F. representative at the conclusion of the test period, and to decide the most reliable VK for ZL contacts. Points will be allotted on the system of the R.S.G.B. International 28 mc. Contest.

### 28 mc. IN NEW SOUTH WALES.

Conditions experienced from the end of November to the third week in December can only be described as most extraordinary. Leaving out the daylight QSO's with ZL, what about the interstate QSO's every night? Sounds more like 3.5 mc., but it's 28 all right! 2HZ, 2HY, 2NO, 2SA and 2LZ have each worked two or three ZL's, and the latter has put good phone through to ZL1CD, VK3, and VK4. He also made the first VK6 QSO since 1930!

2XY, 2BX, and 2YC must be the "Jonahs," because as long as they were on there were no decent contacts. A newcomer to the band was 2FG, and, considering he only received his licence on Nov. 21st, it was quite a feat to have three 28 mc. QSO's on Dec. 9th. 2DQ, 2XO, and 2BX, the latter having been ill, have yet to "break their ducks!"

The most intriguing question of the moment is: Were all the contacts due to abnormal weather conditions, or has the skip altered? G2FN (old XU2UU) inclines to the latter view, but by next month we will have a much better idea of things. . . . VK2YC.

### WESTERN AUSTRALIA.

On Sunday, November 18, a ten-meter field day was conducted, and took the form of a DF hunt. VK6SA operated the hidden transmitter which employed a conventional push pull TNT circuit,

with 201a valves operating from an auto B eliminator. The transmitter was on the air for two hours putting out phone and ICW. Six cars equipped with receivers started in the hunt, but only three were successful in hearing the signals, while none were able to locate the transmitter. As a cup had been donated for the first party finding the transmitter, it was decided to allot points. The judge (VK6SA) had a difficult task in deciding the winner from the three parties who heard the signals and took bearings, but finally VK6MN was declared the winner.

After a good start the previous Sunday, December 2, provided further interstate opportunities, and VK6SA contacted VK2LZ, VK3JJ, and VK3RJ. VK3OF and VK3BQ were also heard. VK6MN and VK6CP were both on the air, but owing to the wrong coil being in the freq. meter the former was listening on about 14 metres. Hi.

VK6MN heard both VK4BB and VK5HG on December 9, but was unable to QSO. VK6SA was successful in working 5HG, but did not hear 4BB, owing to being late in getting on.

Judging by the way harmonics from Japanese commercial stations have been coming through, conditions seem favorable for 10 metre contacts with that country, but apparently there is little activity among the J hams on this band.

Commenting on the contacts of November 25, a local BCL rag states that it was the first time in radio history that VK had been spanned on 10 meters. They are only six years out, as any old-timer on 28 mc. can tell. . . . VK6SA.

### GENERAL.

The improved conditions experienced on 28 mc. seemed to extend to all States and N.Z., and many ZL contacts marked the opening of the VK/ZL tests.

VK3's were surprised to hear ZL1CD handing over an R7/8 CW signal, while at times he was R5 on phone. ZL3AJ is weaker than 1CD, but much more consistent, and has had no less than 16 VK QSO's to date! ZL1FT and ZL1BA, the latter with only 8 watts input, have worked a number of VK's between them, but nothing has yet been heard of ZL1AB, ZL1GC, and ZL1GX, who are also active. VK3's who have either worked or been reported in N.Z. so far are 3CW, 3ML, 3BQ, 3RJ, 3HK, and 3JJ.

VK4BB can be worked almost every night in Vic., but his signals are never quite as strong as those from VK4XN.

On Wednesday night, Dec. 5, conditions were extremely good, and at one time, between 9.30 and 10 p.m., 2LZ, 2HY, 2SA, 2NO, 3JJ, 4BB, 7NC, and ZL3AJ could all hear each other, and several good QSO's resulted. 3FM later contacted 2HY at 11.30 p.m.

3ML, 3WX, 3WC, and 3FM, all of whom did good work on 28 mc. some years ago, are back again and putting out strong signals. 3JO and 3KD are new to the band, and are not yet satisfied with their receivers. 3NM has been rebuilding, and missed the peak of the DX, but his signals are now even better than before.

### VICTORIAN 28 mc. CONTEST.

A UX250 and a pair of 81's have been generously donated by Messrs.

Falkenberg and Orbohm, respectively, and will be awarded the winner of a contest to be held on January 13 and 20, and March 3 and 10 next. The contest begins at 00.01 and ends at 23.59 EST on the above dates, and six hours must elapse before an additional QSO with the same station can count for points.

The co-operation of interstate and N.Z. stations will be appreciated.

The contest is open to all VK3's, and if a list of rules has not been received, they will be sent on request to VK3JJ.

### INTERNATIONAL 28 mc. CONTEST.

The following is an approximation of the points obtained till December 12:—

VK4BB	270,	VK4XN	127,	VK6SA	112,
VK3JJ	111,	VK2LZ	100,	VK2HZ	62,
VK3RJ	62,	VK2NO	60,	VK2SA	60,
VK7NC	57,	VK3WC	52,	VK3OF	48,
VK7KV	40,	VK3ML	39,	VK3BQ	30,
VK3JO	22,	VK6MN	22,	VK5HG	20,
VK3NM	17,	VK3FM	13,	VK2YC	11,
VK3WX	9,	VK3CW	9,	VK2PN	7,
VK2XY	6,	VK2EP	6,		

### IN REPLY TO VK2TH.

Yes, I am the guy called "QRZ,"  
Who never spends his time in bed.  
And many a night I sit and listen  
To all the notes with something  
missing.

I flatter myself I know DC,  
And can tell the difference from RAC.  
I am not regarded as much of a wit,  
But some notes are punk—you must  
admit.

I got a kick in the neck one day  
From a bright young spark called  
Halliday,

But along comes a chap called 5LD,  
And lo and behold he sides with me.  
And at my station my note's T9,  
My sig. never causes others to whine,  
And when I have to send CQ  
I don't keep going, as some others do.  
Now I have my faults, of course, I  
know,

But I always consider the other chap's  
show,

And if I'm told I'm causing trouble,  
Why, I jump to fix it—at the double.  
Now, 2TH, I like your style,

And at your poem I raise a smile.  
A sense of humour I hope I've got,  
And to QSO would please me a lot.  
I'm sorry I cannot sign my name,  
For the Editor says I must refrain,  
And so at last I QRT,  
Remaining to you—just "QRZee."

All district notes should be in the  
Magazine Secretary's hands on or be-  
fore the 18th of the month.

# The "505"



The latest addition to their 2½ in. Instruments

0.50 Millivolts D.C.

0.5 Volts A.C.

0.1 Milliamps D.C.

0.1 Milliamps A.C.

1000 Ohms per Volt

All in the one Instrument, with Selector Switch.

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(MELBOURNE) PROPY. LTD.

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## Victorian QSL Bureau.

By R. E. JONES, VK3RJ, QSL, MGR.



Cards are on hand at the above Bureau, 23 Landale St., Box Hill, for the following stations, and a stamp will ensure their prompt despatch:—

VK3AT, AX, AY, BB, BF, BX, CF, CJ, CL, CM, DD, DQ, EM, ES, ET, EW, EG, FC, GE, GU, GW, GX, GY, GC, HE, JC, JK, JZ, KA, KQ, LP, LT, LX, LZ, MH, MS, NG, NR, NW, OP, OV, OY, OZ, PT, PW, PZ, QZ, RQ, RT, RW, TD, TM, UJ, UW, VU, VL, WC, WK, WP, WN, WX, WZ, XD, XF, XK, XP, YF, YL, YV, ZK, ZL, Messrs. BENNETT, CAREY, ADAMS, MAWMAN.

PKIHD complains that the following hams owe him cards. As he was conducting specific tests when these stations were worked, the cards are of particular value to him:—Vk3 eg ht mr yo zl, Vk2vq xd xv hu iz rk gm my uy vq.

George Watson, ex Vp6sr, ex Zeljc, of Southern Rhodesia, and now an op. on the R.M.S. Cathay, passed through Melbourne twice during December.

Z11FT heard the following Vks. on ten metres early in December: VK21Z, 2SA, 2NO, 3JJ, 3RJ, 3ML, 7NC. The following Z1S are active on that band: Z1, 1BA, 1CD, 1GX, 1AB, 1FT, and 3AJ.

The writer is due to commence six months' furlough as from January 7, 1935, and expects to while away the time on an extended motor tour of VK2, 3, 4, and 5. A qrp portable under the sign XVK3RJ will accompany, and reports and QSO's will be welcomed. As many ham shacks as possible will be visited, and the tentative itinerary is as under:—

January—Melbourne to Adelaide, via main route, returning via Western District.

February—Tallangatta, Albury, and Goulburn Valley Districts.

March—Warburton, Alexandra, and Mansfield District.

April—Gippsland, Omeo, and Bright District.

May - June — Sydney, via Princes Highway, Newcastle, Northern Rivers, Brisbane, Townsville, Cairns, and return from Sydney, via South Coast.

June - July — Bendigo, Ballarat and District.

As the main objects of the trip are fishing and recuperation from the multitudinous tests of the past year, the dope on "prolific" fish streams, and the ruses employed in the capture of the denizens will be welcomed. The work of the QSL Bureau will be carried on as usual.

The number of VK7 stations interested in the 6-point relay could be

counted on the thumbs of one hand, while the interested parties in VK5 and VK6 constituted two in each of these States. It must be disappointing to F.H.Q. to organise a test, and meet with such a poor response.

Why did F.H.Q. depart from the set rules of the last QRP test, and adopt an illegal basis for the distribution of the points. This illegal act wrongfully gave VK4 the winning points to the disadvantage of VK3. The VK3 division has been asked several times to move in rectifying the matter, as once rules are laid down for any test they cannot be broken even by F.H.Q. This may be one reason for the poor entry in the 6-point relay test.

(The controlling and unavoidable condition is that the judge's decision is final.—Ed.)

## BOOKS REVIEWED.

By the Technical Editor.

(Recent import's of McGills Agency, Elizabeth Street, Melbourne.

Theory of Thermionic Vacuum Tubes, by E. Leon Chaffee, Ph.D.—This excellent text book might well serve as a reference book for those who keenly follow the latest developments of vacuum tube theories, as it is based on the author's lecture notes given during a course on this subject at the Harvard University. Commencing with the elementary principles of molecules, atoms, etc., he carries the subject through well-defined chapters dealing fully with diodes, triodes, up to the latest multi-grid tubes, explaining their operation in clear theoretical phraseology. This book has much to be recommended to the advanced experimenter. Price, 49/6.

Electron Tubes in Industry, by Keith Henney, Associate Editor, Electronics.—The experimenter who carries his electrical knowledge into industrial fields and applies automatic electrical devices to machinery, etc., will be particularly interested in this publication. A brief theory, and the construction of thermionic tubes of the amplifier, gaseous, and cathode ray type, is treated in the earlier chapters. The author delves well into the uses and application of photo-electric cells in industry, and makes it clear that such tubes are indispensable in modern works. Many ingenious units are described, such as: humidity and temperature controls, color measurement control, recording photometers, ultra micrometers, etc., etc. A book certainly of interest to the industrial world. Price, 39/6.



## Divisional Notes

### Association of Radio Amateurs (N.S.W.).

#### HAM DOINGS. By 2HZ.

The Interzone Contest run by the A.R.A. was fairly successful, although the number of entrants was not up to expectations.

The entrants, on the whole, vowed they had a good time, and the traffic experience was beneficial, and after all that is all that matters.

It is believed that 2KR will be the winner and 2NP second, although that position may be reversed as 2NP's score for the first week-end was fairly close to 2KR's full score. 2BP will be well up, as will 2LQ, 2FQ, 2OU, and others.

The agenda for the next Federal Convention has been discussed very fully amongst the members, and some of the suggestions, if followed, should be a success. 2FQ will possibly accompany 2HZ to Hobart and the Convention as a second A.R.A. delegate to the Convention. They will be coming back via Melbourne, and hope to meet many of the VIM gang.

ZEIJC has been a visitor in Sydney, and is a wireless operator aboard the "Cathay." He visited the A.W.A. transmitting centre at Pennant Hills, and the shacks of 2HG, 2LZ, 2HY, 2BA, 2DR, and 2HZ. He was shown round with the aid of Bill Clive's car. Bill is a well-known Ham to be. ZL2KY is also staying in Sydney; but so far hasn't been able to get about very much. 2HY and 2LZ are still on 28 mc., recuperating after the strenuous Centenary Contest. 5FM will be over in Sydney shortly holidaying, and he and his wife will stop with 2DR.

2FQ lectured at the December meeting of the A.R.A. on Wave Motion, a continuation of a previous lecture on that subject by 2ZR.

The Council of the A.R.A. wish everyone the Compliments of the Season, and hope that Amateur Radio will continue to prosper. They also thank all the Radio Clubs and individuals who so kindly have supported them during the past year.

#### ZONE 2. ZO—2HV.

The following calls are those of all stations in Zone 2 up till October, 1934: 2HC, 2BE, 2KR, 2CR, 2KN, 2WT, 2ZP, 2ZH, 2UR, 2RV, 2NF, 2JF, 2NA, 2HJ, and 2HV.

2NF is not on yet, but expects to be on with crystal very soon.

2UR and 2NA are listed among the absentees.

No news to hand on the doings of 2WT yet, although he is expected to be on now that shearing has finished at Tenterfield.

2HC-2BE inactive at present. Must be fumigating time at Quirindi again, Ray, or possibly the typewriter has been working overtime with BERU business.

Arthur of 2ZP recently went back to VK4—after calling CQ. Evidently the receiver at 2ZP is none too good, as six Americans were heard answering his call.

Ron of 2RV is giving MOPA a go after having tried several self-excited rigs.

2KN has not been heard for some time now. Possibly Eddie is on a vacation at Spring Ridge.

Mac, of 2ZH, has been very busy, completely rebuilding B class station 2MO, and has not had time to put his transmitter on the air since leaving Sydney.

The low power merchant, Cess, of 2KR, has hopes that Gunnedah will have AC ere 1934 passes.

2HJ is a new one at Quirindi, and has not been heard at 2HV yet.

2JF is, as usual, inactive.

2CR has been confined to 80 metres, as he has no coils wound for the other amateur bands for the four stage rig; 80 certainly doesn't sound too good at this time of the year, Lionel.

2HV spent the first two years chasing DX, and gave it up as a bad job. A new antenna was constructed lately, however, and the first month yielded eleven countries on 40 metres with 8 watts.

Cess and his 3 watts are doing great work for Zone 2 in the contest, and if we don't win don't blame 2KR.

2HV, due to BCL's and skip, did not do too well during the contest, but had a great time with the second operator, Bill Picknell, originating 40 messages.

2RV and 2CR were the only other Zone 2 stations on during the contest, and, according to reports, were not too successful.

Thanks to 2KR, Zone 2 was well represented, and it is to be hoped that Cess gets one of those tubes for his good work.

#### ZONE 5. ZO—VK2BP.

Zone 5 has been very quiet except for the continual barrage of QRN caused by the ever-prevalent thunder storms over the mountains. There are only four hams in this zone at any rate, so we cannot be expected to make a great deal of noise.

2RJ is heard once in a while on 80 mx, with a heavily modulated fone signal. 2BC has been heard once in twelve months, and Trevor, 2NS, finds time occasionally to have a short QSO.

It is particularly noticeable here that the usual summer conditions on the higher frequency bands are only conspicuous by their absence. As a rule, from the end of October to about Easter time, reliable communication can be kept with local stations on the 40 mx band; but so far this summer only one day has brought forth the desired effect; skip still being very much in evidence.

For weeks the usual easy contacts with the U.S.A. have been "non est," only an occasional R3 to R4 signal breaking through the static, whilst

# Amateur Radio

Europe and Asia have not been heard since the Centenary Contest.

2BP put in a couple of Sundays on the recent A.R.A. Zone Contest; but is disgusted with his poor showing, caused by the positively punk conditions over the last day. If conditions such as prevailed over the first Sunday had held up, another 300 points could have been raked in. Still it was practice for the six pointer.

2KR looks the winner of the A.R.A. test, with 2NP a close second. Great credit is due to 2KR for his excellent operating ability, and for the efficiency of his QRP station.

## WAVERLEY RADIO CLUB. (Affiliated with A.R.A.)

The following officers were elected at the half-yearly general meeting of members held in the club-rooms, 13 Macpherson Street, on Thursday, November 1:—

President, Mr. G. A. Wells; vice-president, Mr. H. F. Petersen (2HP); hon. secretary, Mr. W. Garland; asst. secretary, Mr. E. Johnson; treasurer, Mr. H. Martin (2FW); auditors, Messrs. Lusby (2WN) and Charles (2GC); technical committee, Messrs. Wells, Foley (2RQ), Lusby (2WN), Weston, and O'Brien (2OH); magazine committee, Messrs. Wells, Charles, Hainsworth, and O'Brien; publicity department, Mr. N. B. O'Brien (2OH).

The publicity officer desires to thank the members for his re-election to office, and also to congratulate the others on their various appointments, particularly Mr. Petersen, who has successfully graduated to the vice-presidency. So much for that. Hi!

Now that we are all set for another session of work, a little word about the club itself will not be amiss. The Waverley Radio Club was first formed away back in 1918, the days when King Spark reigned supreme. At that time composed of just a handful of enthusiastic members, it has since grown very rapidly, and is now one of the foremost amateur radio organisations in Sydney. The Waverley Club is very proud of its reputation as being the oldest club of its kind in Australia, a fact made possible only by the unstinted enthusiasm of former associates. We believe that at the present time no other club in this city is able to offer better facilities to young chaps desirous of becoming radio amateurs. We have trained many excellent operators in the past and intend to do so again in the future. We have the co-operation of the Amateur Radio Association of N.S.W., and the American Radio Relay League — that great organisation responsible for the growth of amateur radio all over the world. The Waverley Club have two transmitters in constant operation—one working on 40 metres for overseas two-way telegraphy communication, and the other on 240 metres operating each Sunday evening at 11 p.m., under the call sign VK2FW. The latter supplies programmes, which are available to regular listeners of the local stations.

## LAKEMBA RADIO CLUB. (Affiliated with A.R.A.) VK2LR.

The Lakemba Radio Club meets every second Tuesday at the clubrooms, 79 Park St., Canterbury. The meetings

for February and March will be on the 5th and 19th of both months. The club's membership is increasing rapidly, four new members, including three transmitting members, having been nominated over a period of two meeting nights. The lectures for last month included, "The Early Days of Radio," by 2JT, and "Direction Finding," by Mr. G. Brown. These proved of great interest.

A handsome cup has been received from Mr. Slade, 2SX, of Slade's Radio, for competition annually. The nature of the competition has yet to be determined. This makes two cups which will be competed for in two different competitions, the other cup having been donated by the "Chanex-Dulytic" firm last year.

On Sunday, December 2, the club "Social Picnic" was held at Kentucky. This was a great success, and was well attended by wives and young ladies. Tennis, cricket, and rowing were the chief sports.

As December 11 was the last meeting of the Old Year, a Club "Spread" was held immediately after the general meeting. Members brought along the necessary eats, while soft drinks, etc., were supplied by social fund. A gramophone amplifier provided music, and most members joined in community singing. Thanks is due to Mrs. Picknell for the excellent arrangement of the tables, and decoration of the clubrooms.

All particulars regarding the Lakemba Radio Club's activities will be supplied by the hon. secretary on request.

## MAROUBRA BAY GANG NOTES. A.R.A. (N.S.W.). ZO—VK2XV.

This last month has seen a falling-off of activity on 14 m.c., the Europeans being hard to raise until about 22.00 S.M.T.; but occasionally a few filtering through earlier. The first few weeks of this month saw the last of the South Americans for a while on this band; CX1CC reigned supreme for quite a while, and enabled a few VK's to obtain their WAS.

VK2XK seems to land a few as usual, and he landed YL2BB recently and had him QRX for VK2XV; but when the latter called he had disappeared. Too bad! Activity amongst the boys has dropped to a minimum lately, owing to a lot of night work and worry? Hi. VK2WJ still comes on regularly, although the last week or two haven't seen much of him. Whafor Jack? VK2FQ, Jack O'Dea, hasn't been heard for quite a while, although one night after obtaining a pick-up we had a recital of gramophone records for about two hours without an announcement. Must have been running it in, eh Jack? VK2XV has been on fairly consistently and managed to work a few SU6H6, VU2BL, and SPIDE being amongst the lucky ones. Incidentally, ZSIH has been coming through consistently for a few Sunday afternoons on 14 m.c. now and 2XU had him standing by for VK2XK and ZL3AJ, and a few more. VK2ZX is a new arrival out Maroubra district, and Ted's ambition is quality fone, and how. He confines his activities to the 7 m.c. and BCL band, although contemplating 14 m.c. opera-

tion in the near future. Ted recently did in four 50 watters all at once. Gosh, what a break!

Ten meter addicts have been having plenty of fun working several ZL's and interstate Hams, and the Maroubra gang are seriously thinking about giving it a go.

VK2HZ and VK2NO have both been QSO'ed from VK2XV. They were on 10 and 2XV on 20. They were listening on 10 and 2XV on 20. So much for harmonics and overtones.

Something really ought to be done about harmonic suppression. It's getting quite a problem nowadays, with more Hams and more QRM arriving on the air. It only takes a couple of locals on RAC to mess up reception on 14 m.c. if their harmonics are bad, together with key clix.

That's about the lot this month, gentlemen, and incidentally will take this opportunity of wishing you all a Merry Christmas, etc., and best of DX for 1935.

## NORTH SHORE ZONE. ZO—VK2DR.

The extraordinary WX in VK2 has prolonged the "DX," and has been very kind to 80 mx. Fone addicts are still up on 80 and still getting fb condx. Forty mx is good for Yanks, etc., in evenings, but is falling off in the early mornings.

2LZ, 2HY, 2HZ, 2BA, and Bill Clive (VK2Z6), escorted ZE1JC on a visit to 2DR a few nights ago. ZE1JC is mixed up with sparks on the "Cathay," which put to sea again yesterday. ZE1JC follows Ham activity closely when on ship and has some very interesting reports for the Hams he visits. Bill Clive distinguished himself by calling CQ for some time, and then deciding it was time to go home when he signed over. Dirty trick. I haven't had time to check up on missing gear yet. 2HZ left a good revolving pencil behind and will be extremely fortunate if he sees it again.

2AE must be rebuilding or something as I haven't heard him for some weeks. Maybe Dave is getting in a good silo full of sleep in preparation for the Fisk Contest **this month**.

2BA will be in port for about a month over Christmas, so DX on 20 mx will have a trying time. Bruce uses an 800 to squirt his sigs and a s.s. super to suck in the DX. 2BJ got himself tied up with calendar and missed the last A.R.A. meeting. Not like you, Keith OM. 2DA is active as usual with his 852 in xtal rig. 2DU is too busy with work and "Chev" car to find time for Ham radio. Dud will be back again soon, no doubt. 2EL has an 852 perking, but results so far are not up to expectations. Hope it motes better soon. Eric. 2HF has been on 40. Alan's sigs are fairly weak at my QRA owing to skip.

2HG has had a run of bad luck. Was turned out of shack to make room for new maid, and then both his sticks came down. Jack is battling hard and should be perking again before long. 2HY has been on 10 mx ever since the Cent. Test. Roy says that condx down there have been remarkable, as he's worked ZL3AJ, and VK's 3RJ, 3JJ, 3HK, 3WC, 3OF, 3FM, 7NC, 4BB, 2SA, 2NO, 2LZ, 2HZ, 2XY, 2YC, etc. 2HY also had 4-way QSO on 10 mx with

3JJ, 4BB, 2LZ, which lasted 2 hours before sigs faded. Has also heard VK6SA, R4-5, but so far ND. Well, condx must certainly be remarkable on that band. 2HY is using 59 tritet, on 80 and 40, 59 dbler to 20, link coupled to 210 p.a., which is doubling to 10 mx. Tried qualrupling to 10 mx in 2nd 59 but not enough drive for 210 as straight amplifier. 2HZ has been distributing his fragrance on 40 mx, 20 mx, and 10 mx, and is getting FB reports on all bands with new QRO tube. Bill worked 36 countries in a fortnight. 2HZ looks winsome in "Wireless Weekly" photo. 2IM's harmonic on 10 mx gives away the fact that Keith is on 40 mx with his T9 sig. 2IM was VK3FX, so he enjoys VK3 contacts. Heard 2JU on 40 late at night with fb T9 sig as usual. Was sorry to hear that 2KA is in hospital with appendicitis, but pleased to hear that Paul is now enjoying health and has turned BCL with the radio alongside his bed. 2KA has been finding plenty of bugs in a 2 tube SS super. 2KJ is very consistent lately. Works Yanks and handled plenty of traffic in the 10 point relay. 2KJ has nice xtal sig with slite trace of modulation. 2LZ is thoroughly fed up with DX, having shot his bolt in the Contest to the tune of a score of nearly 50,000! Con worked 70 Gs in the Contest. Congrats, Con OM. 2LZ uses MOPA with 59 osc. 46 dbler TCO4/10 dbler 800, and finally a TC1/75, with an input of about 25 watts! Now I ask you! 2LZ is browsing on 10 mx now, and has worked two ZL's, two VK7's, six VK3's (fone), two VK4's (fone), VK6SA, and appears to be leading in N.S.W. in 28 mc. RSGB Test. 2SS uses 45s in S.E. with very nice clean note on 40, and gets Ws, K6, etc., O.K.

2VQ appears to be on the air always. You take the bun, OM, for the most consistent station — VK's and ZL's all day, Ws, etc., all night, and Europeans early morning. Say, OM, are you a robot? (Hi.) 2YC is bucked by condx on 10 mx, but hasn't had much luck lately down there; however I have heard on good authority that while snooping about on 40 mx Jim WORKED A YANK. This sounds far too good to be true, and 2YC is to be congratulated on the infinite patience and care he displayed in landing that Yank. What if 'e doesn't QSL, Jim? 2WW is getting across to W in fine style. An F8 called him the other night, but QRM blotted him out. Better luck next time, OM. Nothing from Manly this month. Shake them up, George OM. 2VP is a budding Marconi. Listen to this one: 2VP was talking in his shack one night while QSO with 2VG, and 2VG noticed that 2VP's voice was modulating the signal. 2VG then asked 2VP to get closer to the rig and speak louder, and, lo and behold! the speech came through 100 per cent., the modulation being due to the vibration of the grid coil by the sound waves from 2VP's voice. The rig, of course, was self excited. A new era for the on-the-bread-line-ham mike-less fone outfit. (Hi.) I think that 2VP should get the bun for that easily.

Sorry to hear that a BCL station has swiped 2KB's call, I would like to convey the sympathy of the North Shore chaps to Eric (2BP), whose father passed away some weeks ago. Ian (2XC)

has obliged with his FB Mosman notes again. Here they are:—

2WW, at Crow's Nest, comparatively new Ham, whose QRA is rather too close to that power station signing 2LZ, is using an MOPA with 45 osc. and 46 pa, with about 40 watts input. Using a half wave zepp about 50 ft. high at one end. Has succeeded in working ZL, W, VP, VQ6, Ac8, KA, K6, all on 7 mc. At present he is enthusiastically hopping from band to band trying to knock up a score in the Zone Contest. He also is going to join the A.R.A. at an early date. 2VQ has rebuilt his rig, and is heard at all hours of the day and night with a XRAC note which seems to bring back the DX in fine style. 2SS is going to Nambucca Heads with a portable for Christmas. 2VG is trying out 20 mx, and finds that by keying the buffer stage he does not annoy his BCL friends so much.

As to the local boys: 2FM has been silent for a month, but this was due to his holidaying in Manly, where YL's are YL's (says Alex.). However, he has returned to the local village with renewed DX keenness. 2PV is now on again after being silent during Uni. exams. He is going great guns in the Zone Contest, and as he is Mosman's sole representative in this event he has the entire sympathy of the local gang. I for one stayed off all last week-end! 2HI has not been heard after a month's absence due to Uni. exams, but is determined to make up for lost time. Both 2XC and 2FM have ideas of rebuilding their rigs, but meanwhile indulge in long rag chews, both having found that local rag chewing offers more scope than DX hunting. Thank you, Ian OM, for that lot. And also thank you, Roy (2HY) for the lots of news you sent me as usual.

Pete (5FM) and Mrs. 5FM are paying me a visit in a few days. Whacko. The 6 point contest starts to-night, and 2YA will be arriving soon to give me a hand with a message or two. 2HZ went on 40 mx recently, worked about three Europeans straight off the handle, then hopped off down to 10 mx, grumbling about the punk condx on 40! Fair go, Bill. The Ed. of this mag. is asking for station descriptions. I hear some red hot ones from those unfortunate Hams who have obstinate rigs, but I'm afraid they are unprintable! As I will be at the seaside all January, the next lot of notes will sure be QRP.

## ZONE 8. ZO—VK2OJ.

Owing to altered QRA's and QRL this zone was not so well represented as I would have liked in the recent inter-zone relay contest. Intentions were good, but the happenings were unforeseen. 2YI was transferred to Girral, where he will supervise wheat weighing for a few months. The importance of his transfer, however, is that he will be second op. at 2FI. He is a force to reckon with. Athol thought Harry was going lion hunting when he left here with a fresh coat of white paint (or shoe cleaner) on that jungle helmet, and a Monopole Midget. Hi?

2QD gone to Vim working at Eclipse Radio. We were sorry to hear of Hilton's trouble after reaching Vim, when his cousin, Bert Davies, was electrocuted during recent storms.

2QE now on radio service work and more QRL than previously.

3EG has new rig going, and just landed a brand new 203a. Hi? Intends adding this to present 3-stage transmitter. There are no other Hams in Tallangatta. Hi?

A new antenna going nicely at 2OJ has 3-wire top and likes DX.

Guess that's all for this year, gang, so wish all plenty of DX and good-luck in the new one.

## VICTORIAN DIVISION. KEY SECTION NOTES.

By PETER H. ADAMS (VK3PX).

The Key Section meeting was held at the Institute Rooms on December 4, at 8 p.m. The chair was occupied by 3OX, and 30 members were present. The president complained about the poor attendance of Key Section members at the combined general meeting in November, and on a show of hands it was discovered that hardly any members had received notification that the meeting was to take place. This was due to the fact that the announcement had been made only at the previous general meeting, and at the phone section meeting. The secretary raised the point that it would be desirable to have, say, the president of the Key Section, an ex-officio member of council, so that the section could be kept in closer touch with the doings of council. However, after some discussion, to which 3UK, 3KN, and 3TH contributed, it was decided that matters could be quite satisfactorily arranged if there were close co-operation between the council representative (3KN) and the president and secretary of the Key Section. After QSL cards had been distributed by 3RJ, 3TH reminded members that the annual Federal Convention took place in Tasmania in January, and suggested that any matter to be discussed at the convention should be brought up as soon as possible. 3ML read the agenda as it stood at present, and 3MR mentioned that it would be desirable at the convention to get the new R.S.T. system of reporting signals officially recognised by the W.I.A. 3BQ suggested that anyone desirous of getting a rough check on the positions of the ten metre band should bring along to the next meeting an absorption wavemeter using a solidly made variable condenser, and a two-turn coil with a pea lamp in series. He promised to bring along a ten metre oscillator and calibrate these wave meters from it. Owing to the holidays, the next meeting will be held at the Institute Rooms on Thursday, January 10, at 8 p.m. At the conclusion of general business a debate was held, in which 3BQ, 3PX, 3ML, 3UK, 3JO, and 3RJ took part. The first three affirmed that it was desirable to restrict newly licensed amateurs for a probationary period. 3KN acted as adjudicator, and ably summed up the points made by the speakers, and the decision, by public vote, was almost unanimously against restriction.

3JJ has been trying multi-way contacts. The best so far is a five-way QSO with VP5PZ, VU2BL, SU6HL, and W8CRA, and finds 14 mc. better now than during last four years. 3OF, after listening throughout the year to com-

mercial harmonics on 28 mc. claims to have heard more signals during the last month than during the last six years. 3JO, also on 28 mc. 3OJ busy rebuilding and devising schemes for prevention of QRM from 3JO. VP5PZ's ambition is to have a WAC QSO party. 3WQ is rejoicing—he worked a ZL4. 3DP has scrapped the MOPA, and is building a 3-stage crystal rig. 3BJ spent his holidays in VK2, and met some R9YL's with 2OH. 3YO is rebuilding all gear and intends to give 14 mc. a fly. 3RS is still working on 14 mc. and 56 mc. with 3KQ. 3WY had his big stick blown down during the recent storm. 3OC is on again after a prolonged absence. 3YK appeared at a meeting again. His activities are confined to R.A.A.F. WR work. 3DT is still building new gear. 3DM's main interest is audio amplifiers, but hopes to be on the higher frequencies shortly. 3PX's YL has gone to Sydney, so he hopes to have more time for radio now. Anyone having interesting dope for this Section's notes, please 'phone 3PX at Windsor 3612 at night, or during the day at Superheterodynes Pty. Ltd., St. Kilda.

## VKS PHONE SECTION NOTES.

By J. R. KLING (3JB).

The last meeting was a combined meeting of the Phone Section and the Key Section, and there was a fair attendance. Mr. W. Gronow and Mr. G. Thompson acted as chairman alternately, conducting the business of the Sections, and various discussions and explanations took place as to the running of the Sections.

The following transmitting members of the Phone Section were present:—3SB, 3CB, 3DH, 3JB, 3CR, 3RO, 3RI, 3JR, 3FW, 3XJ, 3AM, 3OY, 3OV, 3ZO, 3PA, 3XL, 3MK, 3HF, 3TH, 3BY, 3GK, 3FY, 3LN, 3KE, 3LM, 3BT, and Messrs. Kerley, Manning, Lahiff, and Richardson of the Allocations Committee.

The Publicity Band Crystals were all put into the "pool," and after the allocations were read out were distributed to the various stations allocated positions on the band.

Mr. Thompson referred to the order of merit for the phone transmissions during the month, and mentioned the fact that the stations were all doing good work, as the percentages were all high, and very little difference between the top and bottom stations, as all the other stations were very close together.

## PERSONAL PARS. FROM THE PHONE SECTION.

3LU has been off for a while owing to one of his "big" tubes going west, but we hope to see him on again soon.

3JB has been off once or twice as he had the bad luck to get an infection in the eye, but hopes to be O.K. again soon.

3AM has been doing well lately with good programmes.

3CB still does the afternoon session with plenty of pep.

3PA is pumping out fine stuff with Class "B" still.

3DH has been rebroadcasting 3FW, and it has been coming over O.K.

3FY has some early rising operators, as they have been heard on very early Sunday mornings.

3HK still has plenty of kick, and must be modulating deeply.

3ZO gets out up the bush O.K. according to country listeners.

## SHORT WAVE NOTES— -VK3XJ.

The proposed syllabus which was to be published in this issue will be held over until the February issue owing to this group being compelled to change the night of meeting.

The first meeting in the New Year will be held on the second Wednesday as usual, 9th January, 1935, at which it is to be decided which night will be used for future meetings. All members of this Group are urged to make every effort possible to be in attendance on the 9th, and discuss this matter. GANG, ROLL UP!

From observations already taken on the signals from the German Short-wave Stations D.J.D. and DJN much useful data has been obtained, and, judging from the signal strength of these stations, it appears that they will be of 100 per cent. entertainment value as well as very useful for the collection of technical data on the behaviour of signals.

An interesting and educational address on "Induction on Telegraph Circuits, and methods used to remedy same" was delivered by Mr. H. Ferbrache at our meetings on December 12, 1934.

Mr. W. G. Sones is the lecturer on January 9, 1935, and his subject is "Frequency Measurements."

## MALLEE AND NORTHERN NOTES.

By 3WE.

During the last month QRN has been very bad up here, while the local QRM has made one feel like bombing our local D.C. town supply (for full description apply VK3TH). The latest source of annoyance is that caused by the dust storms—sounds like tearing calico, slowly and continuously. 20 metres seems positively dead here, although I understand 3KR worked VU and a few W's during the month. 40 metres, when QRN allows, seems somewhat better, but most erratic. At times you can hear nearly all countries, with a fair number of VK's, ZL, W, and K on phone; but a few minutes later the band just "blacks out." 80 metres, despite all its seasonal drawbacks, seems still the most active band, especially for local working. All VK and ZL, and occasionally W and K on phone, can still be heard when conditions permit. The "chain" gang still continue their Sunday activities, but sigs have fallen off all round. 3WE has boosted the rig by adding a buffer (push pull), making 3 stages P.P. from local D.C.; but, owing to conditions, very little has yet been done. Most work during month has been done with 3GM, 3ZL, 3ZK, 3PY, 3WN, 3CE, 3EP, 5ZC, 5CR, 5IV, 3CH, and 2HU. 3WN is taking a portable away during the holidays, and wants the gang to keep a look-out for him. Some of the Wagga gang have been badly bitten by the 5 metre bug—heard 2YW on 80 metres working portable 2YW on 5 metres.

## NORTH-EASTERN NOTES.

By VK3EG.

With the advent of summer, somewhat similar conditions to last year

have manifested themselves; on 7 mc. strong local signals are causing terrific QRM for the early evening DX fiends, and what DX is on has not been very remarkable.

The early mornings are much more productive, and interesting contacts are possible. ZE1JO is heard quite regularly round 3 a.m., but this is the only South African heard and worked here. Considering he is only using 15 watts to a 245, and often reaches R5/7 QSB, it's a wonder we don't hear more from that direction. SU6HL has been worked round midnight, and GFYV, the motor yacht "Imperial" of Imperial Airways Ltd., Crete, Greece, asks that VK Hams watch for him. He is T9CC on 7060 kc. around 14.30 G.H.T. Other countries workable in the early a.m. up to 3 a.m. at present, otherwise rarely heard, are ET, CR8, V8, VS7, FM4.

Conditions on 20 meters for my location are unencouraging. VK3, VK5, can be heard working VS7, W, CE, CX, VP5, G and D up till 2 a.m. here, and outside of a stray ZS nothing can be heard here except R Max signals from 3OW, 3MR, 5SU, 5XU, etc.

80 mx. is on the wane, and ole man static is in full force there most nights.

Regarding 10 mx. I have listened on this band when conditions of 20 mx. have produced extremely loud local sigs., but to date nothing has been heard except a couple of signals so weak as to be unreadable.

I hope to be on this band myself in the early part of New Year.

The new rig here since the old one was destroyed by lightning is a five-stager, using 47 co. 47 dblr. 46 buffer, parallel 210's amp. and 203A final.

VK2OJ has been working on impedance matched antennae, should have some interesting dope to hand out soon.

Of the VIS sigs., 2VQ and 2OH are the best here, with terrific wallop day and night, while 5LD has at last completed tests and the DX is responding nicely.

A station that does some remarkable work is VK3PG, who has WAC with exception of Africa on 4 watts. How's that for you QRO fiends?

Cheerio and plenty of new toobs for the New Year.

## WESTERN DISTRICT NOTES. 3HG-30W.

In the past month the most noticeable thing has been the excellent conditions on 7 mc. for working W and other DX to the north. Signals from KA, OM, and VS6 are just like locals in the evenings, and reports received are very good. 14 mc. has been rather poor lately, but with some good patches when the Europeans and Africans come through. Very little DX from the east is heard here at all on this band, South Americans being well nigh absent, although other stations can be heard working them. On 3.5 mc. QRN holds sway, but occasionally it lessens, and lots of W and VE stations can be heard, but not raised from here, even though they call DX.

Of the gang's activities very little can be said. Most stations seem to concentrate on 14 mc. 3KX, 3GQ, 3BW, and 3HL heard on now and again. 3HM also welcomed back on 7 mc. 3PG still working DX with his low power, and chasing Africans for W.A.C. He has

been heard in Africa on at least three occasions, but as yet no 100 per cent. QSO has been managed. 3NN has started up on Sunday morning schedules with 3KR again. 3OW rebuilding and rather inactive. 3HG working a little DX, mainly on 7 mc., which is the favorite band for DX here.

## QUEENSLAND DIVISION NOTES.

At the December monthly meeting of the Queensland Division, held on Friday 7th, at headquarters, Heindorff House, Queen Street, a lecture dealing with "Modern Receiver Design" was delivered to a fair attendance of members by Mr. D. Laws, 4DR. Great interest was displayed on this subject by many members, and the talk was voted an excellent one.

The student classes terminated for 1934 on December 22, and for morse instruction will reopen early in January, while for technical classes instruction begins the first week in March. Intending students should note this fact, the idea being to provide sufficient time in which to form a complete class.

The Technical Development Section has been very active in connection with 56 mc. work, and in all there are now seven or eight receivers of various designs round Brisbane. Two-way working has taken place between 4HR and 4WI on about a dozen occasions quite reliably. During a recent test of 25 miles across the Bay, four transmitters could be heard on this frequency, although the results at the distant receiving point were nil. A directional aerial system "AR LA" QST was tried, and over a short distance a definite signal increase has been noted. Regular schedules are being planned on 56 mc. in the future.

Activity on 10 metres has suddenly sprung up. Among the active transmitters on this band are 4BB, 4XN, 4GK, 4US, and 4WT. 4BB, we understand, is doing exceptionally well, and up to the time of writing has had 66 contacts since early November, and his points for R.S.G.B. Contest total 276 to date.

4EN and 4WH, of Longreach, heard on recently probably getting ready for the 6 point relay.

4EI, consistent as ever, lands the DX, and seems to be able to QSO anything that can be heard, and sometimes that which can't be heard here. 4LM back from Sydney, and on three months' holidays after dissecting frogs, etc., and is now giving electron coupled oscillators a flutter, using a pair of 59's in push pull TNT.

4GA, of Mt. Nebo, is shifting QRA to Quamby, just outside Cloncurry, and is now looking out for a motor generator set to take away with him for some QRO gear. 4UU and 4US were on during the early stages of the 6 point relay, both with RAC notes.

4WT has been trying out a big "TOOB," as final amp., but has been wondering how the RF escaped from the grid circuit. 4ES keeps a weekly schedule with 4AW, and finds it handy when skip affects RAAF watches. 4JM has been busy of late, and not heard on his usual Sunday night fone yarns to 4AW and 4RY. QRN has been rather bad in VK4 of late, even on 40 metres, and we feel sure, if for that reason alone, the gang will welcome the winter months.

## SOUTH AUSTRALIA (VK5).

By ERIC HALLIDAY.

Summer conditions now exist in VK6, with the result that there is plenty of QRN on the higher wave bands.

On December 9 a picnic was held at Parafield aerodrome. Due to bad weather in the morning, the picnic proved to be almost a wash-out, only a very few members being present. Those who did go up had an FB time. 5GO, who happens to be man behind W.A. Airways at Parafield, lined out a couple of tennis courts inside the hangar, so most of the time was spent on the courts. Special thanks are due to 5GO for doing his part in trying to make a go of the picnic.

The Christmas general meeting was held on December 12. It consisted of a sit down supper, to which the 50 odd members present did full justice. The agenda for the Convention was discussed between mouthfuls of supper. Altogether, the evening proved to be a great success—such a success, in fact, that rumor has it that one party of diners did not get home until the wee, small hours of the morning.

The Technical Development Section has planned a busy year for 1935. 5WI will soon commence standard frequency transmissions on 7000 kc. and 7300 kc. The crystals to be used in these transmissions are being ground by 3BQ. It is also planned to put 5WI on 80 metre fone. This should assist the country members.

The T.D.S. will continue to give frequency checks on 40 m. on alternate Tuesday nights, between 1900 and 2000 (A.S.T.). The next night for checks is January 22. The checks are made on the institute's wavemeter, which has been calibrated from the P.M.G. Research Department's multivibrator.

5FM has been busy building up a high power rig. Has a couple of big tubes lying round the shack he wants to use. 5MW is still making a good job of his 200 m. transmissions. Ken. hopes to stage a comeback on 40 m. shortly. 5NR is another of the 200 m. "record grinders" who has found out that there is still plenty of fun on 40 m.

A new call on the air is 5XA. It belongs to Howard Stacey, 55 Gwynne Street, Fiole. Howard is using a p.p. T.N.T., with 245's, and a half-wave zepp on 40 m. Congratulations, o.m., on getting your call. 5JB, Jack Burgin, of Semaphore, has been heard on with 80 m fone. 5MY forsook his transmitter for a while recently, and went to Victor Harbor for his annual holidays. Harry has presented his QSL cards for his W.A.C. certificate.

5MD on 200 m. and 5BR on 80 m. have a long Q.S.O. every Sunday night, or, rather, Monday mornings. 5MD is the "super man" among VK5 hams. Can stay up all night on the transmitter, and then say he is not tired.

5LG has written, saying that he will be home from VK3 shortly. 5KL changed his Q.R.A., and was off the air for a few weeks until he could re-assemble his gear. 5RF has been heard on the air again more often now that the exam. for the second class is over, 5CR has been trying 80 m. fone, but, as yet, the quality is a bit rough.

## VK6 NOTES—By 6CP.

The activities of amateurs at present seem to be mostly on 10 mx. 6SA will deal with this band, so I will not make further reference.

The usual Eastern State signals are coming in on 40 metres, with static most nights very heavy, so bad in fact that a QSO is easily lost. I would like to inform the gang in VK6 that in future these notes must contain dope suitable for all our readers to enjoy, and that in future frivolities will not find space. A definite request to this effect has come from magazine headquarters.

At present, conditions on 40 metres are patchy for local work, owing to skip, but on a recent evening the skip lifted, and VK 6GS was worked. 6GS has been on the air for six months, and this was his first VK6 QSO.

A peculiar feature of the evening was that Eastern Staters were only moderate. The date was November 26th, so others can compare their logs. So great was the local strength of signals that 6SA, who is normally R6, rose to blocking point of my receiver, while my sigs. rose from R5 to R9, the distance between stations being about six miles. Overseas stations heard and worked, with difficulty in the evenings, are K6LBB, KALAN, VU2FY, and occasional W and J and KAS very weak.

The active gang at present are MN, SA, RA, GS, RW, KB, CX, CY, and CP.

## FIELD DAY.

VK6 (10 meter).

On Sunday, December 18, one of the most successful field days took place that has ever occurred in VK6.

Nine car-loads of Hams and YL's, as well as YF's, set out to look for a hidden 10 mx. xmitter in the vicinity of National Park. The outing was the work of the newly formed social committee. Having deposited 6CP at the starting point, 6SA set about hiding his portable rig in readiness to send out signals, both Morse and phone. A well thought out plan and a circuitous route brought the transmitter almost abreast of the starting point, with a fairly high hill in between, the distance being about half a mile straight line.

At ten-thirty the first car arrived, and, having been checked in by the starter, got busy with their receiver. The rest of the gang soon arrived, and then the fun began. No signals could be heard at the starting point, so the hill must have been doing its work. Some of the gang had definite bearings 3 miles from the transmitter, and gradually working back plotted a definite chart only to get tied up when they thought they were on top of the plant.

At last the canny Scot, 6MN, decided to spend a bob and enter the park to take a bearing on the other side of the hill, but as time was drawing near to a close he was unable to complete his chart. With a few more minutes to spare he and BN must have roped in the game.

Points were given for the best and most reliable bearings indicated on the charts and 6MN won a handsome cup with 13 points followed by BN and LJ with 10 points each.

The whole gang then adjourned to

the swimming pool, where the ladies soon prepared a sumptuous feast, after which SA got busy and after examining receivers and charts, declared MN the winner of the contest.

In presenting the trophy, Mr. Hamlin, "Lecturer in Radio Physics at the University" eulogised the fine direction finding effects of the amateurs.

To use his own words, he said, "Gentleman you indeed have achieved something worth while, direction finding on 10 mx. with such unconventional gear too!" The trophy was handed over to MN to the accompanying clicks of numerous cameras. The receivers used consisted mostly of shielded Schnell circuits with single wire aerials about 10 ft. long. A couple of super regenerative rigs were also in evidence. Those attending and the points won are given hereunder.

MN and JS with YF and YL ..	13
BN and BB .. .. .	10
LJ and his YL assistant .. . . .	10
MY and JW and ladies .. . . .	7
PK and AC .. . . .	7
CX, KR, KB, with YFs and YLs	7
RL and J. Gollard .. . . .	6
CB and mixed party arrived just in time to be in at the kill.	

### VK7 NOTES.—By 7PA.

(Hon. Sec., Mr. H. M. Moorhouse,  
95 Arthur St., N. Hobart.)

A very small gathering represented the monthly meeting for November.

Activities on the 40 metre band are fairly regular, and a fair amount of early morning DX is worked.

7JB does quite a bit in this early a.m. work, and has his usual fb. note.

7KV has his 800 perking up pretty well now, and is getting quite a good note at last, with good, clean signal. He tells me that 800's are ——— to neutralise—that right, KV?

7BJ does his share of DX. each morning, when conditions are favorable. Says it keeps him occupied. He has a good note, but some fb. clicks.

7JH is always active, but his outfit, somehow, doesn't seem to get out as it should. He has been doing some aerial shifting for directive work.

7AR is re-building his outfit, and should be able to get the "goods" this time with "Tatts" behind him. What say Carl?

7PA has done a bit of DX. work lately with the rest, and has had good reports.

7NC, our UHF. member, had his first contact with ZL on 10 metres late last month, and worked in a multi-qso—seven-way, I believe, from memory. This is the first ZL contact for VK7 on 10 metres.

The 200-metre gang carries on each Sunday, as usual, and there is very little to be said on this section. All manage to find enough canned music to keep up a programme, which, in most cases, gets pretty favorable comment.

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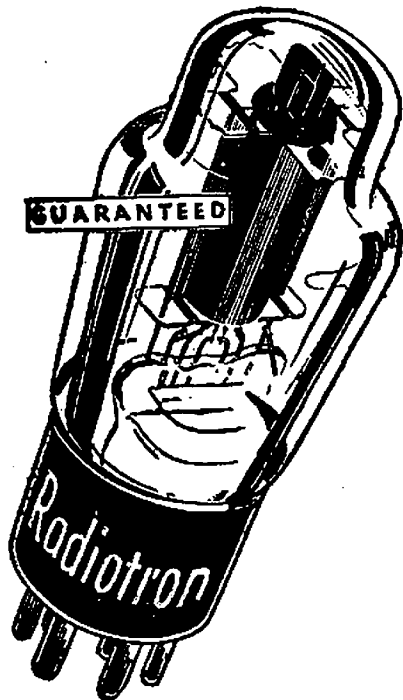
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# R.A.A.F. Wireless Reserve Notes

## 4th DISTRICT NOTE.

The Sunday morning watch on 7317 k/cs at 0900 hours is well observed by members in VMD. At present VMD1 activity is greater than that of VMD2. The chief reason for VMD2 inactivity being adverse conditions between members' stations. 4B1 and 4B3 find it difficult to contact one another on 7317 k/cs. 4B2 is not at home during week-ends, so cannot keep watch. 4A4 sets good example to members of his section in the use of procedure, and puts out a good signal. He is applying for three months' leave, owing to other activities and business at present. 4A6 put out a good signal, and keeps regular watches. 4B1 has been advised of his transfer to north west of Cloncurry. 4Z2 assists D/C in contacting member stations. A general listening time has been set aside for any urgent traffic at 1900 hours on 7317 kcs. VMD activities will cease from 17/12 till 6/1, and watches recommence on 18/1.

## 5th DISTRICT NOTES.

5th district watches will recommence on Sunday, January 6th, at 0900 on 7317 KC's. Members not having a calibration for this frequency can obtain one from 5ZI at any time by arranging a schedule.

Applications for membership have been received from 5PB and 5XR. This is very pleasing as it will greatly strengthen the reserve in the south eastern district, and may serve as a connecting link with members in the western districts of Victoria.

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Notes of activities reaching this headquarters later than the 18th of the month will NOT be published in future.

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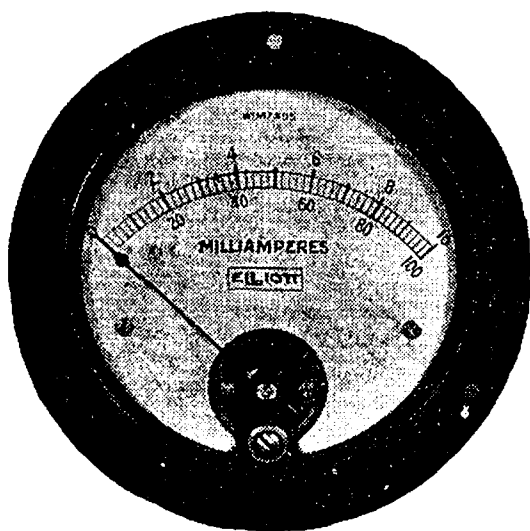
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PRICE  
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**FEBRUARY, 1935**

## HICKOK METERS

Veall's, Melbourne, wish to advise all amateurs that they have now been appointed Sole Distributors for Hickok Meters. As the above are obtainable in a very wide range at moderate prices, these should prove of great interest to amateurs and radio constructors. Veall's mail order department will be pleased to supply any further particulars or advice should same be required.

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# AMATEUR RADIO

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## Editorial . . . .

It is great fun turning out a magazine. From the 18th of one month, when the copy goes to press, it seems like a few days till the 18th of the next month. We all know that time passes quickest when we have lots to do, and many things to worry our minds; and our little worries, although they seem naught to many, certainly occupy our time. Do you know that we sometimes have to squeeze articles from chaps, so that you will have a "presentable" magazine? When "Amateur Radio" was born, we had a really fat technical file, and a fair sprinkling of station descriptions; but now that file is flat, practically, and one of our "little" worries is to get that file filled. Is THAT what you would expect from your brother hams if YOU were running this mag.? Wouldn't you feel that it wouldn't take a minute to run off a station description, or some technical article, and send it along? Perhaps you would learn to realise, just as we have, that many hams are modest—too modest, in fact. They are by no means to be blamed for that, of course. It is only natural that a few are inclined towards writing, and many others, although they would like to do so, just

feel that they have not the ability, or, perhaps, feel that their grammar or technical details might not be quite correct. The dyed-in-the-wool ham is possibly rather sensitive towards displaying a little of his knowledge for fear that some person, armed with a slide rule and a ream of paper, may slay him in his sleep for his actions. For heaven's sake rid yourself of that idea. "Amateur Radio" has set itself a standard to live up to, and naturally all the stuff that goes into it must be good. If a contribution is not up to scratch, we do our best to get it into shape, or make suggestions to the author; then, 99 cases out of 100, it is published. We want constructional articles more than ever. You could write up your transmitter, receiver, modulation equipment, or whatever you desire, and call it anything you like. Even if your article was of great interest to only one man, then just think what you have done for him, and amateur radio all round. We all know that old saying:—"There are two reasons why a chap is in the amateur radio game: firstly, for what he can get out of it; and secondly, for what he can put into it."

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## Lattice Masts

By Frank Brandon, VK5FB.

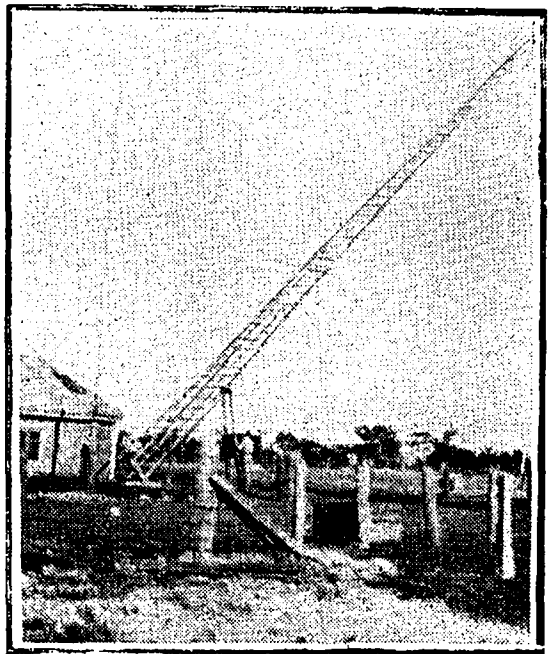
Not very much is written these days on the construction of masts for amateur use, in spite of the fact that a good high aerial is certainly of no secondary importance. Perhaps, if more spare cash were spent on a decent mast, less would be required at the RF end of the works. The higher and better the aerial, the less watts one needs to get that precious DX. Several minor considerations, such as expense, space available, and ability to erect a man-sized pole, may often frighten one away from the trying to realise a dream of possessing a half wave vertical sky wire. This article will show that none of these hazards really exist. The mast at VK5FB is 104 feet high, and has withstood very severe gales during the past few years.

Although the details here are for this 104 footer, the main idea of the article is to show the construction of lattice masts, whether they be 10 or 100 feet high.

The timber used in our mast consisted of 8 pieces of 2 in. x 2 in. oregon 40 feet long, and 4 pieces of 1½ in. x 1½ in. oregon 24 feet long. This material formed the uprights—the 1½ x 1½ section extended from the 80 to the 104 ft. mark. Several hundred feet of 1 in. x 1 in. oregon were used as the stays or struts. The cross arm consists of 2 pieces of 3 in. x 1 in. oregon 16 ft. long, with ends bolted together, and the middle opened up and held apart by several pieces of the 1 in. x 1 in. timber.

The whole mast was constructed on the ground by laying the timber out on a level patch. All the joints of the uprights were made by butting two 40 ft. lengths of 2 in. x 2 in. together, and placing an 18 in. x 2 in. x ½ in. steel plate each side of the timber, and bolting through with ½ in. bolts. When this was completed, a 24 ft. length of 1½ in. x 1½ in. was placed on the end, and bolted into position in the same manner. After these operations were repeated four times, the four uprights were ready

to be stayed or strutted together; so a start was made on one side. Two of the 104 ft. lengths were laid out on the ground, and spaced 26 inches apart at the bottom end, and 4 inches apart of the other, which was to be the top of the mast. Then straps of

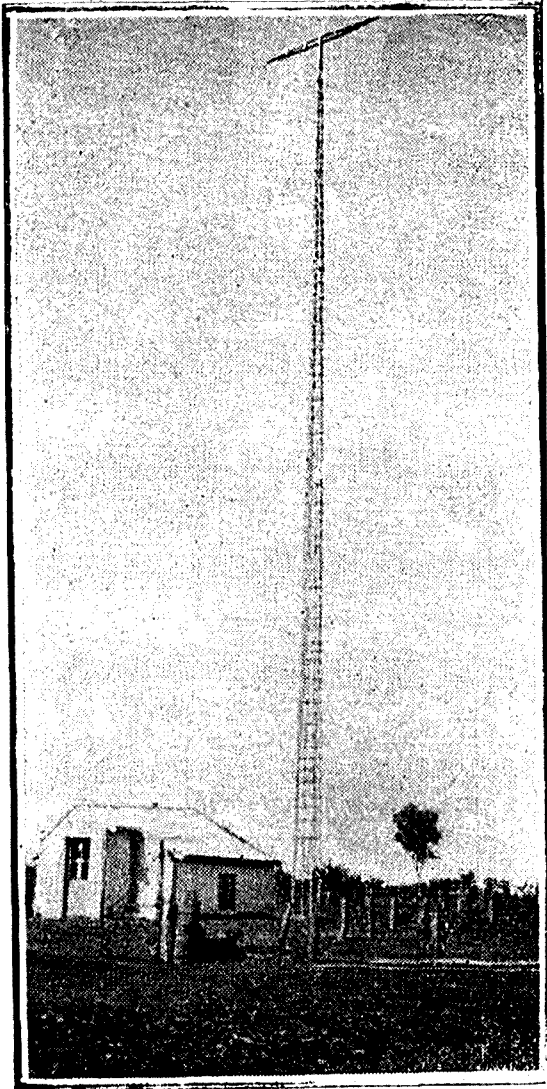


Raising the Mast

the 1 in. x 1 in. timber were nailed across at intervals of 2 feet over the entire length, and then a second stay was nailed angle-wise, as from the left of number 1 cross stay to the right of number 2 stay, and from the right of number 2 to the left of number 3 stay, and so on right to the other end.

The other side was constructed in a similar manner, and then the two sides were stood on their edges, with one end spaced 26 in. apart, and the other the usual 4 in., and then the staying process followed first on one side, and then, after temporarily nailing struts across the side on the ground, the whole job was turned upside down in order to complete the fourth side. A solid block of wood was then inserted into the small, or top end, and all the timbers were firmly bolted together. This is very im-

portant, as it makes it practically impossible for such a mast to be bent. The cross arm was fastened by utilizing two steel plates, bent to right-angles, bolted and bracketed on. A pulley with cotton tape was fastened on each end of the 16 ft. cross arm, as well as down the centre of the mast.



**The Finished Job**

A light angle iron frame was next rivetted together for the base. This was hinged to anchors let in the concrete bed, on which the mast was to stand. The base frame consisted of angle iron extending up each leg of the mast a couple of feet, and terminating in a square frame, so as to give the legs extra strength during erection, and also to try and prevent the white ants from eating the legs away!

The work of erecting this mast was carried out by six men in as many minutes. Fig. 1 depicts the mast, "A,"

lying on the ground, with the base in position on the concrete bed base, "B". "C" and "D" indicate the ground level. Two wires are tied on the mast at some point fairly well up, as at "E". These are run down to, and tied tightly to, posts "F" and "G". These wires "EF" and "EG" must be pulled tight, and tied at the same distance above the ground, opposite one another, in line with the base of the mast. These wires are not touched again until the stick is safely in position. With these wires thus secured, all the energy can be spent in raising the stick by pushing up with ladders, etc. If the mast is a high one, the use of a jury mast is essential, and consists of a pole erected close to the butt of the mast. A "V" or "U" is formed on the top of this pole, and the ropes that are to be used to haul up the mast are passed through this "V" or "U," and when pulled by the men on the ground, they actually lift the mast. The back stays can be measured out and tied to prevent the mast going over past the vertical position. The side wires, "EF" and "EG," prevent the mast swinging around or yawing, which is a bad habit they have around the 45 degree mark! To find the length of any guy wire to the smallest part of an inch, the following trigonometrical formula can be used, and should save many worries of finding a deficiency of one foot when a 100 ft. stick is half way up!

$$\text{Length of guy} = \sqrt{A^2 + B^2}$$

where "A" equals the distance up the mast from the base to where the guy is to be affixed. "B" is the distance from the pole base to the stay post, measured along the ground.

For example: If the guy is to be taken from 80 feet up, and the stay post is 60 feet from the base of the pole, then the length of guy wire needed will be

$$\sqrt{(80)^2 + (60)^2} = \sqrt{6400 + 3600} = \sqrt{10,000} = 100 \text{ feet.}$$

With three sets of guys, this mast is very solid, and we often go up 90 feet or so to make observations!

# The 77 Tube in High Fidelity Speech Amplifier

By VK3ZX

To attain high fidelity telephony, the speech and gramophone amplifier must be of correct design. But to arrive at this end, expensive transformers and attenuators are usually necessary. The arrival of the 77 type tubes opened the field for a higher gain and better quality resistance coupled amplifier, the most attractive point being the low cost of material. The 77 tube is the 6-volt replica of the 57 tube,

## Fading and Mixing System.

The fader and mixer is quite original, and is very inexpensive to include. Fig. 2 shows the hook up. When the mike is in use, pot arm of R4 is turned to position A, with R5 at D. For pick-up use, R5 is turned to position C, and R4 to B. For mixing speech and music, adjust R4 and R5 to the position where the correct level of each is reached.

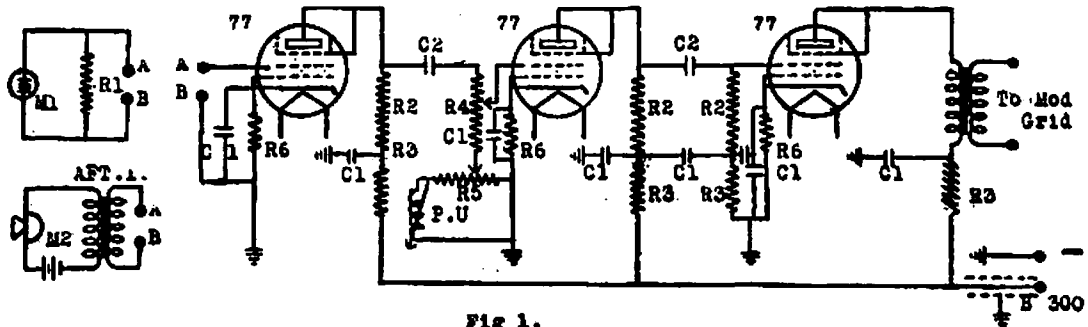


Fig 1.

- R1 5 megohms
- R2 100,000 ohm 1 watt
- R3 10,000 ohm 1 watt
- R4 100,000 ohm variable.
- R5 10,000 ohm do.
- R6 2000 ohm wire wound and adjustable

- C1 0.1 to 1 mfd.
- C2 2 mfd
- M1 crystal mike
- M2 carbon mike
- AFT1 Mike transformer
- IPT2 1 to 1 output transformer.

and when the screen grid is tied to the plate, and the suppressor to the cathode, you have a high a/u triode, with an amplification factor of approx. 19, and an impedance of 10,000

On account of the grid being brought out of the top of the valve envelope, trouble is brought to a minimum, and very short shielded leads can be run to the panel for mike and fader connections.

Photographs of the original amplifier are not included, as the same manufacture of parts may not be procurable. To reduce feed back troubles, complete shielding is essential. A very convenient method of assembly is to build the parts on a metal chassis of approx. 7 in. x 8 in. x 2 in., and slide it into a square aluminium can; the front of the can is covered with ebonite, on which the controls, switches, and terminals are mounted. The valves are shielded with cans, and all grid wires kept to the top section of the chassis.

The power supply should deliver from 300 to 350 volts, and should be placed at least 3 feet from the amplifier. Shielded wires on the power supply are essential.

Two types of mike connections are shown in Fig. 1. Connections are lettered.

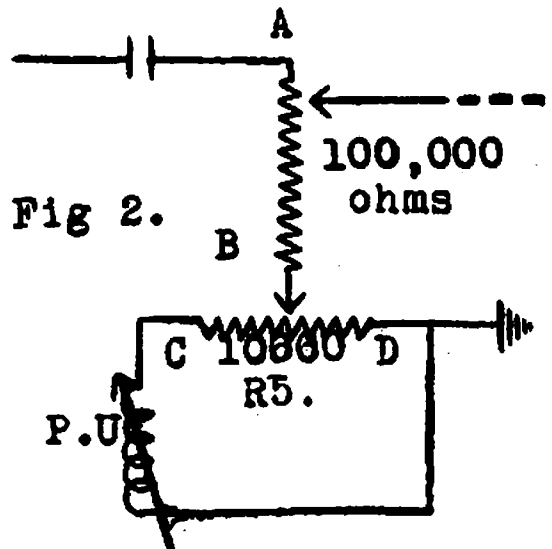


Fig 2.

## Station Description

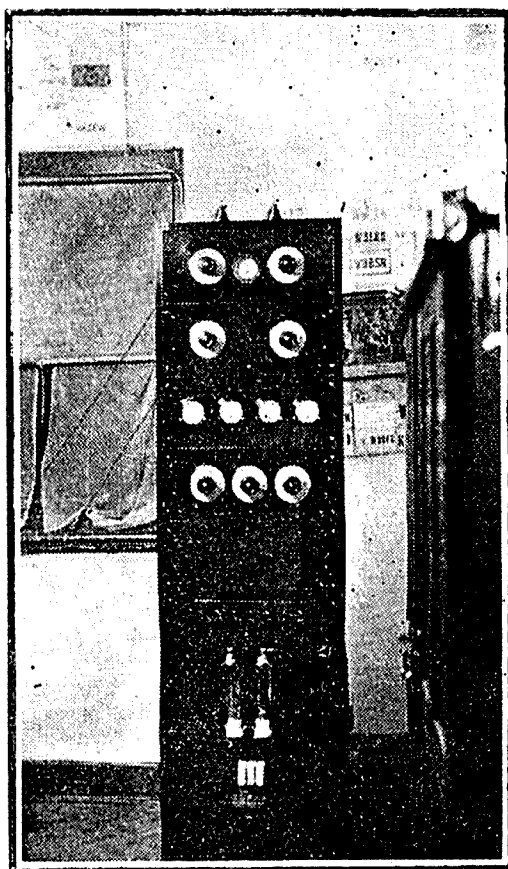
VK3ML.

Experimental work at this station dates back to 1921, in the days of crystal detectors, spark transmitters, and a few splashes of static. Since then, things have grown considerably, as everywhere else, until to-day the "works" consist of a 100 watt crystal-controlled transmitter and a single signal superhet receiver.

The transmitter has few unconventional gadgets, owing to some of the stunt circuits, such as the harmonic oscillator, link coupling, etc., having developed into more or less standard practice. Much work was done on a breadboard layout before the final effort, as shown in the photo., was decided upon. Three stages were incorporated in the relay rack job, the first being the crystal stage, using a Mazda AC/PEN as harmonic oscillator (which has given way to a type 42), two TCO4/10s in parallel as first amplifier, which in turn drive the QB2/75 as the link coupled final amplifier. Three power supplies are employed—a 400 volt unit rectified by a 280, a 700 volt pack using a 1072 fullwave tube, and an 1800 volt supply rectified by two 1762's, shown mounted on the lower front panel. All units are sufficiently smoothed with 8 microfarads each, and the necessary swinging chokes. Batteries are preferred as bias supply, in order to overcome voltage building-up difficulties, as in rectified bias supplies, and the misleading results therefrom. 'Phone has not been installed in the new transmitter, but plans are being drawn up for the incorporation of Class A prime modulation. With the three stages and the one 3.5 mc crystal, outputs from 100 to 150 watts can be obtained on frequencies from 3.5 to 28 mc.

Roughly describing the photo. of the transmitter, it will be observed that the two top dials and meter are the aerial tuning condensers and meter. The next panel lower down is the final amplifier stage with the grid and plate condenser dials in front. Four meters mounted on the middle

panel are the C.O., 1st amp. plate and final amp. grid, and plate current meters respectively. The two lower powered stages are tuned by the condensers appearing beneath the meters. The whole of the power supplies occupy the lowest and largest panel,



all being mounted on shelves behind. For mobility, the outfit is mounted on castors, and could be operated anywhere there is 200-240 volts A.C. to be had.

Practically every aerial invented has been tried, with varying success. It has been found that just about anything made of copper and suspended from the 40 foot poles will get through to U.S.A., owing to the station's locality being on the side of a hill that makes a perfect reflector for 7 mc. However, reliable contact has never been obtained with Europe with any type of aerial, and it looks as

Continued on page 14

# Fisk Trophy Competition

## RESULTS OF 6 POINT RELAY

The results of the third contest (six point relay) of the competition are shown by the tables below, and it will be seen that Victoria has regained the trophy from Queensland, after a close fight with South Australia.

The entries were not as numerous as was anticipated, probably because summer conditions are not popular for heavy operating periods. Several competitors commented unfavorably on the period chosen for the contest, but Federal Executive wish to point out that the rules governing the contests state that they must take place at intervals of about six months. The last contest (QRP) was held in June, and since then numerous requests were made for a relay contest, and although we knew unfavorable conditions would probably prevail it would be necessary for the contest to be held in mid-summer. With the BERU contest during February and ARRL during part of March, we would have to wait until April, which was considered too long.

Practically every entrant favorably commented upon the rules, and all agreed that they gave every State an equal chance. Although it was hard to complete the chain of six States, due to there being only a few Tasmanians working, the scarcity of numbers proved no handicap, as is indicated by South Australia taking second place, with practically two entrants.

The Federal prizes for the two best individual scores were won by VK5JA and VK5MH, who both scored exactly the same number of points—a thing unheard of previously in this type of contest. Great care was taken in checking these two scores, but a tie was the only possible verdict.

The condition of the logs showed some improvement, but several were very poorly compiled, which made the work of the judges very hard.

Despite the summer QRN, etc., the contest was a great success, and the leading stations at least showed that they could handle traffic in a capable manner in bad conditions, and after all we amateurs must operate our stations at all times.

As was previously mentioned, the rules appeared to give every satisfaction, the six point idea and limited number of the team making this relay contest one that can act as a model in future.

The aggregate points for the outright winning State were advanced a further stage, and show Victoria 14, South Australia 10, New South Wales 9, Queensland 7, Western Australia 2, Tasmania 2.

Totals of five leading stations (or up to that number) in each State:—

Victoria .. . . .	2206
South Australia .. . . .	2159
New South Wales .. . . .	1698
Western Australia .. . . .	1643
Queensland .. . . .	1401
Tasmania .. . . .	397

The leading ten stations of the Commonwealth:—

*VK5MH .. . . .	993
*VK5JA .. . . .	993
VK6SA .. . . .	787
VK3RJ .. . . .	745
VK6MN .. . . .	657
VK2BP .. . . .	620
VK3ZC .. . . .	601
VK4EI .. . . .	588
VK3GQ .. . . .	514
VK2KJ .. . . .	447

\* Tie.

Full scores of all competitors:—

Victoria—

VK3RJ .. . . .	745
VK3ZC .. . . .	601
VK3GQ .. . . .	514
VK3KO .. . . .	307
VK3HE .. . . .	39

South Australia—

VK5JA .. . . .	993
VK5MH .. . . .	993
VK5LD .. . . .	173

New South Wales—

VK2BP .. . . .	620
VK2KJ .. . . .	447
VK2OA .. . . .	276
VK2DR .. . . .	236
VK2YC .. . . .	119
VK2ZV .. . . .	97
VK2YB .. . . .	90
VK2XV .. . . .	57

Western Australia—

VK6SA .. . . .	787
VK6MN .. . . .	657
VK6FO .. . . .	199

Queensland—

VK4EI .. . . .	588
VK4AW .. . . .	378
VK4JO .. . . .	220
VK4US .. . . .	215

Tasmania—

VK7JB .. . . .	269
VK7XL .. . . .	128

### NEWS FROM FEDERAL HEAD-QUARTERS.

By G. B. Ragless, FPO.

By the time this appears in print the 11th Annual Convention of the Institute will be a matter of history, and we anticipate interesting history. Over 30 items from five States were placed on the agenda, which must be almost, if not, a record number. Unfortunately items from some States were received long after the closing date, but these were included although this gave less time for the members of the Divisions to direct their delegate.

An application for W.A.C. Certificate was received from Mr. P. J. Anderson, VK3PA, which was approved, and he will receive the award from IARU. Mr. Anderson waited five years before applying for the award after he worked all Continents!

## Modern Monitoring

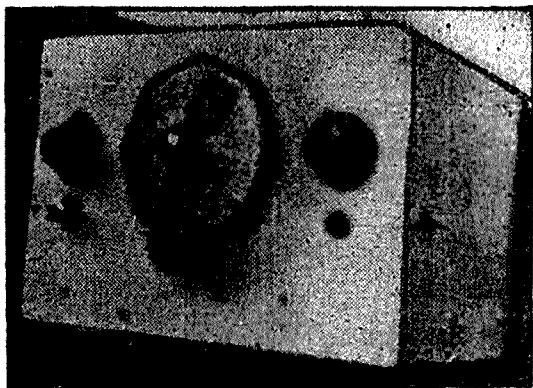
By C. Woodward, VK3YO.

In nearly every amateur C.W. station there is some sort of shielded arrangement which serves the purpose of monitoring the transmitted signal, and, at the same time, gives an approximate check on the frequency.

During the past year or so, however, many amateurs have built the new well-known electron-coupled frequency meter and combined monitor; the circuit of which is shown in Fig. 1 for reference.

The trouble with these F.M. monitors is that, particularly on 7 m.c. and 14 m.c., when the oscillator and/or doubler stages of the transmitter are running, the signal heard in the monitor is almost as loud as when the P.A. is keyed.

A glance at Fig. 1 will show that the detector circuit is untuned. The signal voltage in the headphones is produced by the input to the detector from the E.C. osc., coupled with that from the transmitter osc.



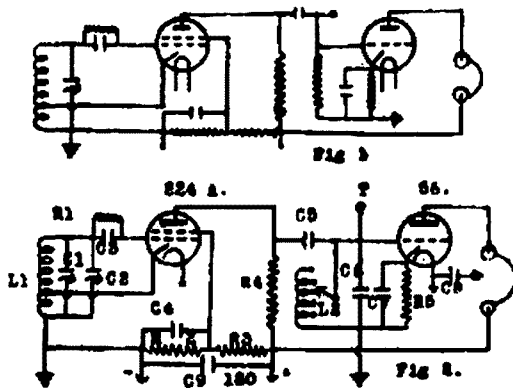
Without going into reasons why, a fairly average signal is being maintained even with the P.A. keyed.

Now, if we roughly tune the detector input circuit to the frequency being used, we will get a much louder signal in the 'phones when the key is down, as the tuned circuit will reject, to a certain extent, the signal from the osc., which is on a different frequency.

This tuned circuit is made by means of a fixed air condenser and a tapped coil, with a switch to change the tap on the coil, depending on the band being used.

Apart from the tuned grid arrangement, the circuit is conventional, and hardly needs explanation.

The improved version of the F.M. Monitor is shown in Fig. 2.



The accompanying photographs show the general layout of the parts.

The band spreading gives a spread of 7 m.c. of about 70 deg. or 80 deg. on a 180 deg. dial, which is a great help toward accurate measurement of frequency, provided always that the meter is calibrated carefully.

If possible, it would be much easier to use a semi-fixed band-spreading condenser, otherwise some means of locking it in position will be required. It will be noticed in the photo. of the experimental model that a small knob is used here, but it was later changed to a vernier dial fitted on the side of the box.

The whole works are mounted in a totally enclosed aluminium box, measuring 11 in. x 7 in. x 6 in. The idea of the tuned circuit belongs to W2ACE, who described it in detail in "QST," April, 1934, and I would recommend that his article be referred to by those who may think of building the meter.

# Electron Coupled Detectors

By G. Glover, A.M.I.R.E.

In view of favor shown E.C. regenerative detectors of late, and difficulties encountered when employing directly heated tubes, the advantages to be gained by using circuit depicted in Fig. 1. are readily apparent.

The entire inductance is wound on one former in same manner described in previous article by the writer (Balanced E.C. Oscillators, "A.R.," August, 1934, page 6). In the article referred to, coil values were given in terms of percentage of entire inductance. However, for the sake of cut-and-try members of fraternity, a different and more detailed explanation will be given here in view of greater space available.

In normal E.C. detectors or oscillators, one-third of total turns of coil are included in cathode circuit. Now, owing to the fact that length/diameter ratio of coil is doubled by virtue of double winding, the percentage of turns included in filament legs must be increased to forty, which corresponds approximately to increased turns required to give same inductance with increased length/diameter ratio. Naturally, it is a different story if grid portion of coil is space wound to increase efficiency, when percentage must be readjusted to fall in line with altered values of length/diameter ratio.

The capacities connecting two coils in parallel are O.I. mfd. non-inductive type and have the advantage that reactance decreases as frequency increases and maintains, in conjunction with coils, whose reactance changes are diametrically opposite, reasonably constant efficiency over entire operating range.

Now for some useful operating data:—

Firstly, fringe-howl may be cured or adjusted to optimum smoothness by selecting correct values for C2, R1 and percentage of turns in filament section of coils.

Secondly, any form of pre-R.F. coupling may be employed, which naturally should be designed to give

maximum efficiency with R.F. tube used.

Thirdly, de-coupling condenser and resistor C6 and R4 respectively are essential if hum is to be reduced to minimum.

Fourthly, value of C7 is really determined by form and value of coupling unit components, and therefore no value is specified in legend. To those readers who favor choke/capacity coupling, the writer recommends the use of step-up transformer with

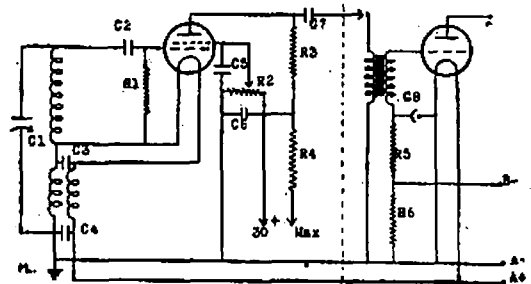


Fig. 1.  
 C2. .0001-.0005 mfd  
 C3, 4, 5. O.I. mfd non ind  
 C6. 2 mfd.  
 C7. see text.  
 C8. 5-25 mfd R.C.  
 R1. 10 megohms  
 R2. 500,000 ohm pot.  
 R3. 100,000 ohm.  
 R4. 10,000 ohm.  
 R5. 100,000 ohm

one end of primary earthed and the other end connected to suitable value of C7, with 100,000 ohm. decoupling resistor and electrolytic condenser connected to secondary return circuit as shown in second portion of diagram. Value of R6 will naturally be dependent upon total current consumption of all tubes, and is determined by use of ohms. law treating required bias voltage as "E." By the same token, value of C7 in this will be determined by type and make of transformer used.

In conclusion, writer would suggest that those readers who wish to couple detector directly to aerial (bad practice at any time) should wind a few turns over earthed end of coil to serve as aerial coupler, choosing number of turns which will not cause aerial resonance in band over which coil is designed to operate.

Although band-spreading tuning system is not shown in diagram, for the sake of clarity it is essential, particularly if detector is to be coupled directly to aerial.



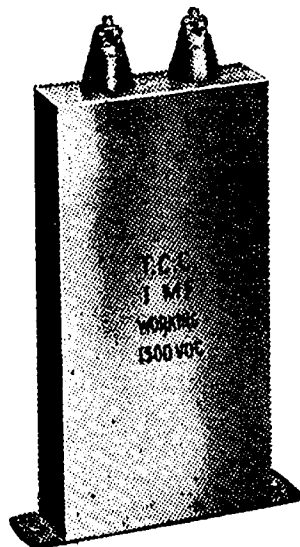
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101	1 mf.	6	2½	1	800	18/6
101	2 mf.	5	3	1½	800	24/6
121	1 mf.	6	3	1½	1500	24/6
121	2 mf.	6	6	1½	1500	37/-
141	1 mf.	6	6	2½	2500	76/6
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## Aerials

### HOW LONG IS YOUR AERIAL?

By Norman Cameron, VK3FG.

The following method of cutting the radiating part of a tuned-fed aerial system to the correct length may be of passing interest to those hams not possessing an R.F. meter. With a reliable P.A. (or oscillator, where only a single tube is used) plate current meter, a good dial on the feeder tuning condenser and a little care, the job can be done to within an inch or two. The method used here will be described, and those interested may modify the directions to suit their own case. We will consider that we are going to operate on that popular animal, a half wave zepp with quarter wave feeders.

Couple the feeder inductance loosely to the transmitter, and tune the system to resonance, taking care, of course, that the transmitter is operating on the frequency on which highest efficiency is desired. The plate current meter was used here as an indication of resonance, and, provided loose coupling is used, a very accurate reading can be obtained. Take a careful note of the dial reading of the feeder condenser.

Now lower the system, and remove the aerial from the live feeder. Then insert insulators between these. Strictly speaking, these insulators should be exactly the same as those at the free end of the aerial. Now pull up the system to its usual height, taking care that the feeders are in their normal position, both in relation to each other, and to nearby objects.

Duck into the shack and go through the tuning procedure again. If resonance is obtained at the same dial setting of the feeder condenser, you may thank Hertz, for your aerial is exactly the right length. Should it be necessary to decrease the capacity of the condenser, you must add to the length of the aerial, and vice versa. The theory is, of course, that your feeder system is tuned to exactly one-half wave, and the addition of another half-wave (in this case the radiating

part) will not alter the point of resonance. The aim now is to add (or subtract, as the case may be) to (or from) the length of wire in the flat top until joining the feeder to the flat top makes no difference in the point of resonance at the desired frequency.

Country hams in particular, who have cut their aerial according to the formula in the book of words, will, in most cases, find that their aerial is too short. The handbook figures are prepared under average conditions in U.S.A., and take into consideration conductors and poor dielectrics in the aerial's field that do not exist in the case of an aerial well aloft in some of the great open spaces in Australia. The wire gauge will have an important bearing on the length, and it should be stressed that stranded wire is undesirable. Soft, drawn, stranded wire will, unless it is unusually heavy, stretch and keep on stretching; individual strands break, and, in the case of bare stranded wire, each wire becomes partly insulated from the others by corrosion. The result is that the wire changes its characteristics considerably.

### FURTHER NOTES ON DOUBLETS

By Don B. Knock, VK 2NO

Dear Sir, — Following on my comparison concerning doublets and "zepps" in your excellent November issue, the additional observations herewith may be of some use and interest.

One big advantage of the twisted feeder doublet is an obvious one, but one not likely to be apparent under first consideration. When using the usual "zepp" with feeders spaced six inches or thereabouts, reception can be very annoying during windy days, if this aerial is used for the purpose. If a limited number of spreaders is fitted in these feed-lines, as is the case with most amateur systems, even slight swaying between the lines will turn a rock steady T9 signal into a

wavering, dancing semblance of the original signal. The remedy, of course, would be to use extremely loose coupling to the receiver, and to use an abundance of spreaders at very frequent intervals, say, six inches. It is not always possible to strain feeders very tightly.

There is no such disadvantage with the twisted feeder doublet used for reception, and it goes without saying that the same applies to transmission. Everybody knows what vibrating feeders on a "zepp" can do to a self-excited rock steady signal, but with the twisted feeder doublet there is no possibility of such variation. I find that some amateurs try tuning the feeders in a twisted line doublet. This simply undoes all the efficiency, and raises the impedance of the line considerably. Others say that they cannot get the doublet to draw current properly. This is merely an instance of incorrect coupling, and possibly incorrect length in the flat-top. The coupling must be near the "cold" end of the tank, and in a push-pull tank at the centre. No more than two turns are needed.

Regarding twisted feeder lines, possibly some "live-wire" manufacturer will have the good sense to turn out some special low impedance cabling similar to the Lynch material obtainable in U.S.A. The Lynch cable is marked at each foot of length, which saves a lot of trouble where a measured length is required. In the meantime, 14 or even 16 V.I.R. is quite good, and is cheap enough. Lamp cord is O.K. for inside systems, but out of the question exposed to sea air.

[Flex type feeders have proved especially valuable on 28 mc for receiving. Spaced feeders gave a misleading swinging effect, which was overcome with twisted feeders.—Technical Editor.]

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## BOOK REVIEWS.

By the Technical Editor.

(Recent imports of McGill's Agency, Elizabeth Street, Melbourne.)  
**Cunningham-Radiotron Tube Manual, 1934 Edition.**

Probably one of the most handy manuals belonging to a ham's library could be the Cunningham-Radiotron Manual, wherein lies a wealth of invaluable information on the characteristics and applications of every RCA tube in general use to-day. This book of 154 pages not only deals with curves and characteristics, but explains the operation of every tube listed, showing suitable circuits and base connections. For the experimenter who wishes to know one thing about any one tube, we highly recommend this manual, which is selling at 2/-, with postage at 3d.

**The Radio Amateur's Handbook, Twelfth Edition.**

Again, in the capable hands of our Australian-born ham, Ross Hull, as editor of the hams bible, the ARRL has succeeded in turning out a completely revised manual. The twelfth edition is something entirely new, in that all the equipment described in the more recent issues of QST; especially the ultra High Frequency matters. The usual elementary chapters are retained, of course, as are those dealing with operating and general procedure.

The remaining chapters could only be described as containing "good, solid dope" brought right up to date, and suffices to meet every ham requirement from the flea-power man up. It goes without saying that a ham would be lost without his "bible," and all those possessing previous editions are well advised to modernise themselves with this 7/6 investment.

## Harmonic

2HZ (Bill Moore) will shortly be packing his swag and getting under way to the Fed. Convention in Tasmania, which he will be attending as the official delegate from the A.R.A. In order to ensure his prompt and sober attendance at the deliberations, 2FQ (Jack O'Dea) has volunteered to accompany Bill as a visitor. Now we want some one to go and keep an eye on Jack.

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## Station Description

Continued from Page 7

though only a half-wave high aerial will overcome the location difficulty. The best type of radiator by far, and which is being used at present, is the doublet, similar to that described by 2NO in a recent issue of "A.R." Another doublet is being used on 28mc. with great success.

The receiver is quite standard, and its superhet. action has proved it to be of exceptional value on 28 mc., where the gain is high even though the selectivity is a little too great.

The majority of VK3ML's ham activities are devoted to W.I.A. and R.A.A.F. duties, which leave precious little time for DX.

Correspondents are again reminded that notes must reach the Magazine Secretary not later than the 18th of the month.

Notes from Mallee and Northern District, South Australian Division and A.R.A. Zone 10B and Lakemba Radio Club arrived too late for inclusion in this issue.

We don't want to leave any notes out of the Magazine, so please try and get your dope into us in time.

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## Operating and Experimental Section

Conducted by VK3WY.

**DX Conditions.**—Conditions on 7 mc. and 14 mc. seem to be much the same as last month. From local observations, conditions are as follow:—

**7 mc.**—This band is fairly consistent for DX at present, the early morning being the best time of the day. From about 0300 to 0630 seems to be the peak period for European DX. During this period the Europeans reach quite good strength, and are not very difficult to raise; the few South Africans which may also be heard at this time are a far more difficult contact.

From 2000 to 0100, W, X, VE, and K6 are the easiest DX, and from 2200 to 0100, KA, J, and OM sigs. are numerous.

**14 mc.**—This band is still holding up well, fb DX being worked during the evenings. From 1900 to 2100 the South Americans are fairly consistent, and from about 2200 to 2400 the DX becomes fairly general, after which it fades out fairly rapidly. Some of the countries which have been worked on this band lately are: VP5, VU, SU6, FB8, OA, PA, EA, ON, CX, D, G, LY, etc. The peak period on this band seems to be getting earlier, and if conditions follow last year it will continue to get earlier until it will be about 1500 to 1600 in March and April.

**Australian W.A.C. Record?** — VK3JJ made W.A.C. in very good time the other night, and we should like to know if this is a record for making W.A.C. All contacts were on 14 mc., the first QSO commencing at 2205 and the last ending at 2356, thus making the total inclusive time for the W.A.C. 1 hour 51 minutes. The stations worked were OA4AA, SU6HL, VK3MR, VU2JP, VP5PZ, and PA0CE. These contacts took place between the times stated on 3/1/35. Can anyone beat this very fb effort?

While we are on this subject, who has got the record for W.B.E.? Let's know!

### 28 and 56 MC. SECTION.

(Conducted by VK3JJ.)

#### Notes from VK2YC, VK4HB, and VK6SA.

Definite indications of a lengthened skip appeared on 28 mc. towards the end of December, and although conditions were variable, some outstanding results were obtained.

ZL1BA heard VK6SA, QSA5 R5, several times on December 23, but was unable to QSO. Several VK3's were on most of the day, but neither of these stations could be heard in Victoria at the time.

VK4BB and VK6SA endeavored to handle some six point relay messages, but QSB was too bad. VK2HY and VK5XU were QSO shortly after midnight on one occasion, but before 1 a.m. 3BQ, 3WC, and 3JJ joined in and worked four-way with 2HY. A phone station sounding like VK2PS was heard

in Victoria at the same time, but appeared to be working someone on 7 mc.

VK6SA has worked 3WC, 3JJ, and heard 3CW as late as 21.00 E.S.T., but these conditions only lasted two or three nights. VK7NC and VK7KV are the only Tasmanians on 28 mc., and had several VK3 contacts on December 29. 7KV reported first hearing an over-tone of 3JJ on 14 mc., and promptly QSY'd! After much trying, 2HY hooked up with 6SA on December 30, and 4BB heard phone from 6SA the previous afternoon.

There seems to be very little activity among VK5 Hams, but VK5LB has now tuned down and has worked VK2HZ and VK2LZ. The latter is anxiously awaiting the W's, which are expected to come through in March if conditions are anything like those of 1930!

ZL1CD has reported having heard VK3CW, R8/9, and VK3TY R4. ZL1BA complains that most VK's don't seem to be listed for ZL's, as they hook up and stay hooked up too long with locals, while the ZL's call and wait! He has heard the following VK's (brackets denote QSO):—VK2LZ, (2NO), (2HZ), 2HY, (2YC), 3ML, 3BQ, 3RJ, 3HK, (3JJ), 3JO, (3WC), 3CW, 3NM, 3WX, (4BB), 6SA, and 7KV.

VK's are not making sufficient use of the schedule, as ZL's find that after ending their 10-minute call at the beginning of the hour, they frequently change over to hear three or four VK's finishing a CQ. More VK/ZL contacts are bound to result if a little more listening were done at the appointed times.

There are a few instances of harmonic reception which suggest likely times for fundamental working. VK2HY heard VU2FP at 19.00 E.S.T. at R6 while the signal on 14 mc. was R4. A listener at Campbelltown who is keen on 28 mc., reports hearing ZS1H R4 on 28 mc. and R2/3 on 14 mc. at the same time. ZS1H was given particulars of our schedules, and has since been heard to mention that he is on with dual transmission, so we are left wondering just which was heard. 3BQ heard two W6 harmonics in the early evenings. JNJ, JAC, XOB, RKC, and one or two other commercial harmonics from ASIA are consistently heard, so that if a few J, VS, XU, and VU Hams would only get going on 28 mc., some good contacts may result.

Many overseas stations are taking a great interest in the R.S.G.B. 28 mc. contest, and ON4AU leads in Europe with 90 points scored by working VE3PT and VE1DR in December.

VE2AC mentions that 28 mc. came good on November 24, and a few (?) of the W's heard on his S.S. super were 9FCN, 9DHH, 9NZE, 9NDF, 9ARW, 4CPS, 4OI, 6BXL, 6BBL, 9OUN, 9JYG, 9HSJ, 9DO, 2GH, and 7AYQ. It is his most remarkable reception since 1930. He uses an 852 P.A., and will be using 'phone and CW from January. W5ATY reports no signals outside his State for some time, but local work goes on. CX1CG welcomes 28 mc. skeds at week-ends.

Continued on Page 21

## Victorian QSL Bureau.

Ray Jones, VK3RJ, QSL Manager.



Cards are on hand at the Victorian QSL Bureau, 23 Landale Street, Box Hill, for the undermentioned stations, and will be forwarded on receipt of postage:—

VK3AY, BB, BF, BL, CF, CJ, CL, CM, DQ, ES, EW, FC, FH, GE, GC, GJ, GM, GU, GW, GX, GY, HE, JK, JZ, LP, LT, LY, LZ, NG, NW, OP, OZ, PW, RT, RW, SK, SN, UJ, WK, WN, WP, WQ, WX, YF, YL, ZK, ZL, ZR, CAREY, HECKER, BENNETT, SUMSION, KELLY.

The annual clearance of the files is to be made during the next few days, and all cards unclaimed will be returned to the senders or destroyed.

Congrats. to Murray Orr, VK3OR, on securing the W.A.C. he has coveted so long. Murray worked the necessary stations long ago, but couldn't get the cards. Yes, Murray, ZSIH's card is now at the Bureau, so you are WBE also. Shoyer's word is his bond with cards.

WILZ, reporting on the Cent. Test, says VK's did not make the best use of 14 mc. for East Coast QSO's, as VK2, 3, 4, and 5 were continuously audible between 0630 and 1400 GMT on most days.

The Second International Competition of the P.Z.K. (Poland) took place between December 2 and 16, 1934. Pity our Polish friends did not send earlier notification of their Contest.

My Camperdown correspondent advises that there are good prospects of hearing a YL at the key of VK3GQ in the near future, as Mrs. Emeny is making good progress on the key.

Jack Batchelor, VK7JB, made three attempts to keep Tas. on the map during the recent six point relay test, but RMAX local power QRM frustrated his endeavors on each occasion.

Lon Jensen, VK7LJ, after 12 months of married bliss, has found time to get on the air again. His signals and operating ability have not deteriorated during his absence, nor suffered from his change of status. Welcome back, Lon!

### INTERNATIONAL 28 M.C. CONTEST.

The following points were scored during December, in addition to those published last month:—

VK2HY 106,\* VK3HK 41,\* VK4BB 45, VK3WC 39, VK6SA 38, VK2LZ 20, VK7NC 18, VK3JJ 18, VK2HZ 14, VK2YC 12, VK5LB 12, VK4XN 9, VK7KV 9, VK3BQ 8.

\* Totals to date.

## British Notes

By G6CL, via G6WY, ZL4AI, VK2HC.

The headquarters of the RSGB convey New Year greetings to your Society, and extend best wishes to your new Executive Officers.

Considerable difference of opinion exists amongst British amateurs in regard to the RST code. To stimulate a discussion, ZL4AI contributed, via G6WY, a letter to the December issue of the T. and R. bulletin, in which he opposed the suggested alterations. The RSGB hope to obtain sufficient information within the next few months to formulate a definite policy. A letter has been sent to IARU headquarters suggesting the National Society should begin to check commercial activity taking place in the frequency channels adjoining our 7 and 14 mc. bands. It is the intention of the RSGB to conduct these checks between the following frequencies—7300 to 7600 KCS, 1360 to 14000, 14400 to 14800. The IARU have also been asked to request members' societies to carry out by annual occupancy checks. The sixth RSGB check showed 543 stations working in the 7 mc. band, and 250 in the 14 mc. band. A total of 715 calls were logged during the checks, which took place during the first four Sundays in September.

The official total of full licences issued to November 30 was 1451. At the same time there were 943 artificial aerial licence holders. These figures show a nett increase of 104 and 42 respectively over the last six months.

The RSGB membership during the same period increased from 1980 to 2245. The grand total includes 498 overseas and foreign members.

Conditions for DX on 3.5 mc. have shown a remarkable improvement. G6RB winner of our recent 3.5 mc. contest has worked over 50 East Coast W and VE stations, and has been heard by a VE5. Schedules with VK and ZL are looked for.

The international contest, as far as Great Britain is concerned, continues to be a washout. Our 28 mc. RES group members are, however, pleased to hear of the recent VK and ZL successes, and look forward with contact with U.S.A. look forward to contact with U.S.A. early in the New Year.

It is my pleasant duty to record that Mr. H. A. M. Whyte, G6WY, has been appointed ELS supervisor. The excellent manner in which ELS traffic is being handled by him in collaboration with ZL4AI, ZL3AN, VK2HC, VS6AQ, ZS1H, SULEC, and VE2CA, is arousing much admiration over here.

Note: G6WY advises that G2HG, the originator of the 28 mc. contest, heard AVE on 28 mc. on Christmas Day.

The 1.7 mc. contest was well supported, but no unusual DX has been worked on this band. It is, however, on 3.5 mc. that astonishing results have been obtained recently. G6RB reports working over 50 North Americans in ten days, which follows on the news that G5VL and VE1EI have been in regular telephony communication on eleven evenings during January.

## Divisional Notes

### Association of Radio Amateurs (N.S.W.).

#### NOTES FROM HEADQUARTERS. By VK2HZ.

2FI, zone officer from Zone 7, is at present in Sydney holidaying. He spent a few days with the Wyong gang and has not been seen since.

2FQ was recently elected to the A.R.A. Council again in the place of 2GS, who is working in the country. This is 2FQ's second term on the council, as he previously had to give it up owing to pressure of business.

The December meeting of the A.R.A. was well attended, and the debates concerning the Federal Convention Agenda were very lively.

9NW, 2EO, and 2WW were visitors. 9NW recently returned to Rabaul, before which he was given a small send-off by the North Shore Hams, 2WW, 2HV, 2LZ, 2VQ, 2BA, 2DN, 2AE, 2HZ, 2YC, and 2XC being present.

Congratulations and good luck are extended to 2ZW, Stan Grilmett, Zone 4 Officer, in his venture into matrimony on February 22.

The entries in the Interzone Contest were greater than anticipated, and it proved quite a good success. Results will be announced at the January meeting of the A.R.A., and in March issue of this magazine.

The R.I. is making it his business to check up the input of amateur stations in N.S.W. Some have been visited already.

Conditions in VK2 over the last two months have, to say the least, been peculiar. Every band, excepting possibly 80 metres, has not been behaving normally, compared with previous years. 20 metres is very patchy, 40 metres at night practically useless, while 10 metres has been doing things that no gentleman would possibly think of doing.

Sympathy is extended to Zone Officer 2BP in his recent sad bereavement, the loss of his father.

#### THE A.R.A. INTERZONE CONTEST.

The following are the results of the first Interzone Contest, and taking them on the whole the support was very fair. As in all contests of this nature, the number of logs forwarded to the judges was out of all proportion to the number of participants.

The winner is 2KR, of Gunnedah and Zone 2, a QRP merchant whose power is regulated by the 220 DC mains, and wins the 210.

Second is 2BP, of Hazelbrook, Zone Officer for Zone 5, and wins the 59.

Both these Hams put in very good work, and must be congratulated on the enthusiasm they showed. A special prize was donated by 2VG for the leading station in Zones 9 and 10, i.e., the City area, in the form of a crystal. This was won by 2NP, who was well

away from his nearest City competitor.

2OU did very well also and was very close to second man. The following is the score of the first five stations:—

Station.	Zone.	Orig.	Relay.	Hand.	Pts.
2KR	2	40	354	135	883
2BP	5	35	231	181	678
2OU	3	40	218	193	669
2NP	9	40	258	3	561
2WW	9	40	173	6	392

Following scores are:—2LY, 323; 2KJ, 168; 2YT, 167; 2ZV, 107; and 2PV, 100.

#### A.R.A. ANNUAL DINNER.

It has been decided to hold the A.R.A. second Annual Dinner at the Dunganwan Cafe, Martin Place, on Thursday, February 21, 1935, at 8 p.m. Tickets are 3/- each, and are available from R. H. W. Power, Wembley House, Railway Square, Sydney, or ring MA 2377, and everyone is welcome. Please book early.

#### A.R.A. JANUARY MEETING.

The above was held at the Y.M.C.A., Pitt Street, and from the outset the discussion centred around the agenda paper for the forthcoming Convention. Each item was fully discussed; but generally speaking the meeting supported each item as set out by the various divisions. 2FI, Zone Officer of Zone 7, was present as a visitor, and also 2VM and 2FK.

#### ZONE 2 NOTES.

##### Z.O.—2HV.

VK2RV is using an electron-coupled receiver, and finds it preferable in every way to the autodyne; the transmitter set up is now 46 osc. and F203 PA. When on phone the F203 is used to modulate the 46, and an input of 4 watts is used. Ron will be off the air for about three weeks, as very QRL with exams. When they are over, however, he expects to take advantage of his 25 watt permit, and then for QRO.

VK2NF has still not been heard, and no dope to hand on his doings.

VK2XQ, the old John, late of Quirindi, after three months without bounding the brass, is back in Zone 2, and this time, we hope, to stay. John is now WAC, or will be if OA4Z QSL's. Don't worry, John; he will. The new QRA is Box 2, Walgett.

It is very doubtful whether VK's 2HC and 2CR are still braving the QRN on 80 metres or off the air. So far this summer they have not been heard on 40 metres.

The following are QRT:—VK's 2BE, 2HJ, 2KN, 2UR, 2WT, 2NA, and 2JF.

VK2ZP has made a New Year resolution to QSL. Well, this will sure be a novelty for Arthur. T9 reports are still received on the Hartley and 210.

Mac, of VK2ZH, was QSO VK2HV a few weeks ago, and his sig. sure had some wallop for 4 watts.

The Gunnedah QRP King, VK2KR, has a nice new card. Cess always QSL's gang, so look out for him on 40.

VK2HV has given up DX chasing for the time being, and is building a new Xtal rig—47 CO, 59 multi-doubler, and parallel 210's PA, input to the final stage will be 12 watts.

Bill Ficknell, the second op. of VK2HV, had a very wild time whilst in Sydney for the Christmas holidays. We have it on good authority that three gallons of beer were consumed on the train between Inverell and Sydney. Bill is secretary of Lakemba Club, and when not QRL painting, spends his time planning to make the Club's Annual Reunion a success. Will those members of Zone 2 mentioned above, whether QRT or not, please send in some dope to VK2HV by the 10th of each month? The QRA is Byron St., Inverell.

Cess, 2KR, of Gunnedah, the winner of the A.R.A. Interzone Contest, is to be congratulated, especially as he has a very limited power owing to having to use 240 DC mains. AC is shortly to be installed, so that the 210 prize should come in handy as a PA tube.

2ZH is also in Gunnedah, at "B" Class Station 2MO; but is QRL work and only makes an appearance occasionally.

#### ZONE 4 NOTES.

##### NEWCASTLE AND DISTRICT A.R.A.

The Newcastle gang have now settled down in their new clubroom in the Sun Building, and the weekly meetings are well attended. Theory classes for AOPC aspirants are being arranged for early in the New Year.

Congrats. to Jim, 2ZC, on the arrival of a second op. 2UF has been working Europeans on 20 metres and threatens to rebuild. What, again? 2MT has also been amongst the DX on this band, as well as on 40 metres. He recently earned his WAC on 40 metres. 2FN has a nice looking Xtal rig (2 stage), and gets good reports from Yanks. 2KB is not at all pleased at having his call taken for BCL purposes. He has been allotted 2YS, and is rebuilding his QRO rig. 2ZW is not heard much these days. 2RG had his cousin, 2BG, from Epping, staying with him at Christmas. 2BG says 2RG's effort in climbing 60 feet up a tree and hanging from a branch by one arm while he tied the aerial on with the other, would have put Tarzan to shame. 2SO still going with MOPA on 80 and 40 metres.

The Club is arranging a local DX contest early in the New Year. Handicapping will be by a novel method—using the db unit, which should be fair to everyone.

#### ZONE 5—A.R.A.

Zone Officer 2BP complains bitterly of the terrible conditions and terrific QRN that was prevalent during the Zone and Fisk Contests. After a lot of preparation, rebuilding and writing messages, QRN was so bad that continuous operation was impossible. Activity on Zone 5 is on the wane, and 2BP is the really only very active Station.

2NS has been heard on various bands at various times, and was recently in V.I.S.

2RJ seems to be conserving his energy for the coming winter, and 80 mx. telephony.

#### ZONE 7—A.R.A.

Zone Officer 2FI is in V.I.S. holidaying; but is unable to compose any Zone Notes. Some of the V.I.S. gang don't seem too composed when they see 6ft. 7in. and 20-stone coming into their shacks.

#### ZONE 8—A.R.A.

##### Z.O.—VK2OJ.

2YI still at Girral and heard working from 2FI. Athol is on holidays in V.I.S. 2QD came back for Christmas, and is going to give Ham Radio a rest. He is living in V.I.M. Two more prospective Hams sat for their AOPC recently; but the result is not to hand. 3EG also on vacation in V.I.S. Ivan has a 203A in PA now, and says it's fine. Lately using untuned feeders on the Zepp at 20J, with good success. Two turns are coupled near the earth end of PA tank coil. Faders are spaced 2 ins. The adjustment is fairly critical, but when correct it works nicely. The arrival of a junior op. will no doubt keep 20J QRT for a while.

#### ZONE 10 (A)—MAROUBRA.

##### Z.O.—VK2XV.

Christmas is over and everything settling back to normal again. DX wasn't so plentiful as would be expected over the festive season. Guess everybody was imbibing freely of "Christmas spirits." Hi!

VK2WJ and VK2XK have started on pastures new and have lowered themselves to the U.H.F.'s, and have started operation on some high power 5 mx. equipment. So stand by, everybody. (Hi!) Ten metres has been investigated recently here also. VK2FQ still. QYL, Jack is studying for "Commercial op." Best of luck, Jack, in next exams. VK2XV has been working a few on 14 mc.; but 7 mc. has been very dead the last month, a few W's filtering through late in the evening.

Europeans have been very patchy and hard to hold down lately; but one or two nights last week made up for quite a lot of the past month. VK2XV worked five Continents in three-quarters of an hour. Nearly W.A.C. not bad. Hi! Europe, North America, South Africa, South America, and Australia.

VK2FK, of Randwick, rallied round and let me have a few details regarding the Randwick crowd, and I will take this opportunity of thanking him.

VK2WN, Randwick, considering building a new Xtal rig using 46's, with modulation. VK2SB blows 280's like P. lamps. Seems to do in a couple of 280's just to show visitors what he can do. Whasamatterbill? Bill has a very nice Xtal QRL???

VK2QM using E.C. oscillator and 46 PA. How come, Cec? Thought you swore by Tri-tets. Believe Cec. dreams of RK20's, etc. Well, you may see one shortly, if you know the Maroubra gang, Cec. OM. (Hi!)

VK2OH works a few Yanks; but conditions very crook on 7 mc. Why don't you QSY to 14 mc., Bruce? He's also QYL, they tell me. 2CG putting out some good fone with two-stage Xtal rig—thinking of building an Xtal mike.

2HP, "the noise of Coogee," is building a S.S. super. Hope it pans out O.K., Harold.



## Victorian Division

### KEY SECTION NOTES.

By Peter H. Adams, VK3PX.

The usual monthly meeting of the Key Section was held at Institute Headquarters on January 10. There was an attendance of 32 members, and as VK3OX had to leave early, the chair was taken by Mr. Jones, VK3RJ.

VK3JJ addressed the meeting, and explained the rules of the ten metre contest which was announced in last month's issue.

QSL cards were distributed by VK3RJ, and B.E.R.U. contest rules and log sheets were given out to those interested.

VK3JJ brought along to the meeting a ten metre oscillator, and it was expected that a fair number of chaps would bring 28 mc. frequency meters for calibration. However, the response was very disappointing; apparently of those who had expressed their intention of bringing meters to the meeting some had found the band and others had simply forgotten about it. As there was no further general business, the meeting was closed and those present engaged in the usual general discussion.

In the past it has happened that someone present at almost every meeting has had some interesting talk to give. The idea of arranging a definite roster of lecturers has been discussed at previous meetings, but nothing definite has been done. However, it is felt that it would be much more satisfactory if members could know for certain that a talk or short lecture on some interesting subject would be given at each Key Section meeting, and the secretary will endeavor to see that this is arranged. There must be plenty of members who could give a short talk on some subject of interest to them. It need not be too technical and there is no need to be worried because you may think that the other fellow knows more about it than you—even if one knows almost all there is to know about a subject, it's always worthwhile and interesting to hear the other chap's views. So any members of Key Section who can talk for, say, twenty minutes, on some interesting topic, please get in touch with VK3PX, Windsor 3612, or at the next meeting. In the meantime, a lecture has already been arranged for the February meeting; but, of course, convention delegates from some of the other States may be in Melbourne on their way home then, and if the meeting proves a particularly lengthy one the talk will be held over till next month.

Conditions on 28 mc. for the first Sunday of the contest seemed poor in Melbourne. A number of locals, including 3JJ, 3WC, 3NM, 3BQ, 3JZ, 3OF, 3XK, and 3PX were on most of the day, but apparently no DX or interstate QSO's resulted.

It will be noted that the rules for the B.E.R.U. contest in February have been considerably altered. The alteration in time from the whole 48 hours in each week, and to 12 hours from 0300 Eastern Australian Time Sunday to 0300

Monday should be very popular, and, as it will now be possible to get a reasonable amount of sleep on both nights of the week-end, should induce many more to enter. The old idea of keeping awake and on the job for 48 hours continuously, and then going to work in a stupor on the Monday savored too much of an endurance contest. Having the high and low power contests on alternate week-ends is another step in the right direction. It evens up conditions for both contests, and makes things much easier for those Hams who are bothered by YLS! There's no reason why every member of the Key Section should not be in it this year. Let's go to it, chaps!

### PHONE SECTION NOTES.

By J. R. Kling, VK3JB.

As there was no meeting of this section held during December, owing to the Christmas holidays, the allocations given by the Allocation Committee at the November meeting are being carried through till the end of January.

1935 seems to have started very well, as there has been a lot of activities amongst the gang, and many courtesy calls have been paid to various stations already by different members of the Section.

Many stations are rebuilding, and it seems that 1935 will eclipse all previous years as to the efficiency of the transmissions from the many metropolitan experimental stations, who already put out good quality transmissions, but are still trying to improve them by making alterations.

Stations are installing all the latest equipment that is to hand, and the result should be better transmitters, better transmissions, and better 'Hams.' Yes, fellows, let's all make this a bumper year, with better activities in the Institute, more new members, more friends, more helping each other, more inter-section social activities, more enthusiasm, more new "Hams," and, last of all, more thought for the other "Hams" who are out of touch with us in the flesh, but whom we can help over the air.

Some of the allocations were vacant during the Christmas holidays, so some of the boys must have gone away and forsaken the ranks for a few weeks.

### SOME PERSONAL PARS. ABOUT MEMBERS OF THE SECTION.

3CB has been putting over some one-act plays, which came over very good.

3DH has been on transmitting with a remote studio. Too bad you had to cut in on them just at 10 a.m. to close down. Ivor. Hi! What time did they knock off? Hi!

3AM has been off for a while as I believe he is knocking up a new speech amplifier or some part of his gear.

3PA has been heard with plenty of pep lately. What is it, Perc.? Class "BB" now!!! Hi!

3OY and 3OV have been sharing their sessions, and evidently the same crystal, as they were both on exactly the same frequency. Hi! Did you hand it over the back fence, Alan OM?

3BW, Portarlington, has been coming in up here with a wallop, too. You must have a good location, OM.

3FY has been very active lately, too. On early in the morning on Sundays and late week-nights.

## WESTERN DISTRICT NOTES.

3OW-3HG.

The main item of interest for the month was a visit by VK3WN from Sea Lake, who was on a holiday tour. Jack had his gear with him and kept in touch with the gang en route.

3PG completed his WAC a couple of weeks ago by working ZSIH on 20 mx. Congrats., OM. A new station, 3WW, has started up in Warrnambool, whilst 3OA has staged a comeback to the air. Wonder how long it will last, tho'!

QRN has been fairly prevalent here lately, and not much doing on 7 mc., although 14 mc. is fairly active. Harvesting operations, now nearly over, have, however, prevented much late-night or early-morning work, as after a day in the field there is not much energy left for hunting DX, hi!

VK3JE has returned from a short holiday in VIM. Owing to pressure of service work, Bill finds little time for radio, and has abandoned the idea of using the AC converter. He will carry on with the 280 DC until the supply is changed over to AC from Hamilton. This is expected to take place during this year.

## West Australian Division

By 6CP.

During the past month we have had varying conditions on all wave bands.

Summer time seems to be 40 mx. telephony time here during daylight hours, and some really first-class transmissions are taking place, and long distances being covered on medium power.

6LR, of Northam, has installed a fine outfit, and using an astatic microphone has the best quality phone in VK6. Using his allotted power of 25 watts, with grid modulation, this station can be heard locally every Sunday afternoon.

6RW and 6KC seem to spend the country idle moments testing phone between their stations at Wagin and Katanning. 6CP also puts out some moderate phone on Sundays, and although the quality locally is not so hot, the transmission seems to lose its rough edges after going about 60 miles.

Reports from listeners up to 600 miles away in all directions give indication that the 20 watts to a pair of 46 tubes in push-pull are at least cutting some ether.

Ten metre work is still being carried out by 6MN, 6SA, and 6CP.

DX conditions on 40 mx. are moderate in the early hours of the evenings, and from 11 p.m. to about 4 a.m. some good contacts have been reported by 6CX.

Hams generally are slowly taking a more active part, and most stations can be heard spasmodically.

Stations on the air are: MN, CX, SA, GS, RW, KC, HD, LK, LR, DH, PK, JW, FM, XL, CP, KB. Others are not so prominent, but do come on sometimes.

PK reports a few QSO's with G. and D. in the early morning hours, and KB has been working South Africans.

## ACTIVITIES OF W.I.A.

On a recent Sunday a trip to Yau-chep Caves took place, and a good muster of the gang and feminine sup-

porters spent a most enjoyable time.

Another outing has been arranged for Jan. 20 to Penguin Island.

Both outings are the work of the social committee, under the leadership of 6CB.

We regret the resignation of LJ from the Council, and would like to record our appreciation of the solid work done by him in the past. Jack will still continue to be QSL officer, and as he has recently got over his big "A" Class exam. will soon be on the air again.

Under the guidance of CB, who is to fill Jack's place, the Council are looking forward to doing big things.

6BN has the AOPC classes well in hand, and as some of the boys have been up before the R.I., we hope to soon have some more new calls.

Once again, boys, I appeal to you to support your own magazine, and also please let me have those outstanding subs.

The distribution and correspondence costs have to be met, and the margin of profit to play with is small.

## Tasmanian Division

By 7PA.

(Hon. Sec., Mr. H. M. Moorhouse,  
95 Arthur St., North Hobart.)

The January meeting of this division was better patronised than has been the case for some time past, and it is hoped that it is an indication of an improving condition for 1935.

It is not for want of effort on the part of our secretary and executive that we are not making the progress that we should; but it seems that a general lack of interest is at present maintaining.

We trust that the Annual Convention being held here this year will prove to be the turning-point for us, and that we will wake out of a long slumber and burst forth as of past times.

With the membership list extended as it has of late, there is every reason to believe that progress is here for the taking. We have a number of young members who, properly educated in the Ham traditions, should help swell the fold of VK7's.

By the time these notes appear the Convention will have been and gone, and with the programme that has been arranged lasting memories should be with all who were concerned with it, and we hope that those who visited here on this occasion will live to see many more conventions in the future.

There is a move afoot to get the official W.I.A. station on the air under its old call of 7WI, and it is sincerely hoped that, after several previous attempts and failures owing to finance, it will now come into being. Our secretary is very emphatic about it, and is determined to do his bit in seeing it through.

It is proposed to have a 200 meter allocation for 7WI, as well as the usual bands, so that it can keep us in touch with the general public as well.

It is regrettable to note how many of our amateurs at present show so little interest in W.I. affairs, and less endeavor at improving our position; it is easier to moan over the inactivity than to try to help with making it active.

There still exists the same age-old position of unfinancial members—mem-

bers who omit, either by desire or circumstance, to honor their obligation, which makes satisfactory and smooth operation difficult, as finance is essential.

The holiday season now over, much of the general excitement has settled down to routine level; the same few are still active here on the 20 and 40 meter bands. Weather conditions have made the bands very patchy for some time now, but we are looking forward to a stretch of settled weather.

Our hon. secretary is overworked, and 7BJ has accepted the position of asst. secretary pro tem., in conjunction with his other activities. Says he has too much time on his hands. Poor old Joe!

7LJ has a bit more time for Ham work during school recess.

7JH and 7PA had a trip around the North-west Coast, via Launceston, one week-end in December, and visited several of the Northern shacks. A portable 'mitter was carried on the trip, but there was not time enough to give it a fair trial. VK5 was contacted one evening while on the return trip through the Great Lake Country.

While speaking of portables, VK2SS was worked twice here at 7PA while he was holidaying with a portable rig at Nambucca, N.S.W., and came through with a good strong sig. for a portable.

#### Continued from Page 15

Scoring 345 points to date in the international 28 mc. contest, VK4BB has presented a knotty problem to other VK's who are trying to overtake him! After threatening to do so since 1928, VK2ZN has come down to 10 mx., and makes other VK's jealous by telling what he hears and the others miss! 3ML and 3QF put up beam antennas directed at N.Z., but the former had the misfortune to have part of his blown down in the recent gales. Comparisons are being made at 6SA between the normal 132 ft. horizontal antenna and a small 28 mc. half-wave vertical, both single wire fed. For local work signals are much stronger with the small one, but for Eastern States the reverse seems to be the case, although a really decent test has not yet been obtained.

3BQ, 3OC, and 7KV use 800's as doublers in the last stage and are finding them very efficient when plenty of drive is available. Among the many additions to the 28 mc. gang are 2WJ, 2PS, 3JZ, 3PX, 3XK, 3JX, 5LB, and 6RA, but owing to the poor conditions at present they have not yet had opportunities to properly try out their gear.

#### TRADES CRICKET MATCH

The Annual Cricket Match and Sports meeting of the Electricity Supply Authorities versus the Electrical Trades will be held on the Albert Ground, St. Kilda Road, on Thursday, 21st February. Events will commence at eleven o'clock a.m. on that date, and as the event has always been a popular fixture, a large and brilliant galaxy of sparks is anticipated.

#### CENTENARY CONTEST.

By Mrs. L. S. Hutchings, VK3HM.

In the radio shacks and hamlets,  
Dwell the He-men, glad of rest,  
This the tale of the survivors  
Of the great endurance test.

After weeks of preparation,  
Making perfect all their gears,  
Pity a Centenary Contest  
Comes but once in hundred years!!

Hams of all the nations ready,  
Standing by for start of fray;  
Organisation perfect,  
Tribute to the W.I.A.

All the household hushed in silence,  
Even to the old grey cat;  
Great the concentration needed,  
Odds against them to combat.

Four week-ends of battle royal,  
Four week-ends of victories won;  
Elements against them often,  
Sigs. R,2 to maximum.

Working far into the midnight,  
Far into the morning light;  
Of surroundings quite oblivious,  
Revelling in the thrilling fight.

'Long as CQ calls are answered,  
Serial numbers flashing round  
All the world in friendly contacts,  
CQ, VK, welcome sound.

First-aid rendered by the household,  
When tired Nature asserts her  
sway,  
Pots of coffee black and steaming  
Help to keep dull sleep away.

When things slacken off at midnight,  
Great temptation to turn in;  
And you call DX, and calmly  
Go to sleep despite the din.

Have a heart ye chiefs and elders;  
Make it two week-ends next test;  
And we one and all will bless you;  
And go through without a rest.

Epic contest now is ended,  
Miles are totalled, points are scored;  
To the winner, to the loser,  
Comes this knowledge, this reward.

Each has helped to make the Contest  
World renowned; has done his best;  
Good luck to the winning heroes  
Of our great Centenary Test.

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# R.A.A.F. Wireless Reserve Notes

## SECOND DISTRICT NOTES.

By 2Z1.

Activity during the past month has not been so great as this district has become accustomed to, and traffic totals have fallen considerably. However, this is due to the Christmas and New Year holidays causing many members to be away from their homes. Some of the most consistent members in the district are 2A2, 2A4, 2A5, 2B3. The latter will shortly be appointed to the "A" Section, so as to keep the most active members together. It is expected that 2Z2 will shortly be able to keep regular watches again, and this will be most welcome. It also appears likely that 2Z1 will soon be in a position to resume active participation in reserve work.

## THIRD DISTRICT NOTES.

3Z1.

Unfortunately through misunderstanding, and the falling down of the Post Office, VMC has been without Reserve Notes for the last two months. 3Z1 posted December's notes to 1A1 while he was away in the Riverina, and up to the present time they have not come to hand. With regard to January, 3Z1 was under the impression that the notes would not be required until later, because of the holiday period, and that fact, together with the fact that business was inordinately brisk, the matter was left in abeyance to our cost! However, we are right on the spot this month, and full of enthusiasm for the future of VMC, especially in 1935. Although it is a trifle late, 3Z1, on behalf of VMC as a whole, would like to wish all members of the Reserve in Australia a very Happy and Prosperous New Year, and hope that the year will bring forth a stronger and better Reserve in all States.

VMC, especially the metropolitan members, is being greatly troubled with amateur phone stations on 3.5 mc. on Sunday morning schedules. Whilst realising the fact that any amateur is as entitled to the band as we are, we feel a strong animus against the annoying "messaging about" by the average phone station using the band on Sundays between 11 a.m. and 1 p.m. On January 6, 3Z1 was trying to copy traffic from a country Section Commander with a phone station right on top of him. This station did not sign in the three-quarters of an hour he was on the air, and whistled a popular jazz tune into the mike for 20 solid minutes. That sort of behaviour not only gives the average amateur a bad name for selfishness, but also seriously interferes with men who are using the band for legitimate experimenting and general work. We are seriously considering the moving of all sections to special reserve bands outside the amateur bands, and if the necessary crystals can be arranged for, the move will be very shortly made.

During the month of February there will be no regular schedules except special section ones, because of the number of stations who will be taking part in the B.E.R.U. contest. The period of Reserve schedules will be spent in well earned sleep by the majority of members, if preceding years are any criterion.

As is usual at this time of the year, conditions have been very poor of late, and country stations fade practically out shortly after noon. The remarkable effect of two stations reasonably close together, with similar powers, having signal strengths of R3/0 and R8/7 respectively, is often noticed, seeming to indicate that the antenna is the secret of successful operation in periods when conditions are poor. VMC is going to do a lot of experimenting in an effort to find the most useful type of antenna for all the year operation on the band we are using. The Reserve offers unique opportunities for testing out any new ideas, as it is possible to amass the same data from reports on one Sunday schedule as an amateur could glean from about three weeks QSO's. In addition, there is the advantage that all the reports are taken simultaneously, and thus a much more accurate result of the test can be made than reports over a considerable period of time. 3Z1 has always thought that members have never availed themselves sufficiently of the wonderful potential possibilities of their organisation for experimental tests.

VMC has a lot of new ideas and plans for incorporating in the work in the coming months, and we venture to say that 1935 will be the most interesting and finest year we have ever had. Incidentally, we have a vacancy for a metropolitan station in one of our sections at the moment, so any amateur desiring to join should get in touch with 3Z1 (VK3UK) as soon as possible. Of course, we are always ready to take in any new country stations, and should a vacancy not be there at the particular moment we can always attach him to an existing section until the opportunity arrives for transfer.

NOTES OF RESERVE ACTIVITIES  
MUST REACH HEADQUARTERS  
NOT LATER THAN THE 18th OF  
THE MONTH.

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VK3ML's SS six tube superhet is offered for immediate sale at a low figure. This receiver of outstanding performance is complete with coils, tubes and power pack. Greatest signal extractor known. Full particulars on application.

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Crystals accurately ground from best Brazilian quartz, tested to 50 watts input to penthode oscillator, 3500 kc., 10/-; other frequencies also in stock. Call or write above address.

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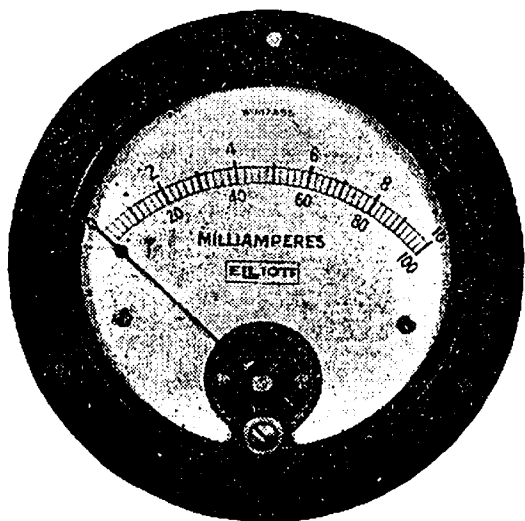
Amateurs are invited to submit  
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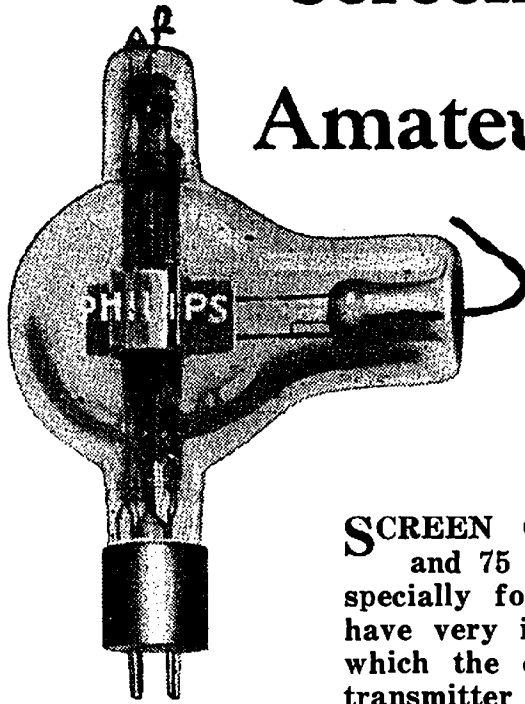
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For

## Amateur Transmitters



Types:  
QB2/75, QC05/15

quarter of actual size

**S**CREEN GRID Transmitting Valves for 15 and 75 watts have been designed by Philips specially for use by amateurs. These valves have very important properties, as a result of which the construction and adjustment of the transmitter can be greatly simplified. The control-grid and anode of these valves are screened from each other by a screen-grid, thus reducing anode-control grid capacity to a minimum. When used as H.F. amplifier or frequency multiplier in controlled transmitters there is practically no reaction of the anode circuit on the grid circuit, and self-oscillation is impossible with screening outside the valve. Neutralisation is unnecessary, so it is very easy to alter the wave-length at short notice. These screen-grid valves give greater amplification than triodes under the same conditions.

Table A shows the various electrical properties of the Philips amateur transmitting valves:—

### CHARACTERISTICS:

Table A. Type.	Screen Grid Valves	
	QC 05/15.	QB 2/75
Filament Voltage .....	4.0	10.0
Filament current* .....	1	3.25
Saturation current* .....	400	2,000
Anode voltage .....	400-500	2,000
Screen grid voltage .....	75-125	300-500
Max. anode dissipation .....	15	75
Anode dissipation on test .....	20	100
Max. screen grid dissipation .....	3	15
Amplification factor* .....	225	200
Mutual conductance (slope)* .....	1.4	1.4
Int. resistance* .....	160,000	150,000
Anode-grid capacity .....	.001	.02
Max. diam. of bulb .....	50	100
Max length .....	160	210

\* Approximate values.

# PHILIPS

## TRANSMITTING VALVES



# AMATEUR RADIO



Published in the interests of Amateur Radio  
by the W.I.A. (Vic. Div.). Official Organ  
of all divisions of the W.I.A., A.R.A.  
(N.S.W.) and the R.A.A.F. Wireless Reserve.



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MARCH, 1935

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0.50 Millivolts D.C.

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0.1 Milliamps D.C.

0.1 Milliamps A.C.

1000 Ohms per Volt

All in the one Instrument, with Selector Switch.

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# WESTINGHOUSE UNIVERSAL RECTOX INSTRUMENT

— for —  
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## Voltage, Current, or Resistance Measurements

- The instrument is self-contained for the following ranges:—

0—1 milliampere, d-c. (resistance 100 ohms).

0—1 milliampere, a-c (resistance 5000 ohms).

0—100 millivolts, d-c. (resistance 100 ohms).

0—5 volts, a-c. (resistance 5000 ohms).

Four terminals are provided on this instrument, two for d-c., and two for a-c. No shunt or special connection is required when changing from a-c. to d-c. Simply use the d-c. terminals for d-c., and the a-c. terminals for a-c.

The following additional ranges can be obtained by the use of accessories which are ordered separately.

Volts, d-c. — 0-1-5-10-50-100-200-500-1000.

Volts, a-c. — 0-10-50-100-200-500-1000.

Ohms—0-1000-10,000-100,000.

Milliamps., d-c.—0-5-10-50-100-500

Amperes, d-c.—0-1-5-10-50.

Milliamps., a-c.—0-5-10-50-100.

Prominent High-Class Radio Manufacturers have obtained and made this Instrument their Standard.

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## Editorial . .

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Has amateur radio an end? Can anyone in this wide world prophesy the "finis" of amateur radio?

What a gruesome way to start an editorial, but it is necessary to give "air" to what is to follow. For some time now, a new phase of radio has crept into the game—let us call it "radio politics." It is a game at which one, two, or a hundred men can play, by letter, verbally, or by magazine publicity. The latter course has been chosen by some of our overseas friends. In Australia we have had, and we probably still have, misunderstandings and differences between men and States concerning our activities; but we never have to consume valuable pages of a magazine that has a big overseas market to give air to our troubles to uninterested foreigners. We know they are not interested, and that they would consider, just as we do, that domestic strifes should stay in their proper place. Those of us who favor buying certain publications do so for the sake of the dope they contain, and not to learn the art of "typewriter politics." Such things are to be looked upon as wasted pages, and will eventually cause the doom of amateur radio. Such controversies are not only unnecessary, but harmful to the spirit of amateur radio, because of their psychological effect, and the things they put into many a Ham's mind. We should be out for the betterment of Ham radio conditions, and a fat chance we have of doing so whilst local squabbles are being circulated throughout the world. Obviously, some men love to see their own thoughts in big print, instead of putting on their hats and making personal contact with their adversaries. Penmanship is a safe method of speech when one wants to continue a life-long debate, because, by its use, one can always easily evade an issue. Thank heavens, "radio politics" has never become a serious side of our hobby, and let us fondly hope that the W.I.A. will always be strong enough to fight it off. You can rest assured that "Amateur Radio" will never be-

come the happy hunting ground for any typewriter politician.

The RST system is a failure. It is very unfortunate, because our English and American contemporaries made a bold effort to modernise Ham signal reporting procedure some time back. However, the system has met with disapproval because of its certain disadvantages, and scarcely 1 per cent. of the Hams are attracted by it. The amateur customs and traditions are hard to shift, especially when an innovation is suddenly sprung upon the gang like RST was. What is to be done? When it is all boiled down, we only want a better "tone" system. The W.I.A. took steps years ago, through the R.S.G.B., but the RST style was favored by the time the matter was given consideration. Let us hope a more sensible system will be evolved.

This issue of "Amateur Radio" is largely devoted to Centenary Contest results. The usual technical articles have been put to one side for this purpose, but will again be in full swing next print. Many requests were made by the overseas Hams for copies of this magazine, and elsewhere in this issue we have listed the foreign subscription as eight shillings, Australian currency. We would appreciate periodical notes from all quarters as well as station descriptions. To get back to the opening sentence; a page or so further over will be found all the details, scores, and photos. of the participating stations. It is felt, however, that many more countries actually participated, but failed to submit logs. To receive support from 50 per cent. of the world's countries is something to be proud of really, and the honest demands for a repeat are so numerous that we cannot fail to comply. However, our ZL friends have been invited to join in next October and make the contest a combined one of ZL-VK working the world. The fun will be greater for all, and should make a contest of this type more interesting. Consideration will also be given to the working hours, and to the power question. At the same time, the principle of the test will be the same, with the added advantage that there will be more stations in Oceania to contact. Early publicity will be given once more to this Southern Oceanic contest. It will be in October, as before—watch out for further announcements, gang!

## Centenary Contest Results

*Announcing another Test, October 1935*

By VK3ML, Manager Contest  
Committee.

"CQ DX CENT," "CQ VK CENT," have ceased flashing across the world, to lie dormant for 100 years. Never again during our stay on this ethereal surrounded planet of ours will we be able to witness another gigantic and mighty successful Centenary contest run by the W.I.A. When we recline in the old lead box, keying horizontally with the left foot, perhaps those will-be Hams of to-morrow, a few feet above us, will be viewing one another's faces, per medium of television and micro waves. But, why worry about the next age? We lived for the moment during those thrilling four week-ends in October last, and got the kick of a lifetime; long to live in the minds of many participants. The contest committee may have had to work hard, but it was rewarded by the happy words of praise from Hams in 50 countries of the world. To know a job is done, and is successful in the minds of the majority, is man's richest reward. We find it hard to express our gratitude to those who helped the Aussies make the Centenary Contest an undeniable success. Many thanks, OM's, and the same goes to all the societies who spared no effort nor expense in giving our show the publicity it received.

Our special word of praise must be handed to the Australian firms who most generously donated awards of outstanding value: To Messrs. Amalgamated Wireless Valve Company Ltd., Philips Lamps Ltd., and Siemens Bros. Ltd., was due one of the major factors governing the success of the contest—the spirit of inducement. The Ham spirit is hard to kill at any time, but, without the wonderful co-operation that our donors gave us, the Centenary Contest may have proved a trifle too strenuous for many. But to see a goal in the form of a string of tubes and meters was enough to stimulate any Ham's heart.

By the time the large blue pencil was wielded over all the logs, the position, as first appeared, changed appreciably. Aided by a measured map, cross checking logs, and a set of the rules, the committee had to rule many blue lines through the logs.

Several disqualifications were made because of non-adherence to the rules, and then again a number received more points than they originally claimed. Modest boys! The battle was between VK3MR and VK3GQ for the first place on the Australian list. After check upon check, VK3MR proved the hero of the Contest. When all logs were totalled, and the power inputs divided into the totals, VK3HL showed himself to be the outright winner of the handicap section. Heartiest congratulations are extended to all winning participants throughout the Contest by the Council of the Victorian Division.

The prize-winners on the VK list are as follow:—First, VK3MR, with 100,320 points, wins the RCA 852 donated by Amalgamated Wireless Valve Co. Ltd.; second, VK3GQ, with 97,218 points, is awarded the set of Siemens meters; and VK3JQ filled third place with 56,666 points, and wins the RCA 800 presented again by the A.W.A. Co. Ltd. VK3HL, with the astounding score of 40,181, obtained with 23 watts, representing 1747 pts. per watt, outrightly wins Messrs. Philips Lamps Ltd. array of transmitting tubes for the handicap section. VKFTH, otherwise Mr. F. T. Hine, of Campsie, N.S.W., put up the best effort in the world in the receiving contest.

VE5BI was voted the best station description after many re-reading sessions on the committee's part.

Outstanding scores on the part of the overseas gang were:—G2ZQ, with 3850; J2GX, with 3414; PAOAZ, 4908; VE5BI, 2256; W6CXW, 7854; closely followed by W9TB and W9FM and D4BAR, with 5400 points.

## Australian Station Logs

DE 2409	F	..	..	..	..	..	..	..	292
DE 2454	V	..	..	..	..	..	..	..	258
DE 1231	C	..	..	..	..	..	..	..	232
DE 1971	C	..	..	..	..	..	..	..	56

### Open Section.

First—VK3MR	100,320 points
Second—VK3GQ	97,218 points
Third—VK3JQ	56,666 points

### Handicap Section.

Winner—VK3HL. 40,181 points with 23 watts, equalling 1747 points per watt.

VK4BB	53,097	VK3HG	3,572
VK2LZ	48,488	VK2BP	3,490
VK7RC	43,076	VK7KV	3,240
VK3KX	43,010	VK3DM	3,144
VK3HL	40,181	VK4UU	2,933
VK4EI	37,980	VK3ML	2,244
VK2ZC	32,004	VK6FM	2,160
VK3HK	26,163	VK3BW	2,040
VK3JJ	23,809	VK2EL	1,590
VK2ER	17,157	VK5MZ	1,480
VK7JB	16,860	VK5FM	1,463
VK2HY	15,050	VK2QN	1,430
VK6SA	14,475	VK2RK	1,233
VK2AE	13,660	VK3VW	1,040
VK2KB	12,328	VK3PG	1,020
VK2OJ	11,074	VK2FX	1,002
VK2WJ	10,548	VK5HG	720
VK3BQ	10,222	VK3YO	720
VK2XC	9,924	VK4RY	686
VK5WP	8,720	VK2RG	648
VK2CS	8,638	VK3UH	616
VK3RJ	8,177	VK3JO	525
VK4GK	8,095	VK6CP	432
VK5MY	7,524	VK2BX	306
VK5RX	7,248	VK2WH	276
VK6MN	5,505	VK7CK	195
VK5XU	5,320	VK2YT	172
VK3OX	5,250	VK5RT	110
VK2KJ	5,190	VK3RX	75
VK2XV	3,991	VK5WR	66
VK2DR	3,984	VK2FZ	51
VK4US	3,624	VK3LQ	5

### Receiving Stations.

#### Australian.

VKPTH, N.S.W.	70,633
BERS, 195, S.A.	48,416
C. M. Howie, S.A.	8,190

#### Foreign.

Austria—		
OE.59	..	950
Holland—		
PA.R 171	..	2050
PA.R 242	..	1950
France—		
RF.F 2230	..	120
U.S.A.—		
J. McCarley	..	9
England—		
BRS 250	..	6150
BRS 1492	..	4554
2BWP	..	3600
BRS 1213	..	3500
BRS 1399	..	360
BRS 822	..	120
Germany—		
DE 1836	R	5202
DE 1857	J	3768
DE 1818	I	2950
DE 2220	I	1830
DE 1729	U	1800
DE 1555	D	980
DE 2161	J	944
DE 1943	H	868
DE 1616	M	820
DE 2194	V	804
DE 2089	H	540
DE 1872	U	480
DE 2322	F	456
DE 2192	P	404
DE 2078	K	351
DE 2327	M	296

## From Here and There

VK3MR worked 38 countries, VK3GQ 36, VK3JQ 29, and VK3HL 23. From W9FM, VK7RC, and a few others were loud enough to throw the milliamp needle (detector plate current) up to .6 millamp, with each dot and dash. ZE1JO says: "The VK's sure meant business." G2YL: "Hope the contest will be an annual one." W5VV: "Please make the contest an annual one; can't stay for the next Centenary." VK2EL says he has one 852, but would like another for P.P., hi! XLA1Y worked with less than 3 watts input to his CC rig. VK3OC reported him R7/8 on occasions. MX2A was the only station heard from Manchoukuo. He is the only one licensed there, of course W9FM turned out a magnificently got-up log, D4BIU remarks that there is a gap on the band for VK's between 7150 and 7250 kcs. X1AM put an R8 sig. into VK with an indoor aerial. ZS5U uses 8 watts. Best VK's at W9FLH were VK7RC and VK2DA. W1SZ worked 'em one after the other. VS6AH passes a word of appreciation of a tip-top contest. From G5YG: "99 per cent. of the VK signals left nothing to be desired in quality." GI5NJ: "Quite like old days to hear so many VK's." OE1ER got 480 pts. with 10 watts. Best time for VK-ZS contacts on 14 mc. is from 0400-0800 GMT according to ZS1H. W8FGA says VK3ML and VK7RC were best VK's heard there. W5BCW uses an aerial 600 ft. long, hi! G6HP is the lad who uses an O-V-O receiver. The D's favor EC-MOPA in about 95 per cent. cases. Very few superhets in Europe; no wonder they complain of QRM. The G's are supporters of the TRF and O-V-1 receivers, too. PK2KO put kilowatts in to milliwatts out; conditions rotten. The South Africans experienced QRN; six men were killed a night during the lightning storms, hi! W9TB uses 7 stages in the CC rig (more than one for each Continent, hi!). W2ESZ, W9FLH, VK2AE, G6RB, and hundreds of others want another contest. WELL, IT'S COMING GANG — NEXT OCTOBER!

We have sought out some interesting statistics from the logs. A handful of them gave the following:—

210 stations sitting on the key at once would draw 35,973 watts of final amp. plate power! Of those 210, 168 use CC, 22 prefer SE, and 20 MOPA. 130 of them chose Zepps, 51 S.W.F. Hertz, 7 doublets, 12 end fed Hertz, 7 Marconi, 1 indoor, 1 600 footer, and 1 260 ditto.

Then, again, 84 use TRF, 64 superhets, 38 det. and audio, 22 det. and 2 audio, 1 det. and 3 audio, and 1, i.e., G6HP, likes just the one too. The average of the 210 chaps gave an input power of 171 watts per man, thanks to several kilowatt merchants from the U.S.A.

Not quite as much can be said of the receiving contest as of the transmitting section. Mr. J. McCarley, of U.S.A., lost all points but 9 for not recording the serial numbers heard. The greatest support came from the G's and the D's. The Germans held a little contest of their own, which proved successful.

## German Report of the Event

By D4BUF.

Comin' along from the Saturday's work, takin' a quick dinner, and then . . . sitting before the "revver" listening for our Australian friends to catch 'em for the peaceful war of meeting them in the air for that Centenary Contest of the W.I.A. . . . such were the week-ends of the participating Hams in Germany and other countries the whole world over.

The weak whistles of the Hams far away were to search out of the enormous European QRM, of that rotten so-called "telephony," each one of such stations covering half the band with its poor, tormented waves, as Uncle Heaviside permitted local transmitters as well as this desired DX comin' through at same time.

Ditt ditt ditt dah—dah ditt dah—clicked our keys or bugs, the relays followed this rhythm, the filter condensers and chokes sung the same melody—ditt ditt ditt dah — dah ditt dah. . . .

The antenna had to blow the high frequency of the transmitter towards Australia, but often the Ham far away preferred listening to a stronger whistle, and the poor competitor here had to try his luck again by another

call. . . . So the Centenary Contest was the most thrilling event of this autumn.

Think that European Hams got the better part of the test! They got the day-time for work, while the operators of VK had to loose their nights for participation. The surprising fact of the contest is that it is possible to contact Australia nearly the whole European day . . . the 7 mc. band being the most consistent one for that; some hours between 1200 and 1600 GMT being reserved for 14 mc. work.

We think to speak with all participants of that event when we may advise you, VK3ML, manager of the contest:—"Thou ought to repeat that event every year!"

Possible that the name has to be changed; we think a centenary to be only once in a hundred years, hi! Well, the international ARRL contest IS a thrilling event but in Europe, working U.S.A. is a traffic round the corner, but Europe-Australia — that is real DX; it is difficult, it has the thrill and excitement of real short wave long distance traffic. And the system of scoring was found very nice, the week-ends being available for every Ham to participate. . . .

It was a specially good idea to give our listeners, those young people without a licence, the possibility of participation. We got some very enthusiastic letters of the DE's, who forgot meals and sleep, armed with a good receiver and tobacco pipe only, picking up the signals of VK. . . .

## Foreign Station Log

CT1ED . . . . .	495	G5YG . . . . .	2200
EA1AE . . . . .	280	GI5NJ . . . . .	198
EI8B . . . . .	705	GI6YW . . . . .	40
EI8F . . . . .	120	HB9AT . . . . .	162
F8RJ . . . . .	240	HB9J . . . . .	18
F8GG . . . . .	150	I1ER . . . . .	20
F8FC . . . . .	120	J2GX . . . . .	3414
F8VT . . . . .	80	J2JJ . . . . .	2898
G2ZQ . . . . .	3850	J3DP . . . . .	1692
G6CJ . . . . .	3400	LA3C . . . . .	10
G6RB . . . . .	2300	LY1J . . . . .	189
G6HP . . . . .	1150	MX2A . . . . .	6
G2OA . . . . .	760	OE1ER . . . . .	480
G2YL . . . . .	640	OE3WB . . . . .	40
G6XQ . . . . .	600	OH3NP . . . . .	504
G2IO . . . . .	400	OK2OP . . . . .	1445
G2WQ . . . . .	300	OK1AW . . . . .	36
G5BD . . . . .	210	ON4RX . . . . .	680
G6WY . . . . .	210	ON4MY . . . . .	120
G2BM . . . . .	180	PA0AZ . . . . .	4908
G2TR . . . . .	20	PA0DC . . . . .	1850
G5OJ . . . . .	60	PA0XF . . . . .	452
G6ZU . . . . .	30	PA0YS . . . . .	180
G5DS . . . . .	20	PA0JMW . . . . .	80
G2XC . . . . .	10	PA0QL . . . . .	36



PA0DA	10	W6WQ	14
PA0XR	10	W6KFZ	8
PK3ST	2616	W7DVY	1998
PK3LC	2130	W7CHT	72
PK1HD	1086	W8ZY	5784
PK1VH	924	W8BTI	5040
PK1CI	756	W8DQN	2250
PK2KO	140	W8FGA	1980
PK4RM	44	W8DGP	1752
SU1BC	3360	W8DIED	1146
TI2KF	36	W8EUY	1050
V8AF	655	W8GQU	544
V8AB	460	W8KOL	420
VE5BI	2256	W8AQ	400
VE3WA	364	W8KVN	400
VE4IG	243	W8BDG	360
VE4RO	192	W8AAT	300
VE5HP	140	W8KC	162
VE2HG	10	W8UV	100
VP3AM	8	W9TB	7104
VQ4CRL	1785	W9FM	6000
VS5AC	1464	W9IJ	3444
VS6AH	6566	W9ASV	2790
VS6AQ	5658	W9AFN	945
VS7GJ	315	W9MRW	770
VU2FY	2070	W9FLH	710
VU2DP	116	W9JFB	525
VU2LJ	18	W9KA	504
W1SZ	1500	W9JYZ	256
W1HUG	546	W9AIW	252
W1GDY	80	W9BIB	138
W1EPC	10	W9NBM	36
W2AIW	1350	W9LL	18
W2BSR	1045	W9LW	9
W2DEW	900	X1AM	392
W2FLG	330	XLA1Y	180
W2GSN	183	YM4ZO	210
W2CC	180	ZE1JO	530
W2DVO	180	ZL2FR	912
W2AFB	180	ZL1DV	414
W2EUZ	160	ZL3BY	360
W2FJG	60	ZL2QM	39
W2ESZ	40	ZS1H	1446
W3BES	3720	ZT6X	512
W3ANH	2226	ZT5R	188
W3CXG	1206	ZS5U	96
W3EVW	630	ZS6V	72
W3EB	324	ZS5Z	44
W1DUK	80	ZU6P	34
W3APC	134	D4BAR	5400
W3COP	126	D4BDR	1715
W4AJX	4884	D4CAF	1362
W4BGG	675	D4BIU	1265
W4AJY	432	D4BUF	1030
W4CEN	195	D4BBK	195
W4DAC	108	D4BMJ	56
W5UX	2730	D4BER	56
W5AFV	1380	D4BEU	54
W5EHM	900	D4BHR	36
W5ASG	685	D4BKK	20
W5BB	279	D4BOG	18
W5BCW	180	D4CNE	10
W5CAS	128	D4BLU	10
W6CXW	7854	D4BGA	9
W6TI	2912	D4BDF	9
W6ANN	846	D4BMK	9
W6JOE	336	D4BJU	9
W6KBD	189	D4BHH	9
W6IWS	168	D4CIF	9

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an engineer attached to an exper-  
imental television station and acci-  
dentally contacted the 7000 volt  
supply.

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# Winning Station Description

## VE 5BI

The origin of Ve5BI may be dated back to the good(?) old days of spark, when the author owned and operated station 4BY at Edmonton, Alberta, Canada. From this evolved, at a later date, station C5BG at Vancouver, B.C., when the author operated this (as was then thought) most modern and up-to-date station, consisting of a single 203 type tube in a Hartley circuit, a much remembered feature of which was the "mountains" of old "B" batteries which were used as plate

voltage final plate, and filter choke, are bolted on back of this panel.

The second panel, bottom half, carries final milliammeter for final plate current, upper half carries, left to right, oscillator/buffer doubler filament voltmeter, buffer/doubler milliammeter, and final voltmeter (filament). Rear of this panel carries osc./doubler/buffer power supply, and grid blocking keying power supply.

The third panel from bottom carries, left to right, crystal oscillator



VE 5BI

1. 1935 Transmitter

2. Good Old Days-1920

3. SSS Receiver

supply; a receiver was used then which was the author's pride—it actually had an RF stage on it.

From 1927 on many changes were made, until the material for the present lay-out was obtained, which, in its present form has been in operation for the past two years.

The complete transmitter, with its power supplies, is built on one 69 inch standard relay rack; this was made of 3 in. x 1½ in. quarter angle iron, panel being of ¼ inch iron faced with 28 gauge galvaneel, this being finished in black.

Enclosed picture shows front of transmitter panel, meters, etc. Bottom panel contains line voltmeter, relay which cuts in primary of high voltage transformer when oscillator is switched on, can be seen to left of meter on this panel, 866 rectifiers are mounted directly above line voltmeter. All power transformers, for filament of final, filament of rectifiers, high

tuning control, plug-in crystal holder, and 1st doubler tuning control; on top half of this panel is meter for reading either crystal or 1st doubler plate current, with circuit switch just below meter. Behind this panel are mounted crystal oscillator and 1st doubler, with associated circuits.

The fourth panel from bottom carries only buffer (40) or 2nd doubler (20); this consists of one 46 type tube operated at 400 volts 30 MA., and gives ample excitation, either as buffer or doubler, to excite the final up to 400 watts input; coil for this stage is designed to cover both 20 and 40 band without changing.

Top panel carries, left to right, antenna tuning, tank tuning, with final grid milliammeter above; behind this panel is mounted the final stage, which consists of two type 211 tubes in push-pull, with associated circuits, all coupling is capacity, with plate series fed on all stages.

The single wire fed impedance matched type antenna, is coupled to final through a separate pp. tank; much better results were obtained this way than the usual method of clipping antenna directly on tank coil. Antenna ammeter can be seen to the upper left of panel; mounting of this meter on panel was avoided, due to losses when in proximity of metal panel.

Antenna tank is so designed as to tune both 40 and 20 without changing coils; no losses were found to occur by doing this, as antenna seems to function better with hi-C for 40 and lo-C for 20 bands.

Transmitter was designed particularly for 20 and 40 meter bands, to enable operator to make quick changes from either of these bands. This is obtained very satisfactorily, as there is only one coil to change (final tank coil), which is mounted on G.R. plugs.

To change bands it is only necessary to change final tank coil and re-set antenna and tank tuning; also buffer/doubler dial.

Band change in this way can be made in less than three minutes, while if crystal is also changed it is only necessary to also re-set oscillator and 1st doubler dials.

Voltage regulation of all power supplies is obtained by means of auto-transformers in primary; by this means the final input can be varied from 250 to 400 watts, and also line variations of filaments can be compensated for.

Complete transmitter and rack was designed and built by the author some two years ago, and has given real service since that time. And it has seen some real work during the U.S. DX contests and the latest VK DX test. Might also say that, with exception of tubes and high voltage transformer, there is not a piece of factory made transmitting apparatus in it, necessity being the mother of invention in this case.

The receiver, which was formerly a 9-valve super, was redesigned about one year ago into a S.S. type super, with optional automatic volume control for fone reception, and now consists of:—

58 type tube rf. (tuned gang with 1st det.), 224A 1st det., 224A hf. oscillator, crystal filter and three stages of 465 kc. lf. using 58 type tubes, 2B7 2nd det. and A.V.C. and 2A5

audio; for CW reception, a 224A ec. oscillator 465 kc. is used.

Rf. and 1st det. are ganged; oscillator is separate, with small shunt condenser for band spread, which gives 90 degree spread on 40 and 20 bands. All controls are mounted on front panel, while coils are quickly and easily changed, being mounted on top at front of chassis.

An electron coupled frequency meter, A.C. operated, can be seen in picture at right, while a small battery self-contained monitor is placed in top left-hand drawer of desk.

Station location is literally "on the shores of English Bay," and is a good location for Western DX for transmitting; noise level is bad for DX reception, however, from 'autos' and commercial apparatus in vicinity. This is where the crystal receiver proved its worth to the author; it is in this location really of more value in cutting through power QRM than for selectivity, since the receiver without crystal has good selectivity. However, a fair share of DX is heard and worked on both 20 and 40 bands; the big ambition at present is to contact Africa, this being the elusive Continent here (this is easily proven by the fact that, as yet, no Ve5 station has made a WAC), with possible exception of stations in the North-west, Yukon, etc.

Ve5BI is not a traffic station, the biggest thrill here being contacting (or trying to contact) DX. The DX tests are looked forward to as the event of the year.

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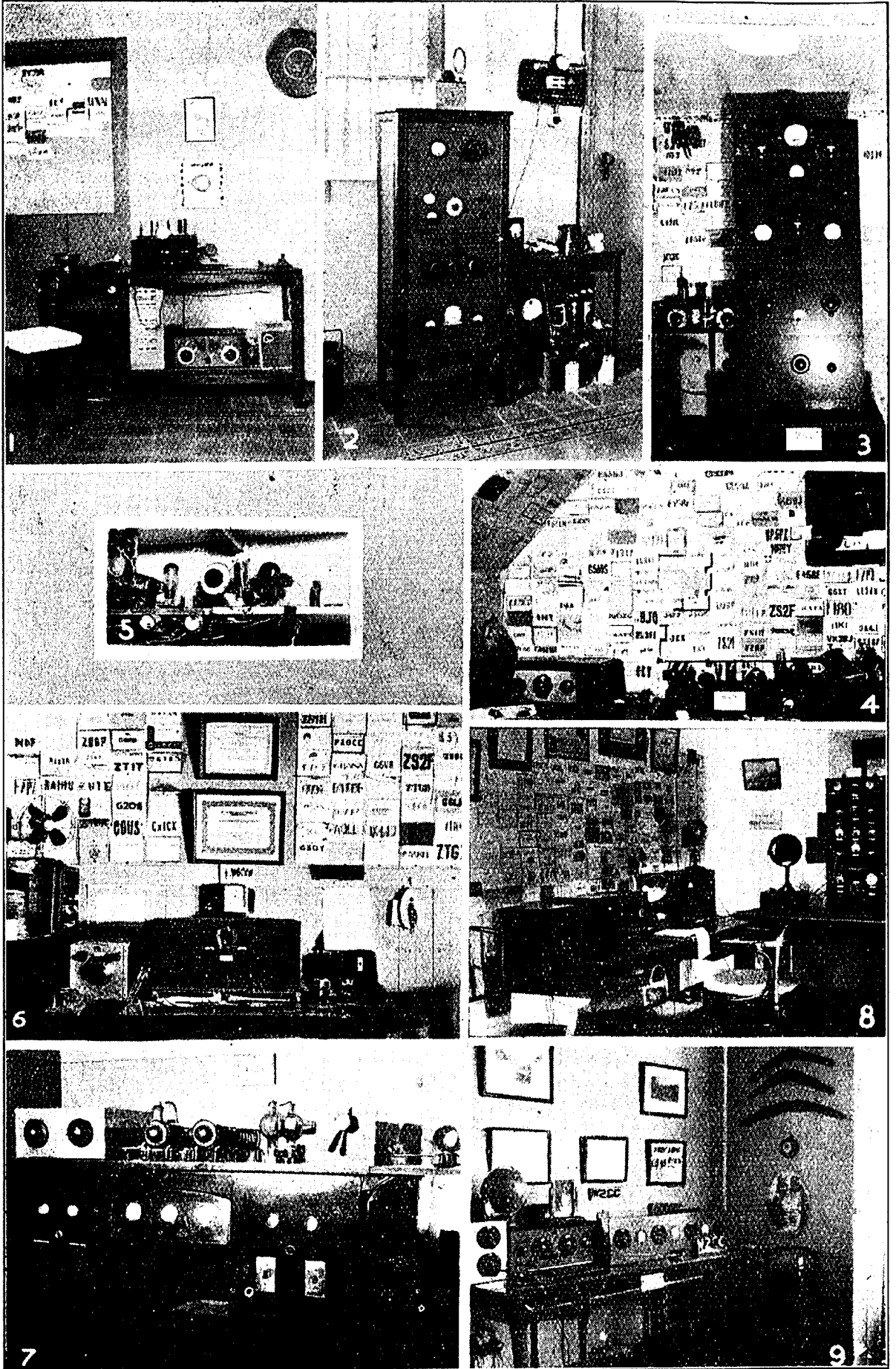
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One of the most interesting valves we have yet had the pleasure of handling is now available from Amalgamated Wireless Valve Co. Ltd. The Melbourne representative, Mr. S. Haworth, has kindly given us the characteristics of the new Acorn Type Radiotron 955. This little midget, the smallest transmitting valve yet released, is not as big as the top of one's thumb, and examination shows it is made with the meticulous attention to detail so characteristic of Radiotron engineers.

The R.C.A. 955 Detector, Amplifier, Oscillator (Acorn Type) is a heater type of triode designed primarily for radio amateurs and experimenters working with wavelengths between 0.5 meter and 5 meters. Operation at

these short wavelengths is made possible by means of an unconventional tube structure having small size, close electrode spacing, and short terminal connections.

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Heater Current . . . . .	0.16 ampere
Amplification Factor . . . . .	25
Grid-Plate Capacitance . . . . .	1.4 uuf
Grid-Cathode Capacitance . . . . .	1.0 uuf
Plate-Cathode Capacitance . . . . .	0.6 uuf
Maximum Overall Length . . . . .	1 3-8 in.
Maximum Diameter (with terminals) . . . . .	1 3-16 in.
Terminal Mounting . . . . .	Special

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## Station Descriptions

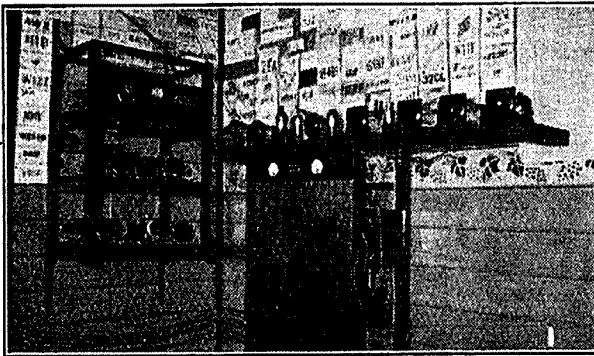
### VK 3GQ

VK3GQ has been on the air since December, 1932. The first two months were the only time that self-excited master oscillator control has been used, the junior B.E.R.U. contest in 1933 prompting the installation of xtal control.

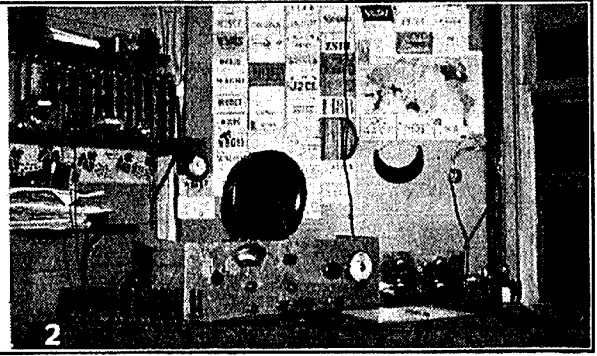
The original transmitter was a 3-stage M.O. job with 171A Hartley, 45 buffer—f.d., and p.p. 47's p.a., with about 18 watts input. Using this rig, all continents were worked in the first five weeks of operation, the majority of DX QSO's being on 14 mc.

though this figure was never used for working.

The driver stages were later rebuilt, and the rig was changed to a 3-stage job with 24 e.c.c.o., and 46 buffer fd. In January, 1934, the 5-stage rig owned by the late VK3BG was installed, and was used for R.A.A.F.W.R. work. This is a relatively high power job, with 47 co., 45 buffer, 47 fd. (when required), 210 driver, and 211 final. The power supplies consist of "C" bias, B/C power pack for first three stages, and a



1. Transmitter



2. Receiver

The first 3 QSO's were with J stations, and then ZL2JA was contacted, before the first VK QSO was made with "Mac," of VK2MY.

It was not until Xtal control was installed that 7 mc. dx became very thick, but the first night on which the xtal gear was tested, five W stations were contacted in succession. Since then over 50 countries have been worked, and over 1500 contacts have been established.

The first xtal rig was a 5-stage job with A409 c.o., B406 buffer, 47 f.d., 45 buffer f.d., and pp. 47's in pa. With a few changes to the first four stages, including the use of 24's as fd's, the original pa was used until November, 1933, when the 47's were replaced by E406 Philips tubes. These tubes proved much easier to neutralise, but required rather more drive than the 47's to keep the efficiency up. **With extra drive and 600 volts on the plates, the new pa. was worked continuously at 150 watts during tests,**

bridge rectifier on 1200 volt transformer, using 83 tubes, for driver and final stages. This supply delivers 100 mils. at 650 volts and 250 mils. at 1050 volts when required, though the normal drain is about 20 mils. at 700 volts and 90-120 mils. at 1100 volts.

The old 3-stage rig was rebuilt for the contest, so that it could be used for 14 mc. work with higher efficiency. It was changed to a 5-stage job with 24 e.c. c.o., 24 fd., pp. 24 buffer, pp. 59 driver, and the pp. E406 final. The 24 was not found to be very satisfactory as fd., and was replaced by a 47, which gave much better output. The pp. 24's do not give the desired lift in the buffer stage, and these will be changed to pp. 46's at an early date. The input used on the 14 mc. transmitter is about 60 watts, and is obtained from a 600-0-600 transformer, rectified by an 83 and filtered by 6 mfd. of paper condensers. The first stages of both transmitters are fed from one power supply.

Four switches, two for each transmitter, are mounted near the receiver. The filament switches are single-throw, while the H.T. switches are 2-way, arranged to open the primary of the unwanted power supply when switched on.

Keying is effected on the 45 buffer of the 7 mc. rig, and on the 24 coil plate in the 14 mc. rig. Key clicks are eliminated by the use of a tube keying system.

The first receiver used was a 2-valve battery job, with A415 det. and A409 audio. An A442 rf. stage was added after a few weeks, and this receiver sufficed until the time of the Cent. Contest. It was considered necessary to have something giving good C.W. selectivity for contest work if a minimum of time was to be lost due to unfavorable conditions. In view of this an Xtal gate super was built up and was luckily rushed through in a week, and finished at 7 a.m. on October 6. It has definitely proved its worth, and also shows how unstable some of the "T9" signals actually are.

The tubes used are: 6D6 rf., 6D6 osc. cc., 77 mixer, 6D6 1st lf., 6B7 2nd lf., and diode detector, 78 bo. and 27 audi. A two-tube frequency meter-monitor is also built into the receiver. The Xtal filter is of the matched impedance type, and Hammarlund lf. transformers were rebuilt to do the job.

A great deal of the get-out ability of the station is attributed by the op. to the aerial system used. The original aerial was a 7 mc. half-wave zepp, with 45 foot feeders. This was definitely directional. This was followed by a half-wave 80 mx. current fed arrangement running east and west, 50 feet high at each end, and about 12 feet high at the centre. This was useless on 7 mc., but on 14 mc. proved

itself to be the best aerial which has so far been tested on that band.

A few other arrangements of generally accepted radiators were tested, but results were not very pleasing; no system giving improved consistency or signal reports in DX QSO's until the present arrangement was erected just prior to the B.E.R.U. contests, 1934. This was erected to eliminate the directional properties of previous aerials tried, and also to give a different radiation angle.

Reports from U.S.A. stations immediately jumped about one point, while reports from European and Asiatic stations came up from 2 to 3 points. African stations, whom it had seemed impossible to raise, started to give reports from R4 to R6 under similar operating conditions. These reports refer to 7 mc. operation. Comprehensive tests on 14 mc. have not yet been carried out, though the general impression, given by the few QSO's had on that band, is one of satisfaction.

The aerial is 43 feet high at its highest point. A 33 foot vertical wire drops to within 10 feet of ground. From immediately under this wire three 33 foot wires radiate at angles of 120 deg. in a horizontal plane. The feeders run horizontally from the shack, one joining to the bottom of the vertical wire, and the other to the mid-point of the horizontal wires. The arrangement is thus equivalent to a current fed half-wave 40 metre Hertz.

All-round reports have been very satisfying. During the contest reports of R9 being received from G, VS6, J, and W7, while R7 and R8 reports are very consistent. In the 357 QSO's of the contest, 223 stations reported QSA5, while 302 reports were R5 or better; only 11 R3 reports were received, and only 31 of the 357 reports were QSA3.

## VK 3MR

Transmitter crystal controlled on all bands on frequencies of 7285, 7190 kc. and 14,380 kc., 47 co., 47 1st fd., 47 2nd fd., QCO5/15 buffer, and 852 pwr. amp.; power, 80 watts.

The buffer is link coupled to fd., and likewise to the p.a.; no neutralising is required in buffer, as the screened grid tube is used.

This makes it possible to change from one band to the other, namely, 7 mc. to 14 mc., without neutralising the buffer.

Using a system of switching, it is possible to effect a change in 12 seconds. The system of switching does not introduce any losses into the circuit.

The advantage of being able to QSY in a short space is obvious. This was considerably helped by using two receivers; one on 40 metres and the other on 20 metres. When the 40-metre receiver was switched off, the 20-metre receiver came into play, and by pulling over a DPDT aerial and earth switch, the 20-metre band could be searched, and if anything was there, as it often was, during the test, it was easy to work them, as QSY was only a matter of seconds.

### Receivers.

40-metre, A.C., 78 rf., 78 det., 37 audio, using indoor aerial.

20-metre receiver, D.C., A415 det., and A415 audio. Also special indoor aerial.

Aerial for transmitter consists of a full wave 7 mc. zepp, 51 ft. feeders, series tuned on all bands. Wire, 7/18 x 133 ft. long, 41 ft. high at feeder end, and 102 ft. at free end, running east and west. This aerial is perfect for all directions on all bands.

The transmitter is built into frame 4 ft. x 2 ft. wide x 14 ins. deep, with all controls on front panel; 4 shelves are used and each one can be slid out. Glass sides give a good view of components. Two power supplies—one 83 rectifier delivers 616 volts to the doublers and buffer and 866S delivers 1600 volts to 852. A key click filter is used, and is very effective. Simplex auto key used. All tubes are RCA and Philips.

## VK 3HL

By VK3RH.

To all those short-wave enthusiasts who during the past decade have donned a pair of cans, VK3HL—otherwise Allan T. Hutchings, of "Bryn Avon," Callawadda—needs no introduction. Even less does he require an introduction to those Hams who have taken part in any DX contests during a similar period, for, although the Centenary Handicap is the first major trophy which Allan has landed, with the exception of a Yank contest in 1931, for which he only received some attractive wall-paper, he has given his fellow-contestants no little anxiety, and in many instances a helluva fright.

VK3HL first pushed a hole in the 300 metre band as plain, ordinary 3HL, away back in the dark ages before the era of prefixes, sales tax, and scanties. On the wall of his shack his station licence, over the faded signature (combination of literary style and crook departmental ink!), of our past, present, and future friend—one J. Malone, R.I., testifies that this was in January, 1923.

Allan began his activities in radio under the parental roof-tree with the usual Hartley rig, fitted into an imposing panel array. The receiver, a 3-tube affair, was similar in size and possessed a change-over switch which even to-day would do justice to the Yallourn power house. H.T. was then obtained from the 32 volt house lighting plant, via a motor-generator, but

this has since been replaced by a more efficient 100 watt dynamotor.

After some years of operation under these circumstances, 3HL began to feel somewhat sympathetic towards his tubes, for with his mother (now VK3HM), and his sister Marjorie (now VK3HQ), showing more than passing interest in his hobby, he felt that the transmitting glassware couldn't be expected to stand 24-hour operation in three shifts, so he said good-bye to the old shack and its memories, and pitched his tent—a very substantial and comfortable one—a stone's throw away, and at the same time espoused himself to the girl of his dreams. In no small way has his "better half" been responsible for Allan's success in his hobby, due to the interest and sympathy she has shown with his work, and particularly in "keeping the eats up to him" during his strenuous contest work. Other YF's please note!

The usual Ham's cherished desire—WAC—was earned in 1928, and to date more than 50 countries have been contacted, and, perhaps more interesting still, over 1000 Yanks.

Now to get along to the technical side of things, we'll take the transmitter. The present rig is a thing of beauty and a joy—I almost said "forever," but nothing stays put forever in a real "Ham's" shack. As will be seen from the photo, it takes the form of an aluminium panel built up on a

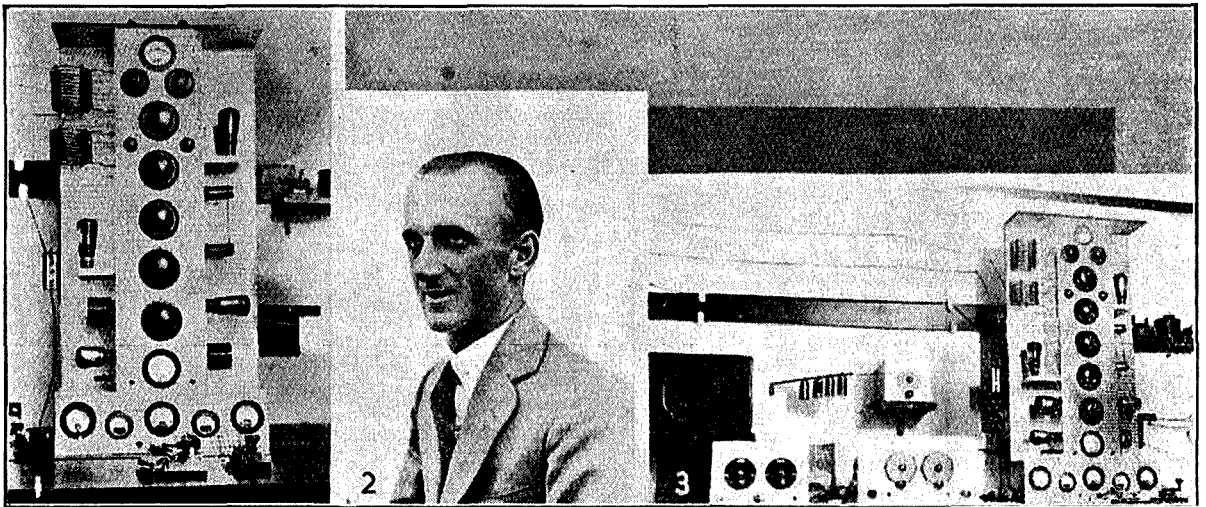


framework of oak, and a mottle finish gives it a really striking appearance. The design is such that all leads are reduced to a minimum, and thus the almost impossible has been achieved—efficiency and appearance in combination. Although only three tubes are in use, the transmitter was designed to use four tubes ultimately, and in the following order: TCO/5 as CO, TCO4/10 doubler, QCO5/15 buffer (or doubler on 20), and either QCO5/15 or TCO5/25 final amplifier. During the recent contest, however, a PM24B was used as CO, E406 doubler, and E406 in the PA, with an input of 23 watts.

The receiver is a recently built 6-tube super-het, using 2 volt battery tubes, and is built around a 1A6

rangement gives a decided directional effect, although not reducing signal strength too much in a sideways direction.

Compared with a half-wave horizontal aerial, DX reports indicated that the beam system increased signay strength in U.S.A. by 2 points, while the Japanese reports revealed no drop in strength, as might have been expected. Two of these directional arrays were used in the contest, one focussed on U.S.A., and the other on Europe, and in this manner, with a reduced input of nearly 50 per cent., reports on signal strength were similar to those usually obtained with the old aerial and normal power. This fact probably won the contest for



Alan Hutchings VK 3HL and his gear

mixer, 2 34's in lf., PM1HL detector, 30 in beat oscillator, and a 33 output tube feeds the dynamic speaker. The job is an all-wave affair, using 2 separate 2-gang condensers—a .0005 for the B/c. band and a .00005 midget for the "Ham" bands—which are, of course, band-spread. The signal strength to noise level is particularly fine.

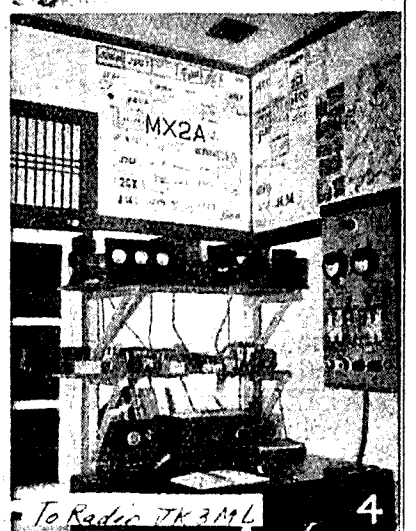
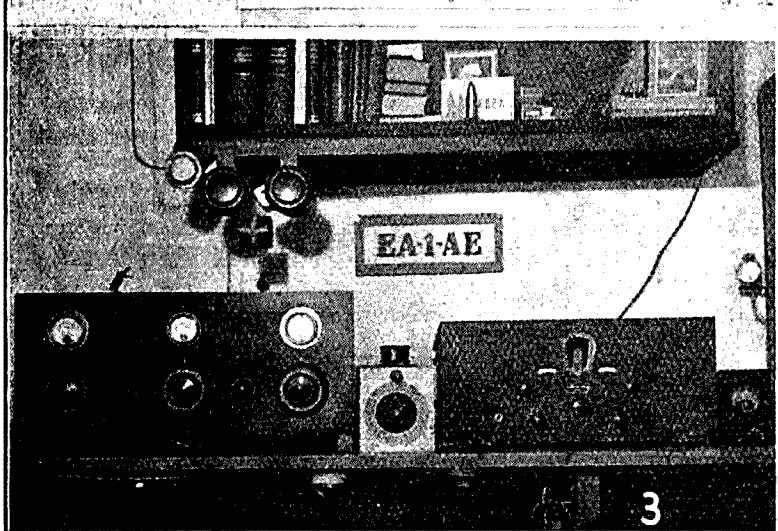
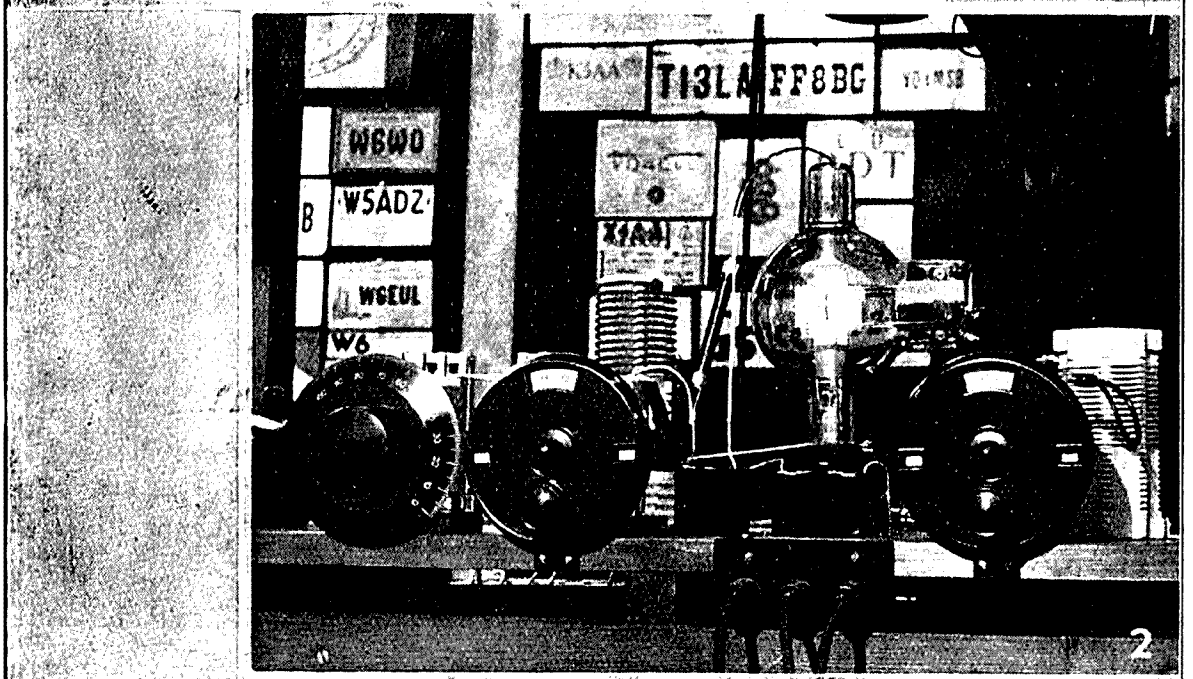
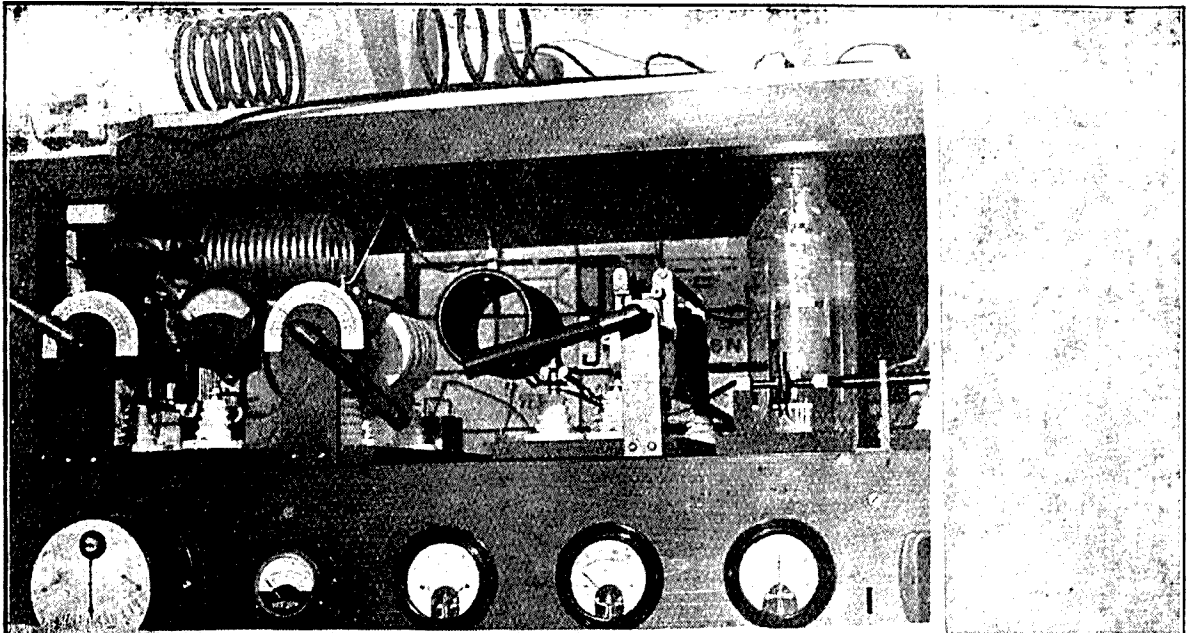
And, lastly, but by no means least, we come to the aerial array, a factor which, in the opinion of the writer, contributed very little less than the man himself, to the winning of the handicap. Most Hams will probably be surprised to learn that it is a beam affair, and that it is a beam which ACTUALLY works, and at the same time is relatively cheap. Two second harmonic radiators are arranged in the form of a V, being fed at the apex by the usual zepp feeders — three-quarter wave in this case. The angle of the V is 80 degrees, and this ar-

VK3HL, and is an excellent illustration of the platitude that "Brain counts more than brawn," just as much in amateur radio as it does in a brawl.

All Hams will undoubtedly join with me in heartily congratulating VK3HL on his recent success, and in wishing more power to his keying arm in the future.

## COUNTRY PHONE STATIONS.

All country stations on broadcast band desiring to continue must apply both to the Dept. for permit and Allocation Officer for allocation, before March 15, otherwise no consideration will be given.



1. D 4BIN    2. D 4BIN    3. EA 1AE    4. MX 2A

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# Amateur Radio

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## Federal Convention

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The Annual Federal Convention was held in Hobart from January 26 until January 31. Four Divisions sent delegates, while the most distant—Queensland and Western Australia—were represented by proxy. The various representatives were: G. B. Ragless, VK5GR (Acting Federal Secretary); W. M. Moore, VK2HZ (A.R.A., New South Wales); J. G. Marsland, VK3NY (Victoria); J. N. O'Dea, VK2FQ (Queensland); W. S. Pitchford, VK5WP (South Australia); W. T. Hooker, VK7JH (Western Australia); H. M. Moorhouse (Tasmania); and F. Wells, VK5BR (Secretary to the Convention). Quite a lot of time was spent on the business side of the Convention, four nights and one afternoon being taken up, and, as the official minutes are to be published in our next issue, I will not mention business, but will concentrate on a description of the social side.

Bill Moore and Jack O'Dea went direct from Sydney to Hobart, while the remaining interstate men, Gordon Ragless, Bill Pitchford, Forde Wells, and Jim Marsland, went from Melbourne via Launceston, arriving in Hobart on Saturday afternoon, January 26. Upon arrival, the latter party were met by the Hobart gang, and, after light refreshments, were taken to the shack of the Grand Old Man of Tasmanian radio—"Pop" Medhurst, VK7AH—where they made the acquaintance of the two Sydneyites. VK7AH has a collection of gear dating back to the days "when Adam was a boy," and has been on the air since 1901.

The first item on the Convention programme was a dinner, which was attended by some fifty members of the Tasmanian Division, and representatives of the P.M.G.'s Department, Broadcasting Stations, and allied societies. We were not allowed to sleep off the effects of the dinner on Sunday morning, as a field day had been arranged, and all cars left the Institute rooms at 9 a.m.. This field day was a tribute to the organisation and enthusiasm of the Tasmanian Division, as no less than fifty-three members were present. The transmitter party, 7AR, 7JB, and Tom Allen, 2nd op., 7PA, left early, and the remain-

der were distributed over twelve cars, all equipped with D/F receivers. The transmitter came on the air at 10 a.m., and 7WR and party located it at 10.30, with 7CW three minutes behind. The next car arrived at 11.40, and the others at intervals up to 1 p.m. After lunch, a cricket match was played, and resulted in a draw.

On Monday morning, the visitors inspected Tattersalls, and have great hopes of installing 852's and S.S. Supers as soon as the next consultation is drawn. They were then shown some of Hobart's wonderful views; there is no doubt about it, the scenery over there is magnificent. In the afternoon the party visited the Cascade Brewery, and had a very interesting afternoon—by "interesting" I mean that it was not dry. Jim, 3NY, took some photos. inside the Brewery, but the negatives show three of everything. He says that he moved the camera, but the boys think that his camera is an extraordinary one, in that it takes photos. exactly as the owner sees things. Hi! Jack, 2FQ, had great difficulty in leaving the place, and is thinking of becoming a barman.

On Tuesday morning we were conducted through the works of Cadbury-Fry-Pascall, and sampled some of the products. Bill, 2HZ, is considering the possibilities of a position there, feeling that a chocolate diet may be beneficial—he is such a little fellow, and weighs only 16 stone. In the afternoon, the Automatic Telephone Exchange and 7ZL Station and Studios were inspected.

The final visit of inspection was to the Electrolytic Zinc Works on Wednesday morning. The power station there is really remarkable, and has a wonderful collection of meters, the one which interested the boys most being a vibrating reed instrument for measuring the frequency of the A.C.

I could fill the magazine with a full account of our doings in Hobart, but, unfortunately, that can't be done, but, before closing, I would like to thank the Tasmanian Division for their hospitality to the visitors, and compliment their Secretary (Mr. Bert Moorhouse) for his organisation of the Convention programme.

## Operating and Experimental Section

Conducted by VK3WY.

Up to the time of writing the main feature of this month has been the first part of the B.E.R.U. contest. Conditions prior to the contest had been rather patchy, but we had been hoping that they would clear up OK for the contest. During the first part of the contest, however, this was not the case. As a matter of fact, I think that conditions were definitely poorer than we have had them for some years. This seemed to be particularly the case in VK3 and VK5, though I believe that VK2, 4 and 6 fared better. At any rate, they could be heard working DX which we could not even hear here.

The following is a rough summary of conditions on the various bands. I should say, however, that this applies mainly to VK3, as I have not received any definite information from the other States.

**3.5 mc.**—QRN is rather fierce on this band at present, but I have heard of several early morning contacts with European stations, which looks decidedly promising for the possibilities of this band in the near future.

**7 mc.**—This band does not appear to be as good as during the previous month. QRN has been rather prevalent during the nights. After 2100 the W1, 2 and 9 stations are coming through well, and can be worked until well after midnight, which looks well for the Yank contest in the near future. ZL sigs. are strong in the early evenings, and later on the usual KA, OM, J, and occasional VU sigs. may be heard. The early morning DX on this band is not as reliable as last month. European DX may still be worked, but it takes a lot of raising, and appears to be getting weaker each week now.

**14 mc.**—DX is still very patchy on this band, but the patches are decidedly good when they do come. At night, HC, HK, CX, and European stations may be worked. CX, I, CG, is still one of the most consistent stations on this band.

### 14 mc. DX IN VK2.

2BA, of Chatswood, has spent a considerable amount of time during the past two months studying conditions on 14 mc., especially from a DX raising point of view. In between periods at sea and periods listening, 2BA worked on 14 mc. during January and first few days of February the following prefixes:—SP, PAO, VU, FB, J, G, OE, W, CX, OK, SU, ZC, VS7, ZB, OH, F3, YL, SU, I, FM4, ZS, HB, EA, PK, EI, VS8, SM, AC, YR, ON, U9, P, VS6, YU, OA, and ZL. 2BA is situated in a position especially suited for 14 mc. DX. Outside those prefixes already shown as worked, the following were also heard: PY, VP5, VP4, K5, KA, F8, VS3, FM8, PJ, LU, OZ, VQ4, LY, F7, HC. A total of 51 countries. None so bad for a period of just over a month, and ten days of that at sea.

2BA submits as a DX chart for the next two-three months the following:—

South America—CX, CE, HC, LU, PY, etc., 1700-2100 SMT.

Europe—All countries, 2000-0100 SMT.

Africa—ZS, ZU, SU, FM8, FM4, etc., 1600 and 2100-2400.

North America—VE, W, X, 1430-1730, 2400-0200, and 0500-0800.

Asia—1700-2000.

About May the Africans and Europeans will disappear at night, and possibly may be worked from 0700 to 0830, while the North Americans will come through from 1100 till 1800, and South Americans from 1400 till 1700 SMT.

### 7 mc. DX CHART.

1700-1900—W, VE, X, HP, K5, VP, and occasionally Southern America.

1900-2100—W, VE, KG, KA, J, AC, and Oceania in general.

2100-2300—W, VE, KC, VU, VS, J.

2300-0100—W, VE, V8, and Asia in general.

0100-0300—W, VE, V, V1, Asians, and scattered Europeans.

0300-0500—FB, V8, CR7, VQ3, VQ4, ZS, ZU, J, and XU.

0500-0700—FM8, FM4, and Europeans in general.

0700-0800—Scattered Europeans and VU, VS, OM, and J.

## 28 and 56 mc. Section

Conducted by VK3JJ.

January and February brought a complete change in 28 mc. conditions, and interstate signals only penetrated on two or three occasions. As usual, VK4BB had the best run, and during the short improvement noticed on Jan. 27, VK3BW, 3NM, 3WL, 3OF, 3BQ, 3HK, 3JO, 3KD, 5MY, and 2LZ were heard, the first three being worked. On the same day, 3BW and 3OF were QSO both 2HY and 2LZ.

VK6SA reports conditions even worse in W.A., no signals at all being heard. He has been keeping a constant watch, but 6MN, 6CI, and 6RA, who are the only other VK6's interested, have not been active.

Unfortunately, all points scored in the first two days of the VK3 28 mc. contest were obtained from local contacts, not a single interstate signal being heard. The following VK3's were active:—3NM, 3WC, 3ML, 3OF, 3BW, 3KD, 3WX, 3PX, 3BQ, 3JZ, 3XK, 3JX, 3OC, 3JO, 3HK, 3WL, 3FM, and 3JJ.

VK3BW only recently started on 28 mc., and although located about 35 miles across the bay, no trouble is experienced in working most of the Melbourne stations. An 800 doubler driving a screen grid QB2/75 P.A. is responsible for the hefty signal, the last stage giving slightly better results when neutralised.

Most of VK4BB's results this season have been obtained with a 210 TNT Xmitter, running with about 25 watts input and coupled to a half-wave 7 mc.

Continued on Page 23

## Divisional Notes

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### Victorian Division

#### KEY SECTION NOTES.

By PETER H. ADAMS (VK3PX).

The usual monthly meeting of the Key Section was held at Institute Headquarters on February 4, 1935. There was an average attendance of thirty members. As VK3RJ was away on a fishing trip, no QSL cards could be distributed, but a letter from him was read, in which he advised that all cards would be posted out in due course. VK3JJ gave a report on 28 mc. conditions, which have been consistently poor for the past month, and only local QSO's have resulted.

A visitor, W2DUM, from Long Island, New York, arrived during the course of the meeting, and was received with acclamation.

VK3OX, who occupied the chair, stressed the need for short talks or lectures at meetings, and was supported in his remarks by the secretary, whose suggestion of putting the names of those present at each meeting in a hat, and drawing for the lecturer to give a talk on some subject of interest at the following meeting, was also favored by VK3UK.

At the conclusion of general business, VK3PX delivered a lecturette on an improved system of Telefunken modulation with which distortionless 100 per cent. modulation can be obtained using a 55 diode triode tube as a modulator. This appeared to arouse quite an amount of interest, and the lecturer was thanked in the usual manner.

After this, W2DUM proved that he was not so "dumb," by giving a most interesting talk on conditions in the States. The questions asked him by the gang were numerous and varied, and if a few went home wearing a look of discontent it was simply because of W2DUM's casual remark that 210's were obtainable in the States for "about 2/6"! He is only passing through Melbourne, but hopes to be back in a couple of weeks to look over some of the ham shacks here before he goes away.

#### VK3 PHONE SECTION NOTES.

By J. R. KLING, VK3JB.

There was a good attendance at the last phone section meeting, held on Tuesday, January 29, 1935.

3BY did not apply for an allocation, as he had the bad luck to have his aerial system blown down during the heavy storms we have been having lately. Many listeners have missed this fine station on the air lately, and we sincerely hope that he will be back on the air again soon.

Applications for allocation were received from the following stations:—3DH, 3PA, 3LN, 3LU, 3BH, 3JB, 3AM, 3GY, 3JR, 3RI, 3FW, 3HK, 3OY, 3ZO, 3CB, 3CR, 3HF, 3GK, 3KE, 3SB, 3FY, 3OV, 3BT, 3XL, 3LM, 3TM.

During the month information was received that stations within five miles radius from 3AK would not be allowed to operate while 3AK was on the air, and the stations affected by this ban were:—3BT, 3OY, 3OV, 3TM, 3KE, 3XL, 3CR.

We sincerely hope that some amicable arrangement will be able to be made at the next meeting that will be of benefit to these stations that have had to stay off for two Sundays.

#### SHORT WAVE NOTES.

ZO—VK3XJ.

The short-wave meetings have been fairly well attended during the last few months, and new members have been coming along every meeting. Mr. W. G. Sones gave a very interesting lecture on frequency measurements at our meeting on February 13, and also another lecture on anti-noise aerials, particularly the R.C.A. antenna, on February 27.

A visit of inspection is being arranged for the group to visit the new studios of 3AW early in March.

Observations of the German short-wave transmissions to Australia are still being maintained by members of the group, and these reports are being supplemented by country listeners to whom we owe our thanks.

The new 270 degree short-wave condenser which has just been released appears to be gaining favor with the members, and it may also interest the transmitting members of the Institute if they investigated these condensers from a transmitting viewpoint.

Next meeting is to be held on March 13.

#### WESTERN DISTRICT NOTES.

3HG—3OW.

Owing to the relative inactivity of this station, news from this district is rather scarce. Conditions also appear to be very patchy, with very heavy QRN almost every night, and little work of interest has been done. The best DX work is probably 3CQ's contact with D4BAR on 3.5 mc. This is a remarkably fine piece of work, and shows that DX can really be raised on 3.5 mc. 3JA has been active during the week-ends, using 18 watts on a single E406. 3X1 was active a month or so ago, but seems to have disappeared again. The newcomer, 3WW, is on the air quite a lot, but as yet his note is not the best. Another newcomer is 3OS, ex 2RS. He is using 1.5 watt phone on 3.5 mc., and comes in here R3. His antenna is a doublet, and he finds that it peaks sharply on 3800 kc. Rob will be increasing power soon by means of a vibrator and transformer, stepping up the 32 volts from the house lighting batteries.

Quite a number of stations are back on 3.5 mc. phone, and in a month or so this band will regain its popularity for local "ragchews."

## Victorian QSL Bureau

### Notes for March.

Cards are on hand at the above Bureau, 23 Landale Street, Box Hill, for the undermentioned stations, and will be forwarded on receipt of postage:—VK3AX, BB, BF, BL, CF, CM, DD, DK, DQ, EM, ES, EG, FC, FG, FZ, GJ, GM, GU, HE, JK, JZ, KG, KY, KQ, LP, LT, LY, MX, NM, OP, OU, OZ, PC, PZ, PL, PW, QJ, RQ, RW, SP, SK, VU, WN, XK, XP, YR, ZL, ZR, Messrs. Hecker, Adams, Carey, Sims, Kelly, Bennett.

The 1935 R.E.F. (France) Cup Contest takes place between 0000 GMT, March 24, and 2400 GMT, March 31, 1935. The contest consists of contacting amateur stations in France or French Colonies. Only one contact with each French station is allowed, and a code word chosen by themselves must be exchanged. The self-chosen five letter code word must be changed for each contact. Each contact counts 1 point, and entries must reach the R.E.F., 17 Rue Mayet, Paris, 6ieme, not later than May 19, 1935. Reports should give the following:—Name, address, call sign, input and total score, and each contact should be set out giving date, GMT, call, codes and frequency band. The leading station in each country will receive a diploma and free subscription to "Radio R.E.F." Further details to those interested from this Bureau.

Supplies of log sheets and rules for the B.E.R.U. Contest are on hand, and may be secured from the B.E.R.U. Rep., VK3OC, or from this Bureau.

### A.R.R.L. DX Contest, 1935.

W9FO will give a prize of a new call book to the first VK station working him in the March, 1935, DX Contest. W9FO uses the following frequencies: 7056, 7286, 14092, and 14384 kc. —R. E. JONES, QSL Manager, VK3RJ.

## Association of Radio Amateurs

### NOTES FROM HEADQUARTERS.

A.R.A. (N.S.W.).

By 2HZ.

2OJ, A.R.A. zone officer, was a recent visitor to Sydney, likewise ex ZO, 2PN, who has been spending a few days at Manly.

The A.R.A. are very pleased with the happenings in VK7, at the Annual Convention. The fact that the Federal Headquarters has come to N.S.W., means more work no doubt, and as for the forthcoming year, a very definite plan of action has been mapped out for the A.R.A. Things should simply shoot along.

The second annual dinner promises to be a wonderful affair, and should be exceptionally well attended.

2FQ and 2HZ were given a wonderful time in Tasmania, and wish to thank the Tasmanian Division and its members for the trouble they went to in entertaining them.

The B.E.R.U. Test is fairly well supported in N.S.W. 2NS and 2LZ should be scoring well, although conditions over the final week-end of the senior seemed very poor. 2XV, of the A.R.A., and one of its most solid supporters, has

journeyed to Brisbane to a "B" class station. N.S.W. over the last year has lost three of its best DX stations to "B" class stations—namely, 2AH, 2ZH, and 2XV.

### ZONE 3 NOTES.

ZO—VK2OU.

As VK2XO is QRL, these notes will be compiled by VK2OU, until Crieff is free again. So would any Zone 3 stations please drop me a line occasionally to let me know what they are doing.

The two most important happenings this month were the interzone contest and the 6-point relay. The former was a great success; everyone said it was FB, and wants more. No Z8, Z7, or Z6 stations were heard here, and Z4 stations came through rarely. VK2NP was always on the go, and should have a very good score. VK2KR likewise. VK2OU was the only Z3 station as far as I know.

VK2AO is rebuilding, and hopes to be on again soon. VK2CU says that ham radio is a thing of the past with him. VK2GM uses a 443N in a TPTG, and is on 80 and 20. VK2NY is tickled pink over a QSL he got from EAR. He is using a MOFA with two buffer doublers and PA, and a new A.C. 3 tube receiver which he says is going very FB. VK2SL and VK2WS are on 80 when QRN permits. VK2GS is at VK2WS QRA. VK2XO has been batching. Uses grid mod. and tells me that he gets good results. VK2ZN paid the Clarence a visit; but did not get to my QRA. Sorry to have missed you, Bill OM, but hope no QRM next time. I cleaned out the shack especially for you, too. VK2GI says that by the time he has finished rebuilding, 80 mx. will be booming again, hi! He is talking about visiting VIS early in Jan., so he may look some of the gang up again. VK2ZM is down on 40 mx., and I think I heard him using fone after dark. How come, Jim? He is experimenting with a new PA, which seems to go FB.

### ZERO BEAT RADIO CLUB.

(Affiliated with the A.R.A.)

The Z.B.R.C. are running during March a "Sylvania" transmitting contest. This contest is open to all A.R.A. (W.L.A.) members, and its affiliated bodies, also Z.B.R.C. members in other States. A 242A and a receiving tube are the prizes in the transmitting section. These tubes have been donated by Mr. Carey, of Tyme Radio Ltd. Full rules can be obtained from secretary of Z.B.R.C. A receiving contest is also being run at the same time, 3, 2, 1 Sylvania tubes being 1st, 2nd, and 3rd prizes respectively.

### ZONE 8.

ZO—VK2OJ.

Two new hams have just received word of their success in passing the A.O.P.C. No call signs are allotted them as yet, but these should be known very soon.

2YI contemplating fone with Heising modulation.

One of 3EG's 66 rectifiers has gone west, and his note is temporarily DCX, with pronounced ripple.

2OJ just back from the mountains, and feeling fit for many hours in the shack, but notes are a bit scarce.

## Queensland Division

By VK4RY.

The monthly meeting of the Wireless Institute was held at headquarters, Heindorff House, Queen Street, Brisbane, before one of the largest attendances for many months, on Friday, February 1.

During the evening a lecture was delivered by Mr. P. Kelly, on "Radiation and Directional Antennas." This was well received and caused much discussion.

On Sunday, February 3, success on 56 mc. was achieved. The experiment was a two-way phone communication between a monoplane flown by Bruce Munro, VK4AL, and a moving car containing other members of the W.I.A.

This is the first time that duplex radiophone contact on 56 mc. has been achieved in Queensland. It is proposed to make similar tests at an early date between two moving planes.

The new class for the A.O.P.C. will commence the first week of March, and intending members are requested to interview the secretary between the hours of 1 and 2 p.m. on Monday, Wednesday, and Thursday, at headquarters, or write to Box 1524V, G.P.O., Brisbane.

**T.D.S. Section.**—Any person interested in five metre work will receive every assistance from the T.D.S. Section of the Institute, as listening posts are required throughout the City. It is also interesting to note that several amateurs in Ipswich are building gear for the ultra highs, to assist our activities in this band.

## South Australian Division

By ERIC HALLIDAY.

Conditions in VK5 up to 20/2/35 have been excellent for DX, both on 7 mc. and 14 mc. Many of the locals have been working G's and other Europeans galore.

5RX is using a two-stage tritet, with a single wire feed matched impedance aerial. On a recent night he worked five G's without having to use CQ once, being called by all five. 5GL is the call of Clem Tilbrook, of Brighton Rd., Brighton.

5MY recently received his W.A.C. certificate. Harry has been interested in the 28 mc. band of late. Had a bit of trouble in finding the band on his receiver. Still uses a tritet on 7 mc. and 14 mc. 5KL now has a four-stage crystal rig built, and has no difficulty in working DX. 5MW recently got his limited certificate. The 200 m. transmissions from this station are getting out well; plenty of interstate reports are being received.

## West Australian Division

The W.I.A., W.A. Division, has had a busy time of late dealing with Convention matters. Owing to late arrival of agenda items from headquarters, the Council were hard pushed to ar-

range for a proxy and get their views across to VK7.

Great praise is due to our energetic secretary, 6CX, in his expeditious handling of the business.

Most of the gang's activities at present consist of bumper outings arranged by the social committee. The latest was a trip to Penguin Island, and was an outstanding success.

The gang will be interested to know that three new calls will shortly be added to the list of VK6. The latest to pass their exams, are J. Gollard and R. Collis. Congrats, boys!

6LJ, who recently resigned from the Council on account of stress of business, has now been through a serious operation for appendicitis, but is now on the way to recovery. The gang wish him a speedy return to health.

6RT has been transferred from Greenough to Bellavista, but as there is no power supply there, will still have to stick to his "Lizzie" coil rig.

6BN and JS are at present engaged in finishing off the students for the next exam, and hope to put some more VK6's on the air. Guess we could do with some. "What do you say, Easterners?"

6KB now on xtal, and working a matched impedance aerial using four-inch spacers. Also experimenting with wire is 6CP, but having no flex decided to try inch spacers. So far the results have been very good, considering the condition of the bands at present.

VK6 has been very favorably considered in the drawing-up of zones, and now has quite a good chance of putting themselves on the map. As the power used by most VK6's does not exceed the 25 watt limit, some of our boys should get on well in the Junior Section.

## Tasmanian Division

By 7PA.

(Hon. Sec., H. M. Moorhouse, 95 Arthur Street, North Hobart.)

The February meeting was held on Tuesday night, the 12th inst., having been postponed from the previous Tuesday owing to it being a local holiday—Hobart's big Henley or Regatta Day, as you please.

General business was attended to and a discussion held re finance, and, owing to our financial position, it was deemed necessary to take some action to collect outstanding subs., which, unfortunately for such a small division, are rather large; should these be paid in this division would be in a very bright position. See to it, chaps!

This matter was put into the hands of the Executive Council to act on.

At the end of the meeting, VK7WR—Bill Nicholas—gave a lecture on "A," "B" and "C" class amplifiers, which was much appreciated by all, and Bill was greeted by a hearty round of acclamation at its conclusion. It is our aim to promote more of these lectures from time to time.

Members are reminded that the first Tuesday in each month is still the regular meeting night unless otherwise advised.

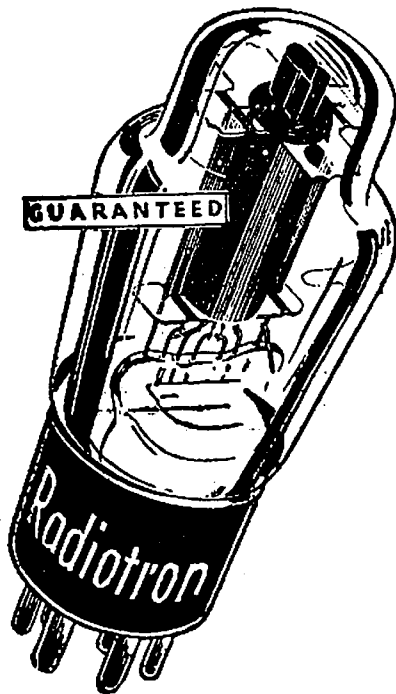
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# R.A.A.F. Wireless Reserve Notes

## RESERVE NOTES, 3rd DISTRICT. VK3UK—3ZI.

Owing to the B.E.R.U. Contests being spread over the four week-ends of February, as usual this month of the year has been one, in VMC, in which no fresh ground has been broken. As 3Z1 and 3Z2 were actively engaged in the contests, and many members were entering as well, 3Z1 took a vote to see if the remaining stations would prefer a suspension of schedules, or whether they would continue working for the period. They unanimously decided on a continuance of schedules, a fact which speaks very highly for the spirit prevailing in the district.

3DI was heard very frequently during the contest period, and, like 3ZI, must have lost a lot of sleep. This station, 3DI, is to be congratulated on his wonderful showing in the Centenary Contest, and through bad luck only was beaten for first place in the open section. 3B3 also deserves the highest praise for his magnificent effort in winning the handicap section. Alan was in Melbourne a few weeks ago, and from all accounts the tubes he will get for the handicap prize form such a bewildering array he will be hard put to evolve a circuit that will include them all. In any case, he will probably have a few spares. So remember, VMC members, when you need to borrow a tube, 3B3 has plenty!

3B5 has made a welcome return to activity again, and was heard during the contest period on more than one occasion. He should put out a glorious "wallop" on 3.5 mc. with his new RK-20. Ex 3C4 is doing very well in the

R.A.A.F., where he is doing his "A" course for a short-term commission. To quote from a recent letter, he says: ". . . am at present endeavoring to master steep turns — have managed landings, take-offs, and turns quite OK—strange to say, as soon as I arrived down here they recognised me as a Code man." Apparently we traffic men form a select (?) and easily recognised species of the homo sapiens!

3D4 spent a few days early this month in VIM. He must have been particularly busy, because we, unfortunately, saw nothing of him. VK3GC is returning to his old QRA at Camperdown, and will be shortly active again. It won't take him any time to get into the swing of reserve schedules and VMC will be very glad to have him as an active member. There is one class code man in Victoria who is not a member of VMC. He is a "speed merchant" and DX man par excellence. It need hardly be said that his call is VK3EG. VMC prides itself on the fact that practically every crack operator and DX man is in the ranks, so drop him a line, VMC men, and get 3EG into the fold!

3D6 is unfortunately still away after her illness. This is this station's first absence from schedules, except during holiday periods, for about five years. We all wish her a speedy recovery, and a quick return to active work again.

It is with the deepest regret that we hear of the death of VK3CD's father. This station, 3B1, has always given valuable assistance at the reserve annual portable station at Denilquin, and we extend our deepest sympathy to him in his sad bereavement.

### Continued from Page 18

zepp antenna. A 4-stage C.C. rig with 210 final doubler and 50 watts input has been used at times, but the efficiency is fairly low even with link coupling.

Electron coupled detector receivers seem to be getting popular, the new one at VK3NM increases signal strength by two points, and employs a 77 det. and 37 audio.

ON4AU has further increased his 28 mc. score by working W9TJ, and will be calling every day for 15 minutes at 1210 and 1315 GMT on 28 and 14 mc. simultaneously.

Experimental work on 56 mc. has been making rapid strides in the U.S.A. recently, new developments being the introduction of simple beam antennas and practical super-het. receivers. It is found that beam antennas increase the range of the ground wave to such an extent that distances between 50 and 150 miles are being worked with remarkable consistency and low power from the usual ham locations. There is still much to be solved, and many improvements to be made in 56 mc. gear, but we VK's will have to make concentrated efforts very soon if there are to be any investigations left for us.

Probably the greatest distance accomplished in VK on this band was the reception by VK2XY recently of phone

and ICW from VK2CG. Signals from 2CG were received over 65 miles away on a portable 3-tube super regenerative receiver with 6 feet of wire as the aerial.

In Vic. 56 mc. activity seems to be increasing, and VK3RS and VK3KQ are again testing on this band. VK3KW of Geelong, and 3BW, are also interested, and will no doubt assist in any experiments arranged among Melbourne stations.

### NEW SOUTH WALES NOTES.

Owing to the continued hot weather and the swing in favor of the surf as opposed to ten meters, the N.S.W. hams have been on in spasms only. VK2LZ and VK2HY hold the honor for the most continuous operation. The country stations report nothing heard. VK2HZ, 2XY, 2NO, and 2YC have been active, but have had to be content with the usual old-time local QSO's.

Looking back over January and February, one is regretfully inclined to think that our old ten mx. conditions have returned with the more normal weather, and from now on only constant watch on the band will produce results. Would it be possible to draw up a roster of times for each ten mx. station to be on during these slack week-ends?—VK2YC.

**CIRCULAR RE RECORDED  
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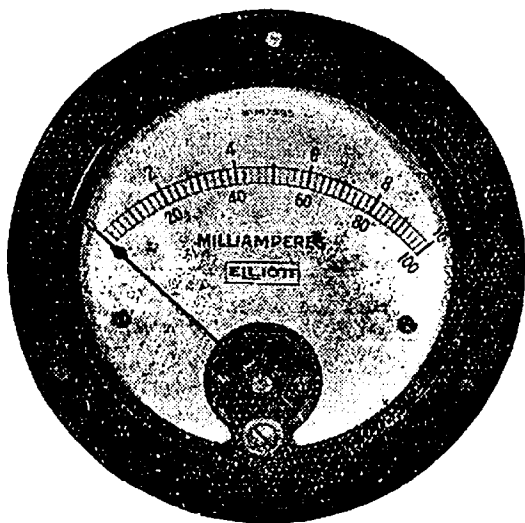
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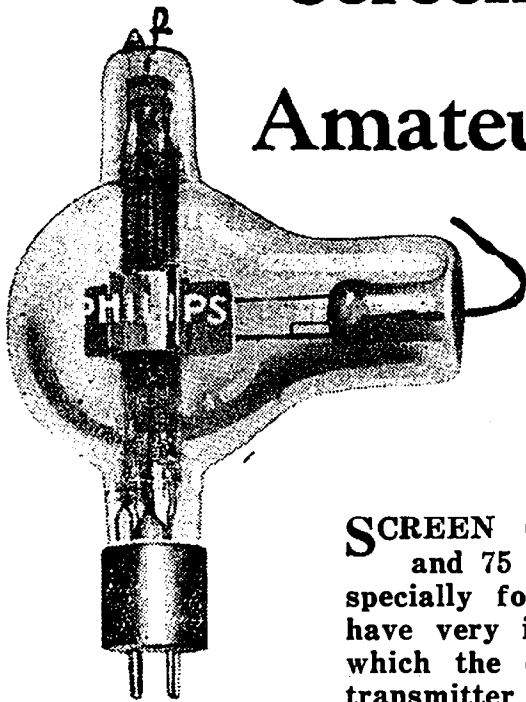
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Amateur Radio

# Screen Grid Valves

For

## Amateur Transmitters



Types:  
QB2/75, QC05/15

quarter of actual size

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Table A shows the various electrical properties of the Philips amateur transmitting valves:—

### CHARACTERISTICS:

Table A. Type.	Screen Grid Valves	
	QC 05/15.	QB 2/75
Filament Voltage .....	4.0	10.0
Filament current* .....	1	3.25
Saturation current* .....	400	2,000
Anode voltage .....	400-500	2,000
Screen grid voltage .....	75-125	300-500
Max. anode dissipation .....	15	75
Anode dissipation on test .....	20	100
Max. screen grid dissipation .....	3	15
Amplification factor* .....	225	200
Mutual conductance (slope)* .....	1.4	1.4
Int. resistance* .....	160,000	150,000
Anode-grid capacity .....	.001	.02
Max. diam. of bulb .....	50	100
Max length .....	160	210

\* Approximate values.

# PHILIPS

## TRANSMITTING VALVES

# AMATEUR RADIO



Published in the interests of Amateur Radio by the W.I.A. (Vic. Div.). Official Organ of all divisions of the W.I.A., A.R.A. (N.S.W.) and the R.A.A.F. Wireless Reserve.



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# AMATEUR RADIO

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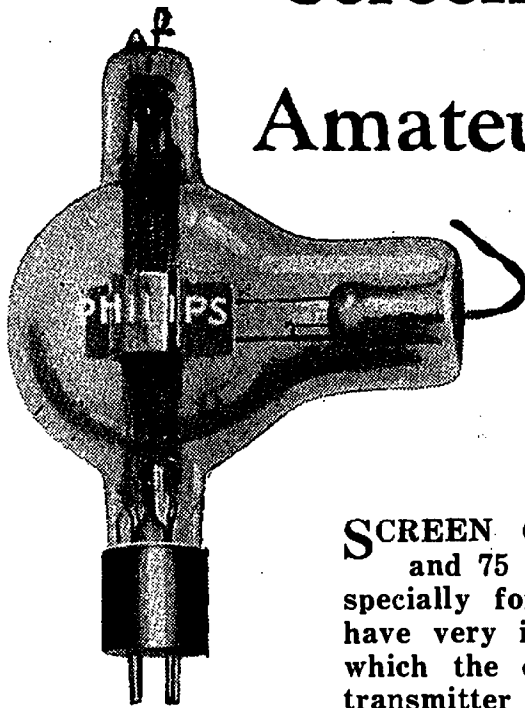
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# PHILIPS

## TRANSMITTING VALVES



## Editorial

Probably the most often occurring item on all Federal Convention agendas since their inception is the matter of 'phone on the high frequency bands. No definite solution has ever been found, and as amateur radio grows older the subject becomes more complex. The activity of the key puncher increases daily, and it is high time that we took steps to establish some agreement to the mutual benefit of all concerned.

Both the 'phone and key men have equal rights on all bands, but the argument mainly lies on what interference each is capable of creating. We all know that telephony occupies a far wider channel than telegraphy, and because its carrier is continually on the air, there can be no doubt that the former is the more selfish of the two. The quality side of the 'phone signal plays a great part in the minds of those who are not in favor of short wave 'phone. In Australia one can count on one's hand the number of high quality-fidelity 'phone stations operating on the 3.5, 7, and 14 mc bands that are really worth listening to. The rest of them are simply utter trash, and one would think that when Heising modulation is being used the plate, grid, and power supply were being modulated at the same time. Then again there is the man who spends hours taking up a large slice of the band talking to some lad 5 miles away, and both are using 60 watts. It is not a fair thing. The outcome of it is that the key puncher gets his back up when all his DX is being blotted out, and he has to content himself listening to tinny waxed music, or some chap making wierd noises by whistling down the mike. It is a wonder this sort of thing has not led to a murder or two. The next step taken by the DX-key man is to park a beautiful AC note as near on top of the 'phone man as possible as a form of revenge, so leading to hopeless QRM. So the game goes on. The

part that breaks the key man's heart is when he is participating in a contest. He doesn't mind the 'phone man jabbering away during the quiet periods, but there is a time and place for everything, and during DX hours is no time for local 'phone rag-chews.

Some, bitten by the 'phone bug, surely carry it too far when it comes to the continuous playing of records for hours on the HF's. Who is getting the enjoyment out of it? ONE man, and nobody else. If we want a musical entertainment, what is wrong with the commercial stations? We say again that 'phone' is all right when used with discretion, but the utter selfishness, consciously or unconsciously, displayed by some of the gang is beyond words. The line must be drawn somewhere, and we, the W.I.A., as the controlling body of the amateur in Australia, should find a way out of the trouble.

What is left for us? We could vote 'phone out completely on these frequencies if we don't want it, but that would not be a happy way out. Nobody is against the man who is honestly TRYING and not PLAYING. Possibly 99 per cent. of the local rag-chews are local, and have we not got bands that are tailored to order for this purpose? What is wrong with 56 or 112 megacycles? These channels were created for some reason, and we are not putting them to their best use. Why, the gear and power necessary to make a station there are half that wanted for the lower frequencies.

One of the greatest steps ever taken by the W.I.A. would be to encourage activity on the UHF's, and relieve the terrible congestion on 7 and 3.5 mc bands. These bands are ideal for a local rag-chew. Let us get this selfish spirit out of our blood and all try and do something for our own benefit. Do not wait for the other man to move to 5 metres—he'll go down there just the same if he has the genuine ham spirit.

## Amateur Phone Modulation

Heising Method Explained By  
A. E. Stevens, VK6BN, President,  
W.I.A., W.A. Division.

Modulation can be effected on the last stage handling high power, or it can be effected on a smaller valve, followed by successive stages of amplification. In the former case, the difficulty of handling large amounts of audio power in circuits containing iron core chokes, etc., has to be considered but in the case of the amateur set this difficulty does not arise, as over 25 watts or so will not cause serious concern.

### Constant Current System.

The Heising system is often referred to as a "Constant Current System." This is in theory, but in practice this does not work out 100 per cent., as will be seen later.

With Heising modulation, the positive H.T. supply flows through the iron core choke, and divides between the anode circuit of the modulator valve and the anode circuit of the modulated valve. The current does not necessarily divide equally, as the modulator valve usually draws more current than the modulated valve.

The modulator valve is a plain power audio amplifier of the class "A" type, preceded by one or two audio stages as sub-modulation. These valves are biased in the same manner as ordinary audio amplifiers; that is, to the centre point of the straight section of the characteristic curve.

The permissible grid swing is determined by the length of the straight portion, so the modulator valve should have as long a straight characteristic as possible, when the audio currents reach the modulator grid, the grid potential will be swung on either side of its mean value. This will cause the plate current to vary. When the modulator plate current increases, it draws more current from the common H.T. supply, but the self induction of the iron core choke opposes any sudden increase of current through it. This means that the extra current must be obtained from another source,

and this can only be obtained from the modulated valve.

The current on this tube is decreased by the same amount that the modulator current increases. Similarly, when the Modulator plate current decreases, the self-induction of the choke prevents any sudden decrease of current, so that the modulated valve takes more current. It will therefore be seen that, when the modulator plate current is swinging up and down during the process of modulation, the plate current of the modulated valve is also going through the same variation.

This causes the amplitude of the R.F. carrier to vary above and below its mean unmodulated value, or, in other words, the carrier is modulated by the audio frequency input. The foregoing describes briefly the action of Heising Modulation, and I will now endeavor to explain the difference between theory and practice as regards constant current.

The fact is that the Heising system is not really a perfect constant current system, as currents do flow through the choke at audio frequencies, and all the variations of the modulator plate current are not transferred to the modulated valve.

The iron core choke is not possessed of an infinite impedance; that is, it is not a perfect block to audio frequency currents. Its impedance varies with the frequency, and it is found in practice that to secure good modulation at low frequencies, it is necessary to connect a large capacity condenser between the positive H.T. supply side of the choke, and the negative H.T. Four microfarads will be satisfactory. This is generally provided as the output filter condenser. If in use, no extra capacity will be necessary. It is obvious if no audio currents flowed through the choke it would not matter what was behind the choke.

## Use of Radio Frequency Chokes.

R. F. chokes are essential in the H.T. plate leads, etc., on the modulated valves, and preferably on the modulator, to prevent any radio frequency getting back into the audio channels. Place them as near to the plates as possible. It will be seen that 100 per cent. modulation is not possible with the standard Heising scheme. Complete modulation means varying the carrier amplitude from zero to twice its normal value, which means that it is necessary to swing the plate voltage of the modulated valve from zero to twice its mean value. This can only be done if the modulator valve plate voltage varies from zero to twice its mean value. An audio amplifier cannot be operated in such a way as to have the plate voltage going down to zero on every cycle. It cannot be operated off the straight portion of its characteristic without causing distortion. This, with the fact that currents do flow through the choke at audio frequencies, and all the variations of the modulator valve does not reach the modulated valves, it is obvious that 100 per cent. modulation is not possible with the standard Heising method, and some modification is necessary to secure more complete modulation.

### 100 Per Cent. Modulation.

To secure 100 per cent. modulation, several factors must be taken into account. As previously explained, the D.C. flows through the choke, and divides between the anodes of the modulator and modulated valve. The D.C. resistance of the choke is very low, but the inductance is high. There is very little D.C. voltage drop in the choke, and the maximum H.T. is applied to the plates of the valves. If we apply modulation to the grid of the modulator, plate current will vary. These variations in plate current are equivalent to super imposing alternating currents on the steady D.C. plate current. This A.C. flowing through the choke will cause an A.C. volt drop across the choke. This building up of an A.C. voltage drop across the choke will cause the voltage on the modulated valve to vary, and modulate the carrier. It is the A.C. volt drop across the choke that causes the D.C. supply to the modulated

valve to vary, and it will be seen that the lower we make the impedances of the modulator valve and the D.C. supply, the greater the depth of modulation we can apply.

### Meeting the Volt Drop.

The volt drop is across the whole circuit filament to plate, and, as all is in series, the lower we can make the internal resistance or impedance in the H.T. supply and valves, the greater the fall across the choke. Ohms Law governing fall of potential explains this. To effect this, we can do several things. Use a low impedance modulator valve, and a H.T. supply that has a low internal resistance. A 4 microfarad condenser connected across behind the choke to the negative H.T. provides a low impedance path back to filament, and bypasses the internal impedance of the H.T. supply. As beforementioned, this is usually fitted in the outfit of the filter, and no other is required.

### Calculating Impedance.

We will see what the impedances will work out using, say, a 50 henry choke and a 4 microfarad condenser. The impedance of the choke (50 H.) is, say, at 100 cycles:—

$$Z = 2 \pi f L = 6.28 \times 100 \times 50 = 31400 \text{ ohms.}$$

In the case of the 4 m.f. condenser. the impedance at the same frequency is:—

$$Z = \frac{1}{2 \pi f C}$$

In the formula above, the units are cycles and farads, and as C is in microfarads, in this instance it is necessary to convert.

$$Z = \frac{L}{2 \pi f C 10^6}$$

$$= \frac{1}{6.28 \times 100 \times 4 \times .000001}$$

$$= \frac{1}{.002512} = 398 \text{ ohms.}$$

As the reactance of a condenser is always highest at the lowest frequency, I have taken 100 cycles for my example. At 1000 cycles it would be 39 ohms, so it will be seen that the impedance is very low at speech and music frequencies. Now we have

all our impedances in series between plate and filament. Say 2000 for the valve, 31,400 for the choke, and 398 or less for the condenser. It does not require much knowledge to see where the greatest volt drop will be, and the lower we can get the first and last factors the greater the percentage of modulation. If the internal impedance of the modulator valve is, say, 12,000 ohms, then the volt drop across the choke would only be about two-thirds. The importance of low impedance modulator valves is apparent. When the current through the choke is increased, it will cause the self-induced voltage to be built up. When the modulator plate current increases, the magnetic flux in the choke also increases. This flux generates a voltage in opposition to the main voltage on the modulator. Similarly, when the modulator plate current decreases, the self induction of the choke will oppose this decrease by generating an E.M.F. which will add to the H.T. supply, and raise the voltage on the modulated amplifier plate. It will be seen that what we need to do is to set up as high an A.C. voltage drop across the choke as possible. The permissible grid swing on the modulator is about equal to the negative grid bias applied.

### Adhere to Valve Ratings.

Grid currents must not flow. It is extremely necessary that the voltages recommended by the makers be adhered to both for H.T. and bias. A slight overload of H.T., with corresponding grid bias, is permissible, but less H.T. and bias limits the grid swing to a much lower value, and the valve is easily overloaded. The A.C. in the circuit will be—

$$C = \frac{U \times V_g}{Ra + Zm}$$

Where U = amplification factor of modulator valve.

Where Zm = impedance of modulator valve.

Where Vg = grid bias.

Where Ra = Resistance of modulated amplifier.

(H.T. divided by plate current = res. in ohms.)

The A.C. flowing through the modulated amplifier will give an A.C. drop in voltage of—

$$V = \frac{U \times V_g}{RA + Zm} \times Ra$$

The modulated amplifier has a D.C. plate voltage normally, and the A.C. voltage superimposed will cause this voltage to rise and fall above and below its mean value. This causes variation of the carrier. If this applied A.C. voltage is equal to the applied D.C., it will assist and double the potential in one direction, and oppose and reduce to zero in the other direction. This variation from zero to double normal value, will give 100 per cent. variation to the carrier. To do this we must be able to generate the A.C. voltage across the choke equal to the applied D.C.

### Modulation Percentage.

We will now take a case where two similar valves are used, one for modulator and one for the modulated valve. We will assume the characteristics are as follows:—

Plate volts, 1000.

Plate current, .1.

Impedance (A.C.), 9000 ohms.

Amp. factor, 10.

Bias, 50 volts.

Resistance of modulated amplifier D.C. volts

$$= \frac{\text{plate current} \times 1000}{.1} = 10,000 \text{ ohms.}$$

$$\text{The A.C.} = C = \frac{U \times V_g}{Ra + Zm} \text{ and the A.C. voltage drop over the modulated amplifier equals } V = \frac{U \times V_g}{Ra + Zm} \times Ra = \frac{10 \times 50}{10,000 + 9000} \times 10,000 = 263 \text{ volts.}$$

Therefore the normal D.C. voltage on the amplifier will be a swing of 263 volts above and below the mean voltage. This gives a percentage of  $\frac{263 \times 100}{1000} = 26.3$  per cent.

This low percentage is due to the fact that the impedance of the modulator is too high, and not permitting enough variation over the choke, which is in series as before mentioned.

We will now try another valve of lower impedance. Plate volts, 1000, and the plate current on modulated amplifier, .1 amp; Zm of modulator, 2000 ohms; and amp. factor, U5. Bias, Vg, 100 volts. We will now have

$$C = \frac{U \times V_g}{10,000 + 2000} \times 10,000 = \frac{5 \times 100}{12,000} \times 10,000 = 416 \text{ volts.}$$

$$\text{Percentage} = \frac{416 \times 100}{1000} = 41.6 \text{ per cent.}$$

This is an improvement, but still not 100 per cent.

### Raising Percentage.

Impedances of modulator valves are limited, so we must look around to see what can be done to raise the percentage. More than half the carrier is going to waste, and for 'phone work we want to eliminate wastage as far as possible. It is far better to have a weaker carrier fully modulated than to have a strong one only half modulated. To retain the maximum power of the modulated amplifier and 100 per cent. modulation, it will be necessary to use a more powerful modulator valve using a higher plate voltage. As this voltage is common to both modulator and modulated valve, a resistance is placed in series with the lead to the modulated valve to drop the voltage on its plate to normal. This resistance is then shunted with a condenser of about 4 microfarads. The reactance of this condenser at speech and music frequencies is negligible. Although this resistance causes a drop in the D.C. voltage on the plate of the modulated valve, the superimposed audio frequency from the modulator can pass easily to swing the plate voltage of the modulated amplifier. It is now possible to increase the modulation, as the following example will show. We will make the resistance equal to, say, 10,000 ohms, and adjust the plate current to .1 as before. By doing this, the voltage on the modulated valve will be reduced by half. The A.C. will be:—

$$C = \frac{5 \times 100}{5000 + 2000} \times 5000 = \frac{500 \times 5000}{7000} = 357 \text{ volts.}$$

(Ra. of modulated valve =  $500 \div .1 = 5000$  ohms.)

The percentage modulation is this  $\frac{357}{500} \times 100 = 71$  per cent. This

means that the carrier amplitude has been reduced on account of the reduction in H.T., but the depth of modulation has been increased from 41 to 71 per cent. Where the modulated amplifier is the final stage, this reduced amplitude may be regarded as serious, but when one considers that a strong carrier with little modulation is not of much use is it not preferable to reduce it and give the modulation a chance? When it is all said and done it is the voice you want, not the squeal. If the modulated valve is followed by R.F. amplifiers, a great improvement is effected as they are actuated by a much higher level of audio excitation with a corresponding greater output. Boiled down, it amounts to this: If you want high percentage of modulation you must employ a modulator valve of low impedance, taking a H.T. voltage greater than the modulated valve, a high inductance in choke, and use a resistance to drop the H.T. on the modulated valve. Usual method of using two similar valves can only give low percentages.

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# Federal Convention

## MINUTES OF THE 11th ANNUAL FEDERAL CONVENTION OF THE WIRELESS INSTITUTE OF AUSTRALIA.

Held at Hobart, Tasmania, 26th Jan.  
to 30th Jan., 1935.

By G. B. Ragless, FPO.

**NOTE**—The "Official Minutes" of the Convention occupy 15 pages of foolscap, and, on account of the question of space, could not be published fully. This report does not set the various subjects out in detail, but any member may, by getting in touch with his Divisional Secretary, peruse the "Official Minutes," and thus obtain a clearer idea of the discussions and decisions of the "Convention."

Convention opened at 9.30 p.m. on Saturday, 26th January, with following present:—W. M. Moore (N.S.W.), W. S. Pitchford (S.A.), J. G. Marsland (Vic.), H. M. Moorhouse (Tas.), J. N. O'Dea (proxy, Qld.), W. T. Hooker (proxy, W.A.), G. B. Ragless (Acting Fed. Sec.), F. F. Wells (Recording Sec.), and approximately 20 members of the Tasmanian Division.

Mr. Pitchford (S.A.) and Mr. Moorhouse (Tas.) were nominated for the position of chairman, in the absence of the Federal President, Mr. Moorhouse being elected.

The minutes of the 10th Annual Convention were read and confirmed.

Discussion ensued regarding hours of meeting, and additional items for the Agenda, the meeting adjourning at 10.30 p.m.

The second session of the Convention opened at 7.30 p.m., 27th January, with all the previous delegates and officers present.

The balance sheet and books of the Federal Executive were examined, and, on the motion of Mr. O'Dea (Qld.), seconded by Mr. Pitchford (S.A.), were accepted.

Mr. Pitchford (S.A.) moved, seconded by Mr. Moore (N.S.W.) that it be recorded in the minutes the approval of the excellent handling of the Federal affairs by the late Federal Executive.

Mr. Marsland (Vic.), seconded by Mr. Moore (N.S.W.), moved that the P.M.G.'s Department be approached by the Federal Council with a view to giving the Divisional Councils of the Institute power to control and prevent unsatisfactory transmissions, and that the method of control be outlined by the Federal Executive. Carried unanimously.

Mr. Pitchford (S.A.), seconded by Mr. O'Dea (Qld.), moved that the P.M.G.'s Department be approached by a representative of the Federal Council, with the view that all applications for mobile and portable licences be recommended by the Divisional Councils.—Carried, Mr. Marsland (Vic.) not voting.

Mr. Pitchford (S.A.), seconded by Mr. O'Dea (Qld.), moved an amendment that the word representative be made representatives. — Carried, Mr. Marsland (Vic.), not voting.

Mr. Marsland (Vic.), seconded by Mr. Moore (N.S.W.), moved that the P.M.G.'s Department be approached and asked to tighten up and approve existing regulations, with a view to restricting the transmission of recordings on high frequency bands.—Carried, Mr. Hooker (W.A.) and Mr. Pitchford (S.A.) dissenting, and Mr. O'Dea (Qld.) not voting.

Mr. Marsland (Vic.), seconded by Mr. O'Dea (Qld.), moved that the P.M.G.'s Department be asked to empower the Wireless Institute to control recommendations for telephony permits, and only licences so recommended be permitted this privilege.

Mr. Moore (N.S.W.), seconded by Mr. Pitchford (S.A.), moved an amendment that the motion only apply to the 200 metre band.

Amendment carried, Mr. Marsland against.

Mr. Moore (N.S.W.), seconded by Mr. O'Dea (Qld.), moved that the allocation of frequency, and control of the 200 metre telephony transmissions, be on a Federal basis.—Carried, Mr. Pitchford (S.A.) dissenting.

Mr. O'Dea (Qld.), seconded by Mr. Pitchford (S.A.), moved that Federal Traffic Channels resume service, and that a genuine chain of traffic stations throughout the Commonwealth of Australia be formed to handle Wireless Institute traffic, and that the stations so appointed make an assurance that they will be on the air regularly and that Divisional Secretaries be asked to originate traffic.—Carried unanimously.

The session closed at 10.55 p.m.

The third session of the Convention opened at 7.30 p.m., 28th January. All present.

After a long discussion on the conduct and future of "Amateur Radio," Mr. Pitchford (S.A.), seconded by Mr. Moorhouse (Tas.), moved that "Amateur Radio" should be considered as the Federal organ of the Wireless Institute of Australia, and that more publicity be provided for Federal Headquarters.—Carried unanimously.

Mr. O'Dea (Qld.), seconded by Mr. Moore (N.S.W.), moved an amendment that FHQ to supply such publicity.—Carried unanimously.

After long discussion on advertising and circulation of "Amateur Radio," Mr. O'Dea (Qld.), seconded by Mr. Marsland (Vic.), moved that "Amateur Radio" receive more support regarding the advertising and circulation from the various State Councils. — Carried unanimously.

Mr. Moore (N.S.W.), seconded by Mr. Marsland (Vic.), moved that an organisation of short-wave groups and special observers for overseas short-wave stations be formed, such to be on a



# Amateur Radio

Federal basis.—Carried, Mr. Pitchford (S.A.) dissenting.

Mr. Marsland (Vic.), seconded by Mr. Hooker (W.A.), moved that the P.M.G.'s Department be asked to reduce the fees of experimental licences. — Carried unanimously.

Mr. Moore (N.S.W.), seconded by Mr. Hooker (W.A.), moved that the Customs Department be asked for duty-free entrance of experimental apparatus into the Commonwealth of Australia. All control of imported apparatus to be in the hands of the W.I.A. And that FHQ approach the Customs Department, and the results reported to State Divisions. If successful, importing to be controlled by State Councils. — Carried unanimously.

Mr. Pitchford (S.A.), seconded by Mr. Hooker (W.A.), moved that a Federal QSL Officer be permanently appointed, and that Mr. Jones, VK3RJ, be asked to Act in the position, and in the event of the new constitution being adopted, that this item be included. — Carried unanimously.

Mr. Moore (N.S.W.), seconded by Mr. Pitchford (S.A.), moved that all Divisional QSL Bureau and Federal Bureau use an official G.P.O. box number, and not a postal address, so that changes of personnel will not result in continued altering of QSL addresses and that the Federal Executive provide the fee for the Federal box.—Carried, Mr. Hooker (W.A.) dissenting.

Mr. O'Dea (Qld.), seconded by Mr. Hooker (W.A.), moved that the matter of commercial interference on the 7 mc band be brought before the P.M.G.'s Department, and that they be asked to ensure their removal.—Carried unanimously.

Mr. Moore (N.S.W.), seconded by Mr. Marsland (Vic.), moved that the W.I.A., as the ruling and official representative body, should obtain as much official recognition as possible from the P.M.G.'s Department, or other Government authorities, before the passing of any legislation or regulations affecting amateur radio generally, or the control of the licenced experimenters, and that these questions be taken up with the P.M.G.'s Department, with the view to receiving such recognition. — Carried unanimously.

Mr. Moorhouse (Tas.), seconded by Mr. Pitchford (S.A.), moved that Federal Headquarters press to have legislation provided for the P.M.G.'s Department, through the Commonwealth Government, to eliminate and suppress interference to broadcast listeners and amateurs caused by persons using any electrical equipment that may cause interference.—Carried unanimously.

The session closed at 10.45 p.m.

The fourth session of the Convention opened at 7.30 p.m., 29th January. All present.

A long discussion took place regarding BCL interference and increase in power for amateurs ended with Mr. Marsland (Vic.), seconded by Mr. O'Dea (Qld.), moving that the item be deleted from the Agenda. — Carried unanimously.

Discussion on overcharge of certain QSL cards deleted from the Agenda, on the motion of Mr. Moore (N.S.W.), seconded by Mr. Pitchford (S.A.).

Mr. Hooker (W.A.), seconded by Mr. O'Dea (Qld.), moved that a better sys-

tem of reporting signal strengths, tone and readability be drawn up with a view to having a system adopted for universal use.

Mr. Moore (N.S.W.), seconded by Mr. Marsland (Vic.), moved an amendment that Federal Headquarters find a better method of reporting signals, and forward same to IARU, after submitting same to the State Divisions. Voting—For: Mr. Moore (N.S.W.), Mr. Marsland (Vic.), Mr. O'Dea (Qld.). Against: Mr. Pitchford (S.A.), Mr. Hooker (W.A.), Mr. Moorhouse (Tas.). The chairman cast his vote against the amendment, and the motion was carried, with Mr. Pitchford (S.A.) dissenting, and Mr. Moore (N.S.W.) not voting.

Mr. Pitchford (S.A.), seconded by Mr. O'Dea (Qld.), moved that in cases of interference it should be first ascertained by the P.M.G.'s Department that suitable equipment is being used as outlined by the Madrid Convention.—Carried, Mr. Marsland (Vic.) dissenting.

Mr. Pitchford (S.A.), seconded by Mr. Moore (N.S.W.), moved that the 1936 Federal Convention be held in Queensland, at a date to be fixed.—Carried, Mr. Marsland (Vic.) dissenting.

Mr. Marsland (Vic.), seconded by Mr. O'Dea (Qld.), moved that a Liaison Officer be appointed to represent FHQ at the P.M.G.'s Department.—Carried, Mr. Pitchford (S.A.) dissenting.

Motions by Mr. Marsland, that Federal Headquarters be located in Adelaide, and by Mr. O'Dea in Melbourne, both lapsed.

Mr. Pitchford (S.A.), seconded by Mr. Moorhouse (Tas.), moved that Federal Headquarters for the ensuing twelve months be located in New South Wales.—Carried, Mr. O'Dea (Qld.) and Mr. Hooker (W.A.) dissenting.

Mr. Moore (N.S.W.), seconded by Mr. Pitchford (S.A.), moved that the Official Minutes of the 1935 Convention be published in "Amateur Radio."—Carried unanimously.

Mr. Moore (N.S.W.), seconded by Mr. O'Dea (Qld.), moved that Federal Headquarters approach the P.M.G.'s Department again about QRO licences, on lines previously attempted.—Carried, Mr. Marsland (Vic.) dissenting.

Mr. Moore (N.S.W.), seconded by Mr. Hooker (W.A.), moved that Federal Headquarters conduct an Annual DX Contest along similar lines to the recent Centenary Contest. — Carried unanimously.

The session closed at 10.45 p.m.

The fifth and final session of the Convention opened at 4 p.m., Wednesday, January 30th. All present.

Mr. Moore (N.S.W.) gave a lengthy explanation of the position regarding the old W.I.A. in his State, also explaining the conduct of the A.R.A.

Mr. Marsland (Vic.), seconded by Mr. O'Dea (Qld.), moved that, as Federal Headquarters is now located in N.S.W., the Federal Executive use their own discretion as to the most suitable means of obtaining the use of name, "Wireless Institute of Australia, New South Wales Division."—Carried unanimously.

Mr. Moore (N.S.W.), seconded by Mr. Pitchford (S.A.), moved that the proposed Constitution be referred to Divisional Councils for adoption, and their decisions reach the Federal Secretary

not later than March 31st, 1935.—Carried unanimously.

Mr. O'Dea (Qld.), seconded by Mr. Marsland (Vic.), moved that Rules Nos. 2 and 3 of the BERU, 1935 Contest be enforced.—Carried unanimously.

Mr. Pitchford (S.A.), seconded by Mr. Hooker (W.A.), moved that the appointment of the Federal Executive be left in the hands of the A.R.A. Council.—Carried unanimously.

Mr. Moore (N.S.W.), seconded by Mr. Pitchford (S.A.), moved that delegates of Divisions who have not paid per capita payments be asked to explain on behalf of their divisions.—Carried unanimously.

Mr. Moorhouse (Tas.), and Mr. Marsland (Vic.), both gave reasons for non-payments of per capita by their divisions. The proxy delegates, Mr. O'Dea (Qld.) and Mr. Hooker (W.A.) could not offer any explanation on behalf of their divisions.

The Acting Federal Secretary, Mr. Ragless, read correspondence on this matter.

Mr. Moore (N.S.W.), seconded by Mr. Pitchford (S.A.), moved that, as the finances of Federal Headquarters are in such a precarious state, the delegates be asked to present most forcibly the necessity of these payments, and if these payments are not made during the ensuing year, that the Constitution be followed closely, and unfinancial States be not allowed a delegate at the next Convention.—Carried, Mr. Marsland (Vic.) dissenting, and Mr. O'Dea (Qld.) not voting.

Mr. Pitchford (S.A.), seconded by Mr. Marsland (Vic.), moved that a vote of appreciation be extended towards the chairman for his conduct of the meetings.

Mr. Marsland (Vic.), seconded by Mr. O'Dea (Qld.), moved that the visitors wish it recorded in the minutes their appreciation of the hospitality extended by the members of the Tasmanian Division of the Wireless Institute.

Mr. O'Dea (Qld.), seconded by Mr. Marsland (Vic.), moved that a vote of thanks be extended to Mr. Wells, the recording secretary, in appreciation of his services.

All the three above carried unanimously.

The 11th Annual Federal Convention was closed by the chairman at approximately 7.30 p.m., January 30th, 1935.

## CENTENARY CONTEST ERRATUM.

In the list of station scores of the VK stations in the February issue, VK2WJ should read VK5WJ; and VK5GW's score of 11,000 should be inserted in its order.

## BEAT THIS, "HAMS"!

Miss McKenzie, aged 12 years, daughter of 4GK, has just obtained the A.O.P.C. Her results were exemplary, and a pattern for all: Sending, 98 per cent.; Receiving, 90 per cent.; Regs., 70 per cent.; Theory, 78 per cent. Look for 4YL and watch your step!

## Federal Headquarters Notes

### THE FEDERAL EXECUTIVE.

The Federal Executive has so far had little time to do any large amount of work, but a few matters of importance have been dealt with.

### RECORD BROADCASTING.

The combined gramophone companies have been approached with a view to getting a concrete statement of their attitude towards the playing of records by radio amateurs. A letter was received from the A.R.A. (N.S.W.) asking the Federal Executive to move in the matter, as they considered it of a Federal nature. This has been done, but so far nothing definite has been attained.

### THE W.I.A. OF N.S.W.

Arising out of the Federal Convention, and at a request from the A.R.A., the Institute of Radio Engineers has been written to endeavoring to obtain something definite about the name W.I.A. (N.S.W. Div.). From personal contact it is ascertained that not much difficulty will be experienced in obtaining the name so that the name W.I.A. will be uniform in Australia.

### W.A.C. CERTIFICATES.

The Federal Executive wishes to point out that applicants for this Certificate must be members of their local Division of the W.I.A. before their applications can be accepted. Non-members cannot possibly obtain this Certificate, as the I.A.R.U. states definitely that applicants must be a member of the local governing body where this body is affiliated with the I.A.R.U. In Australia this is the W.I.A. or the A.R.A.



VK 3MR

## What is a "Country"?

By VK3ML, Traffic Manager,  
Victorian Division.

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Of the many "spirits" that exist in Ham radio to-day, one might safely say that the spirit of friendly rivalry is perhaps one of the strongest. Most certainly does this particular spirit predominate when it comes to boasting of the number of countries worked. At some stage of our Ham life we have all strived to rope in as many countries as possible; even going to the extent of classifying some remote spot, either surrounded by water or by land, as being a new "country." That is all right; but the world is full of "possessions," protectorates, mandated territories, and the like, and one is naturally tempted to "claim" an odd country here or there. Thus the world could go on and the Hams with it, forever digging up new countries.

The main and serious reason why we have been promoted to take this matter up and offer some definite and concrete classification of the world's countries for your consideration, is that the Centenary Contest Committee made a recommendation that steps should be taken to clear the whole matter up so as to avoid any possible headaches in the 1935 W.I.A. International Contest! We agree in the main; there is no decent amateur international list of countries, and it is high time that the amateur world be put in order.

An excellent effort, and an attempt that deserves much praise, is that belonging to W9ADN, who, in Californian "Radio" for August, 1934, offered the fraternity the very thing we are looking for—a well defined grouping system of the countries of the world. Obviously, W9ADN has given a large amount of thought to this question, and those who have studied the article will appreciate all the difficulties he had to overcome. Maybe the system is not perfect, yet it IS an effort, and the world could do well by adopting it as a provisional standard. A tentative standard list is far better than none at all, and it is almost certain that future international contests of the W.I.A., sponsored by the Victorian

Division, will stipulate in the rules that W9ADN's list will be used for checking purposes.

- 1 Aden.
- 2 Afghanistan.
- 3 Alaska, including Aleutian Islands, Pribilof Islands, St. Lawrence Islands.
- 4 Albania.
- 5 Algeria.
- 6 Andora.
- 7 Anglo-Egyptian Sudan.
- 8 Ascension Island.
- 9 Australia, including Norfolk Island, New Britain Archipelago, Admiralty Islands, New Ireland, New Britain, Solomon Islands, Santa Cruz Islands, Australia mandated territory of New Guinea.
- 10 Austria.
- 11 Azores.
- 12 Bahamas, including Little and Great Abaco, Great Bahama, Eleuthera, Cat, Watling, Rum Cay, New Providence, the Exuma chain, Long Island, Andros, Crooked Islands, Mayaguana, Inagua.
- 13 Barbados.
- 14 Basutoland.
- 15 Bechuanaland Protectorate.
- 16 Belgian Congo.
- 17 Belgium.
- 18 Bermudas.
- 19 Bismarck Archipelago.
- 20 British Honduras.
- 21 British Somaliland.
- 22 British Guiana.
- 23 Canal Zone (Panama Canal Zone).
- 24 Cape Verde Islands.
- 25 Ceylon.
- 26 Costa Rica.
- 27 Cuba.
- 28 Cyprus.
- 29 Danzig.
- 30 Denmark.
- 31 Dominican Republic.
- 32 Dutch (Netherlands) East Indies, including Bali, Banka, Billiton, Dutch Borneo, Celebes, Java, Dutch New Guinea, Sumatra, etc.
- 33 Dutch Guiana.
- 34 Dutch (Netherlands) West Indies, including Aruba, Bonaire, St.

## Amateur Radio

- Eustatius, Saba, Dutch part of St. Martin.
- 35 Egypt.
- 36 Eritrea.
- 37 Esthonia.
- 38 Ethiopia.
- 39 Falkland Islands.
- 40 Faroe Islands.
- 41 Fernando Po and Spanish Guinea.
- 42 France (including Corsica).
- 43 French Cameroons.
- 44 French Equatorial Africa.
- 45 French Guiana.
- 46 French Indo-China, including Annam, Cambodia, Cochin-China, Laos, Tonkin.
- 47 French India — Chendernagore, Karikal, Mahe, Pondichery, Yanaon, Calicut.
- 48 French Settlements in Oceania—Gambier Archipelago, Marquesas Islands, Tuamotu, Leeward Islands (French), Society Islands (including Tahiti), Tubuai.
- 49 French Somaliland.
- 50 French West Africa, including Senegal, French Guinea, the Ivory Coast, Dahomey, the French Sudan, Haute-Volta, Mauretania, Niger, French Togoland.
- 51 Gambia.
- 52 Gibraltar.
- 53 Gilbert and Ellice Islands—Incl. Line Islands, Palmyra, Washington, Fanning, Christmas Islands.
- 54 Gold Coast Colony, including Ashanti and Northern Territories.
- 55 Great Britain and Northern Ireland, including England, Scotland, Wales, and Northern Ireland.
- 56 Greece, including Crete.
- 57 Greenland.
- 58 Guadeloupe, including La Desirade, Les Saintes, Marie Galute, Basse-Terre, Grande-Terre, St. Bartholomew, French part of St. Martins.
- 59 Guam.
- 60 Guatemala.
- 61 Haiti.
- 62 Hejaz, Nejd and Dependencies.
- 63 Honduras.
- 64 Hongkong, including Kowloon.
- 65 Hungary.
- 66 Iceland.
- 67 India, including Burma, Bhutan, N.W. Frontier Prov., Brit. Baluchistan, Andaman, Nicobar, Laccadive, and Maldive Islands.
- 68 Nepal.
- 69 Iraq.
- 70 Irish Free State.
- 71 Italian Somaliland.
- 72 Italy.
- 73 Jamaica, including Cayman Islands, Turks, Caicos Islands.
- 74 Japan.
- 75 Kenya.
- 76 Latvia.
- 77 Leeward Islands, including Anguilla, Antigue, Barbuda, Dominica, illa, Antigua, Barbuda, Dominica, Montserrat, Nevis, Redonda, St. Ketts, Virgin Island (British part).
- 79 Liberia.
- 80 Liechtenstein.
- 81 Lithuania.
- 82 Luxembourg.
- 83 Macao.
- 84 Madagascar and Dependencies (Ste. Marie-de-Madagascar, Nossi-Be, Comoro Islands).
- 85 Madeira Islands.
- 86 Malay States.
- 87 Malta.
- 88 Marianas or Ledrones, Marshall and Caroline Islands.
- 89 Martinique.
- 90 Mauritius.
- 91 Mexico.
- 92 Morocco (French).
- 93 Morocco (Spanish).
- 94 Morocco (British).
- 95 Netherlands.
- 96 New Caledonia.
- 97 Newfoundland, including Labrador.
- 98 New Hebrides, including Banks and Torres Islands.
- 99 New Zealand, including Nauru.
- 100 Nicaragua.
- 101 Nigeria, including British Cameroons, Lagos.
- 102 Norway, including Spitzbergen Arch.
- 103 Nyasaland Protectorate.
- 104 Palestine.
- 105 Panama.
- 106 Paraguay.
- 107 Persia.
- 108 Peru.
- 109 Philippine Islands.
- 110 Pitcairn Island.
- 111 Poland.
- 112 Porto Rico.
- 113 Portugal.
- 114 Portuguese East Africa (Mozambique).
- 115 Portuguese India (Goa, Daman, Diu).
- 116 Portuguese Timor.
- 118 Portuguese West Africa (Angola).
- 119 Reunion (Bourbon) Island.
- 120 Rhodesia, Northern.
- 121 Rhodesia, Southern.
- 122 Rumania.

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| 123 St. Helena.  | 141 Trinidad, including Tobago.  |
| 124 St. Pierre and Miquelon.                                 | 142 Tunisia.   |
| 125 St. Tome and Principe, including Sarame.                 | 143 Turkey (Asian and European).   |
| 126 Saar Territory.  | 144 Uganda.  |
| 127 Salvador.  | 145 U.S.S.R., including Moldavia, Bashkir, Tartar, Kirghiz, Dagestan, Crimea, Vakutsk, Karilian, German Volga Settlements, Buriat (Caucasus) Mts., Georgia, Azerbaiken, Armenia. |
| 128 San Marino.  | 146 Union of South Africa, including Cape Province, Natal, Zululand, Amatongaland, Orange Free State, Transvaal, British Bechuanaland, Tristan Da Cuba, South West Africa.       |
| 129 Serbs, Croats and Slovenes, Kingdom of (Czechoslovakia). | 147 Uruguay.   |
| 130 Seychelles, including Admirantes, Cosmoledo, Aldabra.    | 148 Venezuela.   |
| 131 Siam.  | 149 Windward Islands, St. Lucian, St. Vincent, Grenada, Grenadines.  |
| 132 Sierra Leone.  | 150 Zanzibar and Pemba.  |
| 133 Spain.   |  |
| 134 Swaziland.   |  |
| 135 Sweden.  |  |
| 136 Switzerland.   |  |
| 137 Syria, including Lebanon, Alauites.                      |  |
| 138 Tanginyika Territory.                                    |  |
| 139 Tonga (Friendly) Islands.                                |  |
| 140 Trans-Jordan.  |  |

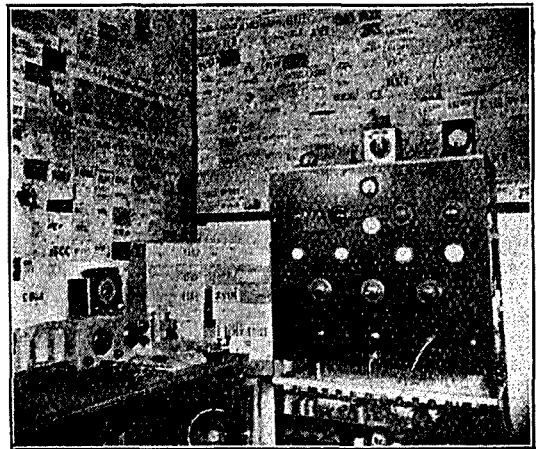
## Station Description

VK3JQ.

### Third in Centenary Contest.

The transmitter is the usual 4-stage job, using a 47CO 46FO 10 buffer and 203A five amp., which runs usually at from 50-80 watts input. A lease of long life being put on this tube, HI 1 link coupling is used between last two stages, and battery bias throughout. Keying is done in the centre tap of either doubler or PA, and the usual filter of choke and condenser is used, no trouble being experienced with thumps. A separate power supply is used for each stage. U8s are used as rectifiers, except for last stage, where a pair of GV1s handle the 1000 volts. The bank of 10 watt pilot lamps seen in the photograph are used as bleeder resistances across each supply, instead of voltage dividers. For 14MC work, I have found that the 203A works much better as a doubler than PA, and so the last coil is so designed that it will tune to both 7 and 14 MC. Two DPDT switches in lappings of HT trans. cuts the voltage down to about 700 when using PA as doubler, and another switch brings in an extra 60 volt B battery for more bias. This is all that is necessary to move from 40 to 20, and can be done in about 8 seconds. An absorption type wave meter can be seen on top of x-mitter. The whole rig is mounted on 6 in. auto-tray wheels, and can be pushed

about for making any adjustments. The receiver is a home-made 8-tube S.S. super, complete with x-tal at 525 KC, and certainly was a great help during test, the x-tal cutting out much of the mush picked up from the 30,000 volt power lines running past my QRA to Warrnambool. A Monitor using type 30 valve is seen standing



on top of receiver. The station has been on the air about 17 months, and 53 countries have been landed to date. All conts. being worked several times. Two  $\frac{1}{2}$  wave 40 ants are used 58 feet high, one N.E. and S.W., which is O.K. for Europeans, and one N. and S., for Yanks. Feeders are 51 feet long, and tune O.K. for both 20 and 40.

## Typical Topicals

By "The Listener"

### THE ACORN TYPE 955.

(Concluded from last issue.)

As an amplifier, the 955 is applicable to the audio or radio-frequency stages of short-wave receivers, especially those operating in the band between 0.5 meter and 5 meters.

As a detector, the 955 may be of the grid-leak-and-condenser type, or of the grid-bias type. For the former, conventional operating conditions with a plate voltage of 45 volts are suitable. For the grid-bias type, a plate-supply voltage of 180 volts may be used, together with a negative grid-bias voltage of approximately .7 volts. The plate current should be adjusted to a little less than 0.2 milliamperes, with no input signal voltage. If self-bias is used, a suitable value of cathode resistor is 50,000 ohms.

As an R-F or A-F Amplifier—Class A—or as an Oscillator or R-F Power Amplifier (Class C), the 955 is operated with plate voltage up to 180 max. As a Class A Amplifier with max. plate voltage, the grid voltage is .5, and a note is made that the d-c resistance in the circuit should not exceed 0.5 megohm. The plate current is 4.5 milliamperes, the plate resistance 12,500 ohm, the mutual conductance 2000 microhms, load resistance 20,000 ohms, with a U.P.O. of 135 milliwatts.

As R-F Power Amplifier—Class C—an Oscillator Plate Modulated, or C.W., we note the d-c plate current and d-c grid current are quoted as max. 8 and 2 milliamperes respectively. The power output is approximately 0.5 watts at 5 meters, with only a moderate reduction in this value on wavelengths as low as 1 meter. Below 1 meter the power output decreases as the wavelength is decreased.

Pay particular attention in this issue to Alan S. Duke's talk all about the Universal Rectox Instrument for A.C. or D.C., voltage, current, or resistance measurements. Believe me, hams, your attention will pay you.

### AUSTRALIAN ENGINEERING EQUIPMENT CO.

Attention is drawn to an interesting notification in this issue from the above concern, which has now become another of our regular advertisers. The notification refers to the famous "Kester" plastic solder, noted for its efficacy with the joints of radio sets. The Birnbach Insulators are also stocked, while the firm reports the usual brisk business, which never "lets up" day or night, in their popular T.C.C. condensers.

### P. and L. WIRELESS SUPPLIES

Attention is drawn to the advertisement on another page of this old-established firm, which has quite a lot on its shelves at 11 Hardware St., Melbourne, to interest amateurs. Their prices are remarkably moderate, and their big stock, constantly turned over offers a wide choice. An interesting department is that devoted to local and overseas publications devoted to radio, short wave, and the like.

### NOYES BROS.

I had an interesting preliminary chat with Mr. E. B. Foster, of the above popular concern, who has returned from his trip abroad. More of our chin-wag will appear in next issue. While away Mr. Foster visited the establishment of Messrs. Crompton Parkinson Ltd., of Chelmsford, and Ferranti Ltd., of Hollinwood, sponsors of the goods which worthily bear their name and which are handled just as worthily by Noyes Bros. While in England Mr. Foster visited Leeds, where after some years of separation he met his parents and family. While aboard ship our friend attained the dizzy honor of manager of the Melbourne Cup Sweepstakes, and has a good story to tell of the numerous winners which, allegedly, came over the air.

Visitors to Melbourne during the month included Messrs. Alan Hutchings (3HL), winner of the handicap section of the contests, who fiddles the dial at Callawadda, Vic., Brebner (3JQ), Belmont, Geelong, and C.F. Emery (3GQ), Camperdown, Vic. The latter is the live local representative of the Stromberg Carlson goods.

Mr. Ken Dyer reports increasing business in the transmitting department of Philips Lamps for Victoria, of which important department he is in charge. Well-known to amateurs, the big Holland concern, world renowned for its lamps, valves, Neon, and X-ray, has long ago proved itself indispensable to Australian radio interests.

Get in touch, often, with Vealls, who want you to know some more about the rather unusual Hickok Radio Meters. Not to know about them argues yourself unknown.

Solve all your instrument problems by allowing Siemens (Aust.) Pty. Limited to diagnose your worries and troubles. Meet them face to face in this issue.

Fresh information for your technical literature requirements herein from McGill's Agency, Melbourne's leading technical book and journal rendezvous in Elizabeth Street. If there's a book published on refrigeration in Iceland, McGill's will have it.

Cast your supercilious eye over the Quartz Crystal notifications of Mr. Maxwell Howden (3BQ) and Mr. P. R. Watson (3PY) and crystallize your requirements in this direction, and—read the Hamads in this issue. Attention to them will pay handsome dividends.

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Wind. 1605, W 5160.

# Operating and Experimental Section

Conducted by VK3WY.

The main feature throughout the past month has been the annual Yank contest. This resulted in a glorious mess of QRM on the 7 and 14 mc. bands. The most active stations in VK3 seemed to be 3ML, 3MR, 3YP, 3GQ, 3EG, and 3KX.

One thing the test seemed to show out was the value of a S.S. Super.

One of the nice things noticed this year was the big improvement in the notes of the majority of the W. sigs. Unfortunately this could not be said for some of our own stations, however, as it was noticed that several who usually have a decent clean-cut sig. seemed to have changed over to a rather rough RAC for the contest. This certainly made things rather less pleasant for the rest here, and certainly didn't help the VK's overseas reputation for decent sigs.

It was found to be comparatively easy to contact all W districts, and VE3, 4, and 5, but very few I believe landed VE1 and 2—they seemed to be as scarce as proverbial hen's teeth!

Conditions on the bands may be summarised as follow:—

**3.5 mc.**—QRN seems to reign supreme at present, although he is closely followed by a few energetic fone stations. During the contest a few W's were heard on this band, but they were very difficult to copy, and I didn't hear of any of the VIM Hams raising them.

**7 mc.**—This band has been fairly good in the evenings, and VE and W were worked up till about 1 a.m. Early morning DX on this band has nearly disappeared for the present.

**14 mc.**—The good DX which we have been enjoying on this band during the evenings has practically disappeared, except for a few W's just before midnight; between 1600 and 1800 the Europeans are fairly good.

## 28 and 56 MC. Section

Conducted by VK3JJ.

After an absence of almost five years, real DX has again started to break through on 28 mc., the first signals being heard on March 10. VK3BW reported a weak signal at 9.30 a.m., calling VK2LZ, and later J2IS was logged at good strength by 2LZ and 3BW. The signals from J2IS were very unstable and drifted out of the band, which probably accounted for other VK's missing them. Shortly after that a station signing O21AA was heard by VK3NM, but he was unable to get the second letter in the call.

The following Sunday the first VK/DX 28 mc. contact since 1930 was made between VK3BW and J2HJ. The former was reported R5, while the strength of J2HJ varied from R6 to R2, and faded in Vic. shortly after 10 a.m. The commercial harmonics of JNJ, TDC, and JAY, which have been very consistent this season, were in-

audible on this day. This leads one to think conditions were none too good, so perhaps the J's are just making a start on 28 mc.

VK's should make every effort to keep on this band for at least two months yet, as conditions at this time of the year are generally similar in both hemispheres. Many W's are active, and they are most likely to come through in April, May, and June.

VK3XK has been very consistent lately, and now that a doubtful 210 has been replaced with a 171a, the signals are much more stable and two points stronger. 3NW is putting out good signals locally, with only 8 watts input to a 47. A difference of 25 degrees direction of 3WL's antenna is sufficient to drop the strength of signal from R6 to R2 at 3JJ. VK3YP (old 3CP) intends making another start on 28 mc., and is at present working on a rotary beam antenna. He had plenty of experience on 28 mc. in 1929, and was the first VK to work U.S.A. on this band.

On 56 mc., VK3KQ seems to be getting the best results, and the signals are good strength at 3OF, 3JG, and 3LG. The transmitter is pp 210's grid modulated, no capacity is used across the tank coil which is in the form of a large loop and coupled to a half-wave 14 mc. vertical antenna. 3JG and 3LG have type '19 tubes in transceivers. VK3RS is using a small portable in tests with 3KQ, but so far they have been unable to work over any great distance. VK3KW is hopeful of getting through to Melbourne with the aid of a beam antenna similar to those recently described in "QST." At a location two miles from the transmitter the signals are inaudible with the beam broadside on, but on changing it to the direction of the receiver, signals immediately jump to R max. 3BW and 3JJ are just about ready for 56 mc., the former having yet to complete a transmitter, while the super regenerative receiver at 3JJ is being remodelled for the fourth time.

### INTERNATIONAL 28 MC. CONTEST.

Points scored in January and February:—VK4BB 66, VK3BW 26, VK3JJ 21, VK2HY 18, VK2LZ 18, VK3WC 17, VK3NM 9, VK8WL 9, VK3OF 8, VK2XY 4.



Correspondents are again reminded that notes Must be in the hands of the Editor NOT LATER than the 18th of each month. This month notes from VK3 Phone Section and VK6 Division arrived too late for publication.





## Victorian QSL Bureau.

STOP PRESS

R. E. JONES, VK3RJ.



Cards are on hand at the Bureau, 23 Landale St., Box Hill, for the following Victorian stations, and will be forwarded on receipt of the necessary postage:—

3AT, AX, BF, BK, BL, BX, CF, CM, CN, DD, DK, DL, DQ, EG, EM, EP, EQ, ES, ET, FC, FH, FM, FW, GE, GJ, FM, GU, GW, HE, JK, JX, KG, KI, KO, KQ, KY, LG, LP, LT, LX, LY, MX, MZ, NG, NW, OP, OZ, PC, PL, PW, PZ, RW, SP, SK, TK, TM, WP, WN, XK, ZF, ZJ, ZK, ZL, ZO, Messrs. Simms.

At the recent W.I.A. Convention held in Hobart, the Federal Bureau was changed from Adelaide to Melbourne, with address as above. It is the intention henceforth to refrain from altering the location of the Federal Bureau. VK3RJ was appointed Federal QSL Manager.

G5RV would appreciate reports from VK listeners on his 7 mc. and 14 mc. sigs. All reports will be acknowledged. His QRA is 19 Springfield Park Av., Chelmsford, Essex, England.

As a result of the multitudinous contests held during the last six months, the work of the Bureau has been quadrupled, and stations are asked to facilitate its work by claiming cards promptly and by observing the rules laid down in a recent article on the Bureau's activities.

Gippsland stations, and those in the North-east and Central North of Victoria, may expect a visit from the writer during the month of April.

Sunday, 24th March saw the blanket definitely lift on 10 mx conditions. Spasmodic bursts of DX have been coming through for the past three weeks, but nothing approaching Sunday's conditions have been experienced since 1929. The irony of Sunday was the fact, firstly, that VK3YP who worked W6VD at 9.30 a.m., had not been on 10 mx since he worked his last W there in 1929, and secondly, that VK3BD, who is surely one of "ten's" staunchest supporters was away for the week end. W6VD was the first DX to come through and he was worked by VK3BW, VK2EP, ZL 2GD and VK3NM in rapid succession after the contact by VK3YP. And list, you DX fiends, the MINIMUM report either way was R8, and the Yank reported VK2 EP's fone as R9 !! Between 9.30 and 10 a.m. VK2LZ worked W9NY and W2TP. The latter contact is believed to be the longest distance contact yet made on this band. Later, J2HJ and J21S came through and were contacted with the same ease as the W's. One interesting feature of the day's work was the fact that no VK's using self excited transmitters "got across."

Summarising the contacts, W6VD worked VK3BW, VK3YP, VK2EP, ZL2GD, and VK3NM. VK2LZ worked W9NY, W2TP. VK3BW worked W6VD, J2HJ, ZL1BA, ZL2KK, ZL 2BN. VK6SA worked J21C. VK3JJ worked ZL1BA, and ZL2KK. The W's period lasted from 9.30 a.m. to 11.30 a.m., and the J's from 2 p.m. to 6 p.m.

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## Station Description

VK2WT—TENTERFIELD.

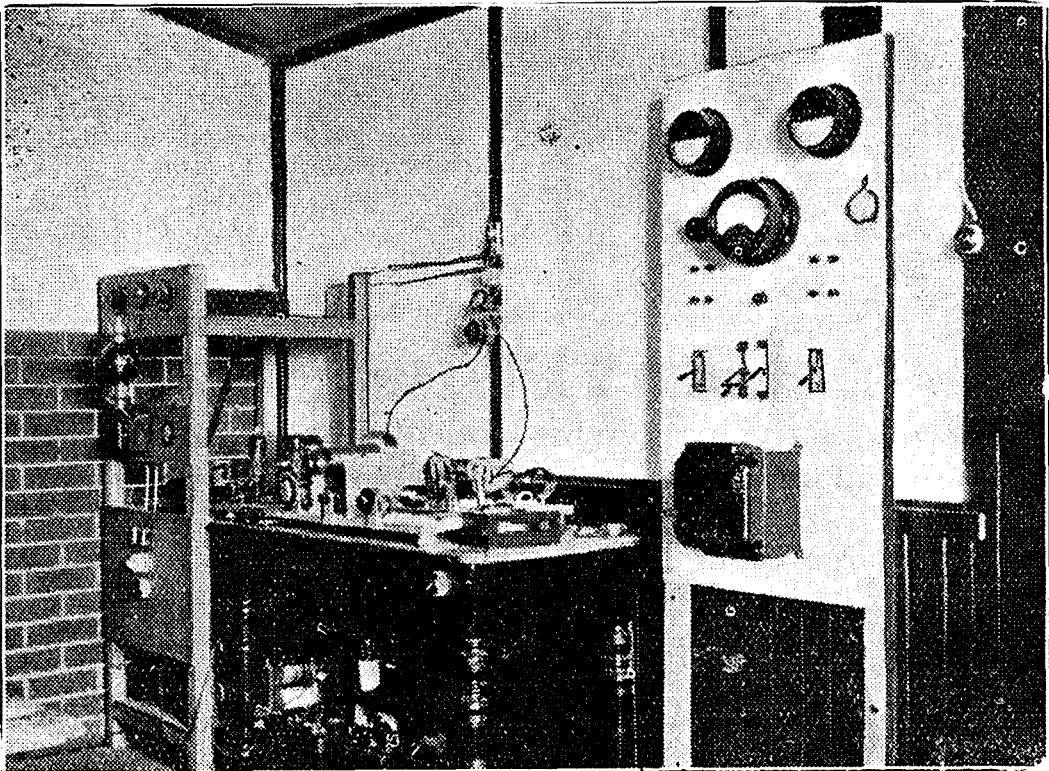
A Transmitter first took the air from Warranfields Tenterfield in 1924, signing A2WT. This Transmitter consisted of a 201A and 120 volt accumulator batteries for High Tension.

Among the most interesting memories of this time was A2CM's trip across the Pacific, Schnell's visit to Australia and the first trans-Pacific Tests, and on the good old 32 mx. band 2 or 3 watts was all that was necessary to get R5 and R6 reports from the 201A Xmitter.

The transmitter at present in use operates on both 3560 kc. and 7120 kc. A type 59 Tritet oscillator, 59 buffer and DO/40 final amplifier and the modulator portion which modulates the final is a pair of 210s in Class B, and the tubes driving this are 354 and LS6A. All the filament are lit from the ordinary 50 volt D.C. house-light-

ing, and shunt resistors are used where the current is too high. The plate supply for the 210s and DO/40 is obtained from a 1000 volt Esco generator, motor driven. All other supplies are obtained from a Rotary Converter and usual rectifying systems. Some original S tubes are still in use.

The Receiver consists of 78SGRF 77 E.C. Det. and 354 V. Audio, and the plate supply from a small motor generator which is home wound and was originally made from a 10 volt to 350 volt job, the primary and secondary being rewound for 50 volt D.C. and 200 volt D.C., and is about 50 per cent. efficient, but proves very successful, as it is silent even down to 10 metres.



## Divisional Notes

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### Association of Radio Amateurs

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#### NOTES FROM HEADQUARTERS.

By 2HZ.

The ballot papers for the annual general meeting of the A.R.A. have been completed and forwarded to all members for voting.

At present there is a notice of motion on the books regarding the raising of the annual subscription. Many and varied are the expressions on the subject, so it is in the laps of the gods whether the subscription is raised or not.

2YC, our efficient QSL officer, is not standing for re-election to the Council, owing to pressure of business.

The second annual dinner held at the Dungowan, Martin Place, was a great success. Some 80 Hams attended, and representatives from Waverley, Zero Beat, Manly, Lakemba, and Newcastle Amateur Radio Clubs, besides representatives from the Radio Telegraphists' Institute and Australian Inland Mission.

2UX, Mr. Goyen, the A.R.A. President, was in the chair, and a little business was disposed of first. The usual toast to the visitors was replied to by the Rev. Flynn, well known as "Flynn of the Inland," who described some of the work done by the amateurs in the science of radio as applied to the out-back.

Ray Carter (VK2HC) proposed the toast to International bodies, and during his speech mentioned the successes of the I.A.R.U. and B.E.R.U. Mr. C. D. Price, G6PC, replied, stating that he was very glad to be amongst such a gathering of amateurs.

The country Hams were well represented: 2HC (Quirindi), 2PN (Tumut), 2BP (Hazelbrook), and 2YS and 2ZC (from Newcastle).

#### ZONE 2 NOTES.

ZO—VK2HV.

VK2XQ, the most western Ham in Zone 2, will soon be making things buzz at Walgett. John is on the track of a rotary converter, and with a bit of luck he should land one very soon.

Old Ray, of VK2HC-2BE, has been in Sydney. The old familiar voice hasn't been heard on 80 metres for ages now!

Ivan, of VK3EG, old 2EG, has rebuilt his rig and is working DX in fine style from his great location in VK3.

Tamworth now boasts a gang. VK2GU is the latest addition to that centre. VK2DD is also a new one up that way. Toddy and Jack, of VK2CR, have not been QRT through the summer; they have been up on 80 metres, braving the QRN, and are turning out some real good telephony. Speaking of 80, three K6 stations, two W6's, and a couple of VE's have been heard on that band at R4-7 from VK2ZP during

the last few nights; all were QSA5 and on phone. VK2ZP now has an energetic second op.

VK2NA has left Delungra, and will be going to Kensington.

VK2HJ has gone to VK4, and was not heard at all from Quirindi.

VK's 2RV and 2NF are on a little from Werris Creek. Both are QRL with exams., but hope to be on Xtal for the winter.

Mac, of VK2ZH, and 2KR, are rejoicing, as Gunnedah has 240 A.C. at last. Cess is QRP no more; his beefy sig. now rocks in at 2HV QSA5, and always R6-8. "Willie" Picknell, the second op. of 2HV, is shortly going to ZL, and hopes to be there for at least a couple of years.

Would all the chaps in this zone please send in dope on their doings, station descriptions, etc., for publication in this mag. to me on or before the 10th of each month, and don't forget to tell any radio minded friends about "Amateur Radio."

Send your subs. to VK2HV, Byron St., Inverell.

#### ZONE 3 NOTES.

ZO—VK2OU.

QRN has been very bad this month, only one or two nights being reasonably free.

Nothing has been heard of the local gang except that 2ZM had a portable on his holiday. 2GI supplies this one. A BCL, on seeing a tube rocking in a spring socket, asked if that was what was meant by a tube being "in a state of oscillation"!!!

2ZC was overheard talking to W8BTL.

2JO has been heard again. The first time I've heard him for six months.

Another old-timer heard was VK5MB.

VK2BP is giving Ham radio a rest, and when I was QSO was using QRP to his exciter unit for TX. Eric will be in the first few in the W.I.A. 6-point relay with well over 600 points.

2UY was heard R max.; very nice to copy, but very broad.

2EJ is a new Ham putting out a very solid Xtal sig. with a pair of 46's in PP P.A.

4PK puts out very nice fone, using PP46's in PA mod. by 250. One night the shack temperature was about 85 deg., and W6GXV told me that he was sick of extra blankets and ear muffs.

VK2OO has put in a 59 in tri-tet and finds it FB, but uses a 47 as regen. doubler in place of another 59. Also been trying separate heterodyne osc. in receiver, and finds that the sig. noise ratio is much better than with the usual antodyne.

#### NOTES FROM ZONE 6.

2LM and 2WH still conduct their weekly skeds on 80. 2LM has another small rotary converter, and is working on a 1 kw. job. Should be QRO again shortly. Both still using the 2-stage suppressor grid modulated outfits. A few of the Dubbo gang are active, but

the quality of fone from that direction leaves a lot to be desired. (See editorial.) Most of their activities seem to centre on 250 metres.

2VJ, of Alecktown, still on Monday nights; no particulars of gear.

2QA has been tearing round the country with portable gear. Writing these notes from VIM finds the old 240 A.C. a pleasant change from rotary converters, and the power house across the road has nothing on our old home town for electrical interference.

2RJ has been deep-sea fishing. Ask him about the one that got away.

## NORTH SHORE ZONE NOTES.

### ZO—VK2HY.

Owing to pressure of business, the previous writer of these notes, VK2DR, has reluctantly had to give them up, and in the meantime I promised to fill the breach until further help was captured. I think you will agree that these notes by 2DR have been among the best each month, and I take this opportunity of thanking him for his hard work in this direction. The past month has been one of much activity, incorporating the B.E.R.U. tests and latterly the A.R.R.L. test. Each of these have received considerable help by the VK's, and in some cases fair scores have resulted.

Dave, 2AE, is on again with Xtal RAC sig., which sure gets over to those Yanks. He seems to be piling up a score in the Yank test. He uses a vertical 66 ft. ant., so this may account for his good results. 2DA is putting Manly on the map in W. When he can't work 'em it's no good anyone else trying. Hi! 2HG is on again after his illness. Believe he worked some FB DX the other night on 40 mx., K4 or something. FB Jack, you seem to be settling down to "biz" in the new shack.

Bill, of 2HZ, divides his time between Executive meetings, YL's and 80 mx. fone.

2YC has completely discarded his old love, 10 mx. Jim is becoming quite a DX fiend, and worked PK recently. Don't leave us cold down on 10 mx. though, Jim.

2LZ must be pretty well known throughout this old globe by now. After winning N.S.W. award in Centenary, he went pretty close to VK award in B.E.R.U. Con is on 10 mx. nearly every night; but lately the best DX down there is 2HY's, half a mile away. Hi!

2SS is on quite a lot, and has been trying out 20 mx. Worked W8CRA and received R8. Nice sig. for self-excited, OM. 2WW entered in B.E.R.U. Junior and worked quite a bit of DX. I haven't forgotten your card, Bill. Hi!

2KA QRL study. How's that super going, Paul?

2VG has very solid harmonic on 10 mx. from 40 mx., and can be heard R8 on former working DX. Made his WAC last month, working LU. FB, Rex.

2VQ been rebuilding, and at last achieved T9. QRI.

Had visit from 2DQ recently, who informed me he had heard my overtone on 20 mx. when calling on 10 mx.

Well, gang, hope you give me the same support as you gave 2DR.

## LAKEMBO RADIO CLUB.

### VK2LR.

The financial year of the Lakemba Radio Club is drawing to a close, and by the time these notes appear the final arrangements for the Club's annual reunion will have been made. This usually takes place early in May.

There are now three silver cups circulating in the Club for annual competition, two for transmitting members and one for receiving members. The Club's outward QSL Bureau under the direction of Mr. Hughes (2QP) shows a handsome profit, and at the same time provides an excellent opportunity for members to dispatch all their cards cheaply.

The Club's official paper, "Lakemba Review," has proved most successful.

Each meeting night a box is presented by 2QX, into which members may place any spare coppers. This fund is to defray the expenses of any minor club "spreads" which may be held throughout the year, such as on the occasion of inter-club debates. The fortnightly fee payable by members is probably the lowest of any radio club. All other "funds" are entirely voluntary, and there is no doubt that members must be complimented on the excellent support they have extended to all club activities during the past year.

Particular thanks is extended to the following:—Messrs. Hetch & Co., and Slade's Radio, for the donation of silver cups; Mrs. Mitchell, for the very great assistance in printing "Lakemba Reviews"; Mrs. Picknell, who has arranged all club "spreads" during the year; Miss Picknell, who has assisted with the necessary sketching; Mr. Darroch, whose generosity towards the club has been unlimited; the A.R.A. and "Amateur Radio," who have been good enough to accept and publish our notes, and to all those who have in any way helped or displayed interest in the Lakemba Radio Club. We only wish that we had the accommodation at our re-union to invite everybody, and thus extend our thanks in a practical manner.

Communications addressed to the Hon. Secretary, 79 Park St., Canterbury, will receive immediate attention.

## WESTERN SUBURBS WHISPERINGS.

### ZO—2MY.

2DW—Doing a bit of DX es fone on 40 mx., but not heard on very often. Still keen on 5 mx. work.

2BX—No sign of Bert. He must have proceeded on that hiking trip up the north coast. Wonder if he lugs his HT supply in a haversack?

2FO—Reported to be having a bit of trouble with neutralising his rig; also to be preparing for a bit of QRO.

2MQ—On the last stage of that famous sniggle snooper.

2JT—Just got settled down nicely in his new QRA, and he finds it necessary to move again. Stiff luck, JT. Let's hope the next QRA is as good for DX as the late one.

2JR—Reported back from the Islands. Wonder if he brought that spark Xmitter back with him. One of these days I'll tell the story of what happened one night when this station fell to assisting 2JR test that rig out. Or

perhaps Davo, 2FD, might be able to tell it better!

2MY—At last solved the mystery of the local QRM that has been making conditions impossible here for weeks. In case anyone happens to ever get the same trouble, here it is: Being troubled with clicks from the light switches every time they were used, decided to try the effect of a line filter. So the conventional filter was installed, but being a bit doubtful about the condensers which had been cribbed from an old be. power pack, I hit on the brain-wave of passing them to earth via a fuse consisting of a pea lamp. Now figure it out? It took me a week's hard pondering to wake up.

## NEWCASTLE AMATEUR RADIO CLUB NOTES.

(Affiliated with A.R.A.)

By 2RG.

The annual general meeting of the Newcastle A.R.C. was held on March 12. In summing up the activities of the Club for the past year, the President, 2ZW, made mention of the rapid progress made. The original meeting-place of the Club was 2ZW's shack, but the ever increasing membership outgrew the available space. For the past six months a room in the Sun Building has been rented, and this was furnished by a levy on the Club members.

Lectures and debates have been held from time to time, of a most interesting and instructive nature. Mr. L. T. Swain, 2CS, was one of the chief contributors.

During the year two DX contests for Club members were held, the first being won by 2OF, and the second by 2ZC. A trophy donated by Mr. F. Silverthorne is held by the winner.

A recent exhibit of Ham gear at the Newcastle show aroused great public interest, and is regarded as one of the most successful held in this State. Our thanks are due to G. Young, 2FN, and Bob Best, who organised the display.

A Ham Convention is mooted and will probably be held on the second week-end after Easter. A large number of Sydney Hams have already promised to attend, and it is hoped that a very enjoyable week-end will result.

The success of the Club is due to the fact that membership is limited to licensed amateurs or others possessing high technical qualifications. Thus all members retain their keen interest, and activities of the Club continue to increase.

Officers elected were: President, S. A. Grimmett, 2ZW; Vice President, A. Fairhall, 2YS; Secretary, R. J. Glassop, 2RG; Committeemen, G. Cowell, 2SO, and F. Tarrant, 2UF.

## Victorian Division

### WESTERN DISTRICT NOTES. 3OW-3HG.

Conditions on 3.5 mc. have improved considerably during the last few weeks, and the band is quite active again with fone stations, both VK and ZL. VK3OS, 3XJ, and 3HG are very active. (The latter's YL has a SW receiver, and is learning quite a lot about Ham radio!)

3XI (Warrnambool) caused a surprise by starting up one fone on 3.5 mc. 3JA is also active on 7 mc., whilst 3GJ has gone to Melbourne to live.

3DX and 3TA still active on 200 metres.

The 14 mc. band has been good at times, particularly during the warm weather. 3PG succeeded in raising CX and OA with his 4 watts. Although only 8 or 9 miles away from here, his position seems much better for reception than ours, as stations come in there when they are inaudible here.

3HG is leaving in a few days on a trip to 3OR and 3KR, Kerang.

It will be interesting to see how the proposed new power supply at 3OS turns out. It is intended to use a rotary chopper driven by a small motor to break up the 32 volt house lighting supply, this being fed into a special transformer.

This system was tried by 3OW some time ago, and worked fairly satisfactorily until the transformer broke down under the high no-load voltage.

A high working voltage condenser across the secondary would probably have remedied this trouble, but the system was scrapped for other reasons without this being tried.

### MALLEE AND THE NORTH.

3WE.

Conditions generally in N.W. VK3 during January and up to the middle of February can best be described in the words of 3PY as "lousy." Even with a six "toob" super it was impossible to hear anything on 20, and very little on 40, except an occasional VK2; while 80 was a veritable nightmare, owing to QRN and the QRM from frigidaire, fans, and picture show converters, which during the summer is particularly atrocious. However, since February 15 the QRN blanket has lifted somewhat, and a general all round improvement is noticeable, particularly on 40 and 80, although the former is still freaky. On the other hand, at Kerang, 3KA and 3OR report DX galore. Ken worked W6, G, BQ, W9MCD on 40, OH3OJ, OK2KO, and F8WB on 20 in one go, while when 3YJ visited him recently they just about WAC one week-end. Ken also active R.A.A.F.W.R. work, contacting 6ZI while flight of planes on way to Perth recently.

The 3.5 mc. band is rapidly coming "good," and the writer shows a tally of over 60 QSO's for past four weeks—all phone. These include all States and ZL (ex VK6) while several W's. Excellent results are being secured by our ex VK2RS, now 3OS. Bob is getting 1½ watts input from about 100 volts "B" batts. and darn near works the world. When the Fire Brigades Demo. was held at Ballarat early in March, the Hams there had quite a number of visitors, and so much hilarity was heard from 3GM on the 7th that George could be pardoned for putting the YL "behind the grille." Having 3ZK and 3WN there we don't blame him a bit.

Paul, of 3PY, went on a trip to VIM during the month, and visited a few of the boys. Haven't heard yet if he acquired any new gear or if it was all screwed down. 3XJ (with Mutt and Jeff in attendance, assisted by Jess) was most consistently "on" for the

month. He was closely followed by 2HU and 3WE (what's this "personality" stunt, fellows?), while others more or less frequently on 3.5 mc. phone were 5IV (Auntie Ivy on the mike), 5ZC, 5GL, 5QA, 5WJ, 5HD, 5KL, 7RY, 2HU, 2HC, 2BW, 2NM, 2PN, 3's OS, CG, ZJ, ZK, FW, TY, KE, CE, EQ, PW, CH, WN, RZ, GM, PY, HG, LH, EP. The latest to get on 80 phone is 3RG, and was so intrigued that the hours fled swiftly, and when he finally QRT—?—was it the knob off the bedpost that you stopped, Gil? The first ZL to make their appearance on 80 are ZL's 2BE, 1KO, 4CR, 4CU, 3FM.

## Queensland Division

By VK4RY.

The monthly meeting of the Wireless Institute was held at headquarters, Heindorff House, Queen St., Brisbane, on Friday, March 1, before a very large attendance, including several old-timers.

After the general business, a very interesting lecture was delivered by Mr. M. O'Brien, VK4MM, the subject being electron-coupled receivers.

Congratulations were extended to Mr. J. Bates and Mr. J. Bowen, two members who were successful in passing at the recent A.O.P.C. examination.

Members are reminded that the annual meeting will take place at headquarters on Friday, April 5.

All correspondence should be addressed to the Secretary, Box 1524V, G.P.O., Brisbane.

4UU has at last worked that elusive African for his WAC.

4KA recently paid a visit to VIB and called on several of the local boys. Understand two RK20's were purchased.

4HR and 4MM were recently heard testing on 56 mc.

4AP certainly gets out FB. During the recent B.E.R.U. test he was able to obtain his WAC in eight hours.

4HB has completed his four-stage Xtal rig.

4EI intends annoying the Yanks on 14 mc. fone suppressor grid modulation, during the coming winter; has also purchased an RK20.

4WB, ex VK2BI, is back in VIB, and is at present rebuilding.

4JB, another lucky one, recently worked SU6HL on 14 mc., and is now WAC.

4GU still continues to put out good fone.

4WT is a real solid worker. When not doing secretarial work is spending his spare moments decorating his yard with 56 mc. antennas.

4UZ, of Toowoomba, is at present entertaining the B.C.L.'s on the 200 mx. band.

## South Australian Division

By Eric Halliday.

DX conditions, both on 7 mc. and 14 mc., have been very good in VK5 up to 18/3/35. Hams on both bands have had no difficulty in working Europe, Africa, and, of course, North America. At times it has been hard to decide which is the better band, but just at present DX seems to be more on 14 inc.

Early morning and evening seem to be the best times to hear DX, and often there are so many chaps on that it is hard to find a quiet spot on the band.

Naturally many of the Hams have had no difficulty in raising the number of countries worked.

5RX has worked 63. George's two tube battery receiver certainly drags the DX in. Maximum high tension is only 60 volts, too!

5RF went out the other morning to find his pole down on the ground. Hopes to have it up again shortly, but in the meantime is rebuilding his Hartley. 5LD still drags in the DX. 5KL has found conditions good on 7 mc. in the early mornings. Has worked HB, F8, CR7, X, and XU lately. 5WK is another who has done well. Finds no trouble in contacting W's on 20 m.

5LG returned home this week from Western Victoria with his YL. Hopes to be on the air again shortly with a p.p. rig. 5LB has been heard on 7 mc. a lot lately with some FB fone.

5RI, the South Australian Railways Institute, has been heard on fone on 200 m. quite a lot lately. Strength is FB, but the quality could be improved a trifle. 5DC puts out one of the strongest 200 m. signals in VK5.

5WB is back in Adelaide again after having been stationed as operator at 5PI, Crystal Brook, for some months. Result: 5WB is back on the air again. Harry Wheeler (5HW) is making an FB job of the elementary lectures again.

The annual general meeting will be held at the club-rooms on April 10. It will take the form of a smoke social.

## Tasmanian Division

By 7PA.

(Hon. Sec., H. M. Moorhouse, 95 Arthur St., North Hobart.)

The A.R.R.L. contest has held the attention of a number of our members and from the times 7RC and 7XL in the North have been called, one would anticipate something from them.

7JB has been the most consistent down here. I understand he bagged 37 W's and a VE the first night.

7JH and 7PA made their attempt at contest work for the first time, but it was not so hot in my opinion.

Conditions here—due to QRM from high-powered mainlanders—were putrid at times, and some of the broad signals covered a big percentage of the band, and were many times worse than any local.

It is proposed to run a monster "State Field Day," which members from all parts of the State will attend. The centre of the activities will be Campbell Town, on March 31, and a big day is expected. The 80 mx. band is to be used, and it is proposed to try phone. Our Northern brothers are providing the transmitting equipment.

A camp is being arranged for those who can get away on the Saturday, so that it should be a great attraction.

A further attraction is a lantern lecture to be given by one of Hobart's recognised lecturers, Mr. Nat. Oldham, and will be entitled, "Early Hobart and Its Hotels."

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"T," TONE.	
1. Extremely rough hissing note. 2. Very rough a.c. note—no trace of musicality. 3. Rough low pitched a.c. note—slightly musical. 4. Rather rough a.c. note—moderately musical. 5. Musically modulated note.	6. Modulated note—slight trace of whistle. 7. Near d.c. note—smooth ripple. 8. Good d.c. note—just trace of ripple. 9. Purest d.c. note. If it appears to be crystal controlled, simply add an X after the appropriate number.



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## R.A.A.F. Wireless Reserve Notes

### NOTES AND ACTIVITIES.

#### Federal Notes by the C/O.

Fresh ideas are to be shortly put in operation in all districts. The first will probably be the issuing to each active member of a quartz crystal ground to his section working frequency. When all stations are working on the officially allotted reserve frequencies the trouble of phone interference on traffic channels will disappear entirely.

The Air Board is now in a position to see its way clear to co-operate more with the reserve, and we may look forward to a year of lively activity. It is hoped that some of the lost enthusiasm on the part of certain members will be renewed. More members are being gradually enrolled, and the reserve is spreading its operations over a wide area of the Commonwealth.

The VMF and VMC districts are to be congratulated on the fine work done during the recent flight visit to Perth. Daily watches were conducted without a miss. We can look forward to more of this genuine work when the squadron is finally established in W.A. At present the minds of the VMC reservists are turned to the Easter Camp at Laverton, where they are assured of an interesting time and practical experience, both in the air and on the ground. It is to be expected that such camps will shortly be extended to Richmond, N.S.W., and other places.

This month has brought about a change at the Air Board. Flight Lieut. Wiggins, the Staff Officer for Signals, has left on a world tour and his place has been taken by Squadron Leader Swinburn, who has recently returned from London, where he was Liaison Officer. Both these officers have always taken a keen interest in the reserve, and have done their utmost for it. Flight Lieut. Wiggins said that he could proudly speak of the fine work of the reserve wherever he goes.

#### Second District Notes (by 2ZI).

Activity in VMB has not been too bright lately, but with the renewed hopes of better co-operation that have been received from headquarters, we can look forward to a more lively future. Traffic totals of the more active stations are:—2A2 3, 2A4 10, 2A5 5, 2B3 5. Owing to 2A4 being absent on leave, 2A5 has taken over the section commandership of the first section.

#### Third District Notes (by 3ZI).

VMC has been in a furore since the announcement that a reserve camp would be held at Easter. Many members must have latent ability in persuasive methods, because every man in VMC but one, both inactive and active, will be present. Some of the bosses took some persuasion too from all accounts, one member even going to the extent of saying if it meant his job or camp, then camp it was! In future years, inactive stations, unless there is some legitimate reason for their inactivity, will be debarred from camp,

but this year all may go in order that each man may benefit from the actual experience gained whilst at Laverton. The only proviso is that every man must be 100 per cent. efficient as far as message handling ability and procedure are concerned.

Of course, nothing need be said about the active men—they are proficient in all phases of procedure from practice, but the inactive stations have got to work, and work hard, between now and the camp period, in order to reach the desired efficiency standard.

3DI unfortunately won't be able to get down to camp, as he runs his own business, and can't get anyone to handle it during his absence.

3C2 and 3D4 have been doing a great job handling the Perth traffic, in conjunction with 6ZI; with the flight of Wapitis over there, there has been quite a lot of messages moving, but contact has been 100 per cent. each night.

We are very sorry to hear that 3D4's father is very seriously ill, and sincerely trust that he is showing very definite signs of improvement.

3C5 has been handling some of the Melbourne end of the Perth traffic for 3C2/3D4 when they have been unable to contact VJP.

3A6, one of our most recent members, has been putting over a great job this month. Besides the 56 messages he has originated in the last 18 days, and all real traffic, he has handled well over 100 relays, both Perth and section traffic. In a little over six weeks he has learnt his procedure 100 per cent. perfectly, and is now in the forefront of our VMC crack operators.

We are missing 3D6 very much from our weekly schedules. For over four years her signal has been the most regular of anyone in the district.

1A1 has requested full traffic returns to be forwarded again to him, so the returns shown for VMC are those from 1/3/35 to 18/3/35 only. These returns are always kept by 3ZI and tabulated in each quarterly report. However, it will be excellent to have the best district, section, station total in "Amateur Radio" each month again. As far as VMC is concerned, the totals that appear are those of messages handled only in the normal course of work, no dummy traffic being permitted.

#### Sixth District Notes (by 6ZI).

The twelve-day visit to Perth of three Wapitis has aroused considerable enthusiasm amongst VMF members. 6A3 is the only member who has been unable to attend the lectures, and report at aerodrome for instruction, owing to distance from Perth. Both 6A1 and 6A4 came down from the north and had flying experience, with prospects of further instruction when the flight visits their home town. One whole day has already been spent at the aerodrome, and one and a half more are to be put in. Unfortunately

the flight is only equipped with 600 k/cs. transmitter, with portable ground receiver for army co-operation work. No short-wave gear is being carried, but the greatest use is being made of the apparatus available. Thanks to the co-operation from 3C2 and 3D4, daily watches have been kept while the flight is staying here with 6Z1, 6Z2, and 6A2. Many important signals have been handled by reserve stations, and the utmost use has been made of reserve channels by the O/C. of the flight. Such a thing gives members great confidence in their ability.

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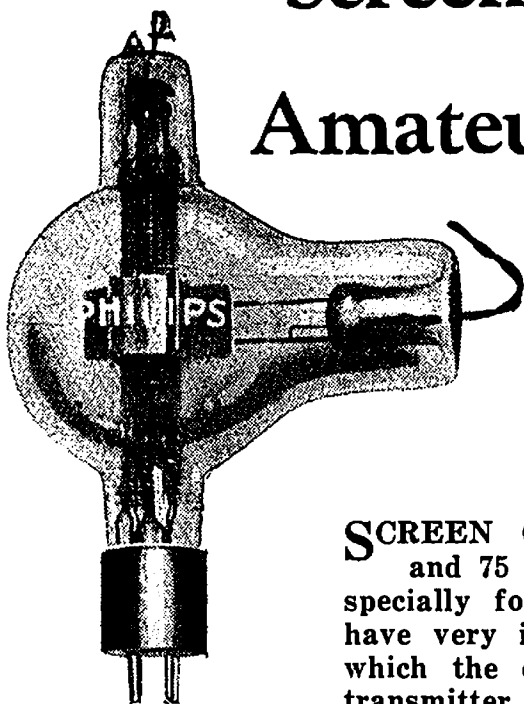
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# Screen Grid Valves

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## Amateur Transmitters



Types:  
QB2/75, QC05/15

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SCREEN GRID Transmitting Valves for 15 and 75 watts have been designed by Philips specially for use by amateurs. These valves have very important properties, as a result of which the construction and adjustment of the transmitter can be greatly simplified. The control-grid and anode of these valves are screened from each other by a screen-grid, thus reducing anode-control grid capacity to a minimum. When used as H.F. amplifier or frequency multiplier in controlled transmitters there is practically no reaction of the anode circuit on the grid circuit, and self-oscillation is impossible with screening outside the valve. Neutralisation is unnecessary, so it is very easy to alter the wave-length at short notice. These screen-grid valves give greater amplification than triodes under the same conditions.

Table A shows the various electrical properties of the Philips amateur transmitting valves:—

### CHARACTERISTICS:

Table A. Type.	Screen Grid Valves	
	QC 05/15.	QB 2/75
Filament Voltage .....	4.0	10.0
Filament current* .....	1	3.25
Saturation current* .....	400	2,000
Anode voltage .....	400-500	2,000
Screen grid voltage .....	75-125	300-500
Max. anode dissipation .....	15	75
Anode dissipation on test .....	20	100
Max. screen grid dissipation .....	3	15
Amplification factor* .....	225	200
Mutual conductance (slope)* .....	1.4	1.4
Int. resistance* .....	160,000	150,000
Anode-grid capacity .....	.001	.02
Max. diam. of bulb .....	50	100
Max length .....	160	210

\* Approximate values.

# PHILIPS

## TRANSMITTING VALVES





## Editorial . .

**COUNTRY MEMBERS.**—Are you availing yourselves of your representation on Council?

You may have a "grouch" against something. A city man can ventilate any grievance at a meeting, and generally leaves the meeting in a better frame of mind than when he entered it, through having the other fellow's point of view explained to him. You are unable to attend meetings, but you have your representatives to speak for you.

Do you keep in touch with your representatives on Council? You have two of them—Mr. Howden, 3BQ, and Mr. Marsland, 3NY, were appointed to look after the interests of the country membership, but they cannot do so unless the country members submit their problems and suggestions to them.

Of course, being a country member has certain disadvantages — you are unable to bring your technical problems along to a meeting and discuss them with your fellow-members, but you can borrow technical books from the library, although you are expected to pay the postage on same.

Council realise to the full the disadvantages of country members, and wish to extend to them the same privileges as are available to city members. Have you any suggestions for placing the country member on a more equal footing with the city member? If so, send those suggestions to either of your representatives — **MAKE USE OF YOUR REPRESENTATION ON COUNCIL.**

**CITY MEMBERS.** — Ninety - nine per cent. of city members have no idea of the difficulties experienced by country members. Do you share your privileges with the country member? Remember, he cannot come along to a meeting, and his only means of solving a problem is to contact an-

other ham and either make tests or ask for suggestions as to how the difficulty may be overcome.

Are you one of the fellows who say, "Sorry OM, QRL here," when asked to stand by for tests, and then call CQ-DX five minutes later.

Most of us are far too apt to take for granted the privileges obtained from membership of the W.I.A., but how many times have you brought your problems along to a meeting and had them solved by your more experienced or more technically inclined brother hams.

It is very nice to have your shack wall covered with DX cards, but wouldn't it be a far greater achievement to have spent some time in which you may have worked that elusive South American, in helping some other Ham, who, on account of his distance from other Hams, has been unable to gain as much knowledge as you have.

Perhaps we should endeavour to foster a co-operative spirit between the country and metropolitan Ham, in order to bring about a better relationship and understanding of what each other has to contend with? For instance, the town man has his worries over local QRM, and the country man, with his power problems. All these difficulties make interesting talk, and from them we surely can gain knowledge in every day radio life, and, most probably, actually get somewhere with our experiments. If the two communities got together more, a far stronger bond of friendship would be established, and a sympathetic understanding would arise, that would make the two minds think alike, which, in turn, would advance the objects of the W.I.A., "For the amateur; by the amateur."

## N.S.W. Progress on Ultra Highs

By E. B. Ferguson—VK2BP.

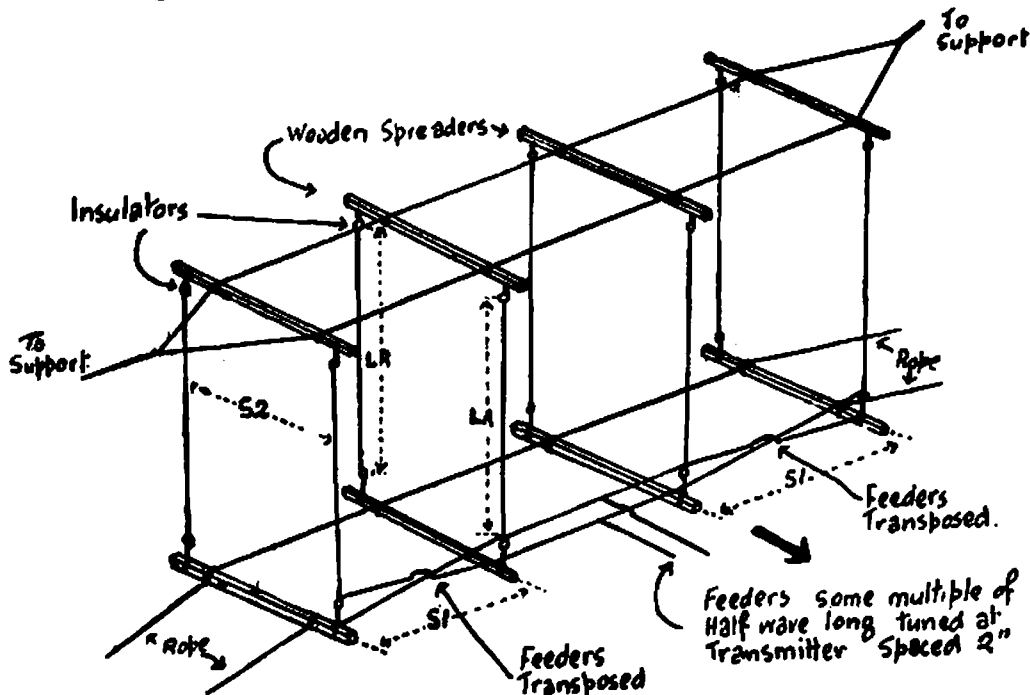
The five metre field has, in the past, been little explored in Australia, and for some considerable time, the best of gear was capable of covering but short distances. This, in itself, was disappointing for many, and resulted in a dropping off in numbers of those interested in the ultra-high frequencies. Still, a few were content to remain and explore the practically unknown.

Taking N.S.W. as an example. Quite a few 5-metre stations have been active during the past eighteen months or so; but never until lately has a greater distance than perhaps twenty miles been covered.

A short time ago VK2NO and VK2WD erected beam antennae, and a test was arranged whereby a car equipped with a 5-metre receiver was to proceed along the main Western

road. The test proved most satisfactory, as signals were heard from each station participating in the test, up to a distance of 50 miles. After this test, a beam array was erected at VK2BP, which is situated some 2500 feet above sea level, and approximately 50 miles in a direct line west of Sydney. A very small transmitter, consisting of a single type 46 tube was coupled to the beam antenna; and immediately an R7 report was received from VK2NO, just over 55 miles distant. Later the same day contact was made with VK2WD (48 miles), and VK2CG (53 miles), strength in each case was satisfactory.

An interesting test was carried out with VK2WD, proving without doubt the necessity of a beam array for what we may term dx. The signals from VK2BP were R7 whilst using

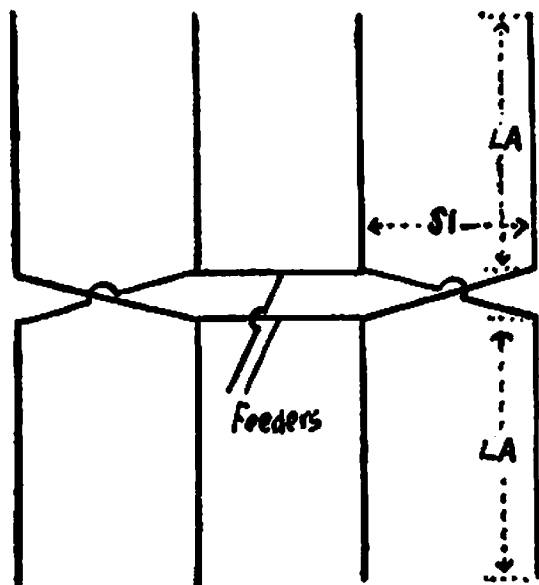


**Fig. 1**

Frequency MC.	Wavelength Metres.	Antenna Length LA	Reflector Length LR	nt. Spacing SI.	Reflector S2 Antenna to
56	5.357	8 ft. 4 in.	8 ft. 7 in.	8 ft. 9 in.	4 ft. 4½ in.
57	5.263	8 ft. 2½ in.	8 ft. 5½ in.	8 ft. 7½ in.	4 ft. 3¾ in.
58	5.172	8 ft. 0½ in.	8 ft. 3¾ in.	8 ft. 5¾ in.	4 ft. 2¾ in.
59	5.085	7 ft. 10¾ in.	8 ft. 2 in.	8 ft. 4 in.	4 ft. 2 in.
60	5.0	7 ft. 9 in.	8 ft. 0½ in.	8 ft. 2½ in.	4 ft. 1½ in.

the beam antenna for reception; but when the receiver was coupled to a double aerial, which is most satisfactory for local work, the signals were barely audible. Similarly, signals received at VK2BP were 5 to 6 points stronger when using the beam array for reception, in place of the vertical antenna first erected.

The use of beam aerials now opens up fresh fields on the ultra-high frequencies, and no 5-metre station should be without one. The arrays



**Fig. 2**

used so successfully at 2NO, 2WD, 2CG, and 2BP, are described in full in "QST," October 1934. For the benefit of those who have not had that publication, diagrams, measurements, etc., are given.

Fig. 1 shows the construction of the 8-element uni-directional beam. With this type, a highly concentrated in which the heavy arrow points. Although rope supports may be fairly satisfactory, the use of a solid frame-beam is transmitted in the direction

work is recommended, as rope, when wet, will stretch, thereby throwing the array out of alignment.

For those with limited space, a 4-element beam made up similar to the 8-element array, may be erected; the two outside sections being done away with. This will greatly improve range.

Fig. 2 illustrates the bi-directional array. This radiates equally well in two directions, and although it may not have the same concentrating effect of the array in Fig. 1, the difference is only slight. VK2WD used this type most successfully, and is always very strong at this point, just on 50 miles distant.

When erecting an aerial for ultra-high frequency work, whether beam or otherwise, great care must be taken in cutting the wires to the correct length, determined by the frequency on which it is desired to operate. In the case of the beam aerials, a table is given for the various frequencies between 56 mc, and 60 mc.

With the beam aerials described, exceptional results have been obtained in the United States, and there is no reason why they cannot be duplicated in Australia.

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# The Cathode Ray Tube and its Application

By the Amalgamated Wireless Valve  
Company Ltd.\*

The future possibilities of the cathode ray tube, and its application in so many fields of experiment, make it an instrument with which all should be familiar.

Briefly, the tube functions in the same manner as a three or four electrode valve, the difference being that the anode is operated at a relatively high potential, giving a high speed electron stream, portion of which shoots through a small aperture provided in the anode plate, and passes on to strike the end-wall of the bulb. Here, due to the coating of a fluorescent material, commonly zinc silicate, the electron "beam" becomes visible, and forms a pattern, which can be focussed to a small spot by the control of the various electrode voltages.

This "beam producing" section of the tube is sometimes called the "gun," and is illustrated in the sketch of a 906 tube in Fig. 1. The remaining section of the tube within the diverging part of the bulb consists of two pairs of plates set at 90 deg., arranged for electrostatic deflection of the electron beam. Electromagnetic deflection can be used, but is usually more complicated in practice than the electrostatic deflection, while the latter can be arranged so that there is no load on the electrical system being examined.

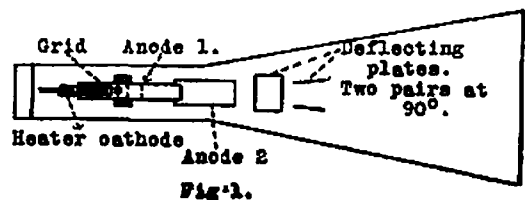
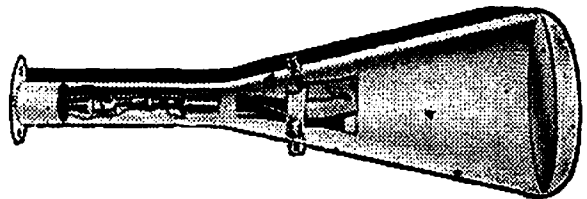
The type 906 tube shown in Fig. 1 is of the heater-cathode type. The cathode is surrounded by a circular shield with central aperture, known as the grid, since it is operated at a negative potential to assist in focussing the beam. Beyond the grid is the first anode with another central aperture. Surrounding and overlapping this anode is the second anode. The first anode operates at approximately one-fifth of the potential of the second anode.

Of the four electrostatic deflecting plates, one of each pair is tied to the anode, which is usually at earth potential, the cathode and heater then being at negative potentials with res-

pect to the earth.

### Focussing of the Beam

The tube described is of the high-vacuum type, and focussing of the beam to a fine spot on the screen is accomplished by adjustment of the grid and first anode voltage.



"Soft" tubes containing a small pressure of helium are sometimes used, ionisation in the region of the beam assisting the focussing. However, these suffer from the disadvantages of errors at small deflections and falling sensitivity at higher radio frequencies.

The auxiliary power supply apparatus can be made very simply and a circuit diagram is shown in Fig. 2. The 879 is a high voltage rectifier specially designed for cathode-ray tube requirements. Owing to the small current drain, a resistance-capacity filter is sufficient.

Many applications require the use of a time-base sweep to delineate the voltage being measured upon the screen. This time-base may be linear (requiring special apparatus), or an ordinary 50 cycle voltage may be used to sweep the spot horizontally, when, provided the sweep is large enough, an appreciable portion can be regarded as linear for the examination of wave-forms.

\*47 York Street, Sydney, N.S.W.

## Linear Time-Base

The circuit of a linear-time base generator is shown in Fig. 3, and in 3a the "saw-tooth" wave-form which is generated. The 885 is used in a gaseous triode. The saw-tooth voltage is generated by the uniform discharging of a condenser C1, C2, etc., and then a sudden discharge when the tube breaks down and suddenly becomes conducting.

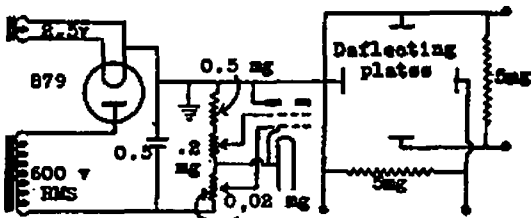


Fig 2..

The 34 pentode is a constant current device to maintain a uniform charging rate for the condenser. Control of the output and frequency is obtained: (1) by using a series of condensers of various capacities; (2) control of grid voltage of gaseous triode; (3) control of grid voltage on pentode 34.

The linear time-base illustrated is a useful device for obtaining the desired wave-forms, but for simplicity of operation, where exact patterns are not required, a 50 cycle time-base is of great value, and does not add much to the cost of the complete instrument. The difference in form of a sine-wave obtained by using a 50 cycle time-base or a linear base is shown in Fig. 4. Over the central part of the 50 cycle sweep, it can be seen that the result is quite reliable, but the two extremes of the sweep must be neglected.

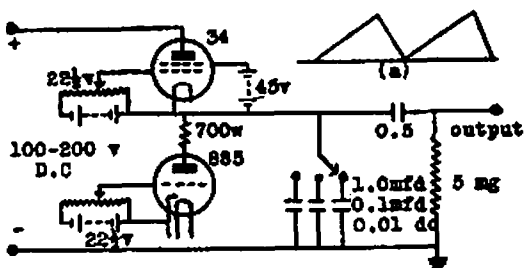


Fig 3.

### Application

The cathode ray tube can be used as an indicating voltmeter at all frequencies met with in present R.F.

practice, and since it takes a practically negligible current, can be used out the stages of a transmitter can be measured, and the power output determined by measuring the voltage on very low powered circuits with equal satisfaction. R.F. voltages through-across a dummy resistance load. For this purpose, the screen is calibrated with D.C. or A.C. voltages, and comparison made with the line traced by the R.F. voltage which represents peak values.

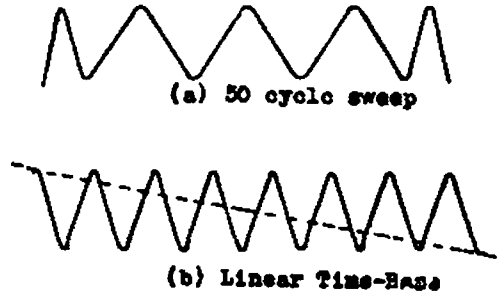


Fig 4.

Of greatest interest to the amateur, and probably the most important application at the moment in the broadcast field is the examination of the depth and linearity of modulation of a transmitter. For this purpose, no time base sweep is required. The audio modulating voltage obtained from a steady signal is applied to the horizontal pair of plates (condenser coupling will be required), and the R.F. output voltage from the modulated amplifier to the vertical plates. The resulting pattern is of the type shown in Fig. 5a when modulation is a moderate percentage. When (a) and (b) are as shown, then:—

$$\text{Percentage Modulation} = \frac{a-b}{a+b} \times 100$$

Linearity of modulation is indicated by the linearity of the line BC. Trouble may be experienced due to phase shift during modulation. This may be overcome by passing the R.F. output voltage to a rectifier and supplying the resulting DC voltage to the vertical plates.

Other depths and conditions of modulation are illustrated in Fig. 5.

From this series of patterns, the variety of faults determinable can be seen. Besides being of use in adjusting the modulator and R.F. amplifier, the cathode ray tube can be kept in use continually as a monitor as any tendency to over-modulate on high audio peaks can be observed.

Continued on page 8

## Tube Base "Stand-offs"

Few Hams seem to have realised the possibilities of valve bases as stand-off insulators, plugs, and sockets, etc. Many breeds, of the things, especially those mahogany coloured Mullards, are beautifully made and finished, much better, indeed, than many of the GR type stand-offs on the market. A very neat job can be made by using bases as terminal blocks and power plugs as well as coil mountings—and, best of all at a time like this, many shillings can be saved.

A very brief description should suffice, as once a Ham has the idea, all sorts of ways of using bases will suggest themselves. The writer finds the 4-pin type SG with the terminal block on top of the bulb, ideal as this bakelite block can be used to give a finish to the job.

Continued from Page 9

Other applications of the tube are numerous and varied, while at the present moment it appears likely that the cathode ray system will prove the most satisfactory television receiving device.

A suggestion is as follows: Knock bulb off, and clean glass and cement from base and terminal block. Cut prongs off base taking care not to mar polish. The best way to do this is to saw them off fairly close, then run a 3/16 inch drill right through. The drill has a little tendency to wander going through the hollow pin, and in any case the holes are covered by the terminal block. An attempt at filing almost invariably results in unsightly scratches on the periphery of the base where the terminal block doesn't cover them. Next cut the terminal off the bakelite block flush with the metal, and run a 3/16 inch drill through it. No trouble should be found as the metal is thin and securely fastened in the bakelite. Accurately centre tube base, and drill it 3/16 inch. Now cut a square of bakelite with sides slightly greater than diameter of base, drill a screw hole in each corner, and a 3/16 inch hole in dead centre. Run a 2 inch x 3/16 inch bolt and nut through bakelite square base, and terminal block, and you have an FB insulator. The writer uses hexagon nuts to clamp the parts together and to hold coil on. These are quite neat, but city Hams will probably be able to get nickelled wing nuts for the latter.

For power sockets or the like, drill out the old pins and mount valve leg sockets in the base. Make a square base as for insulators, and bolt tube base to it. If sockets are chosen to fit the pins, a plug can be readily made from another base, by soldering the leads into pins and filling base with wax from old high tension dry batteries. Lead-in insulators, and a host of other similiar affairs are possible. If care is taken in choosing a good type of base, accurately centering holes, and cleanly cutting the mounting squares, a really commercial job results.

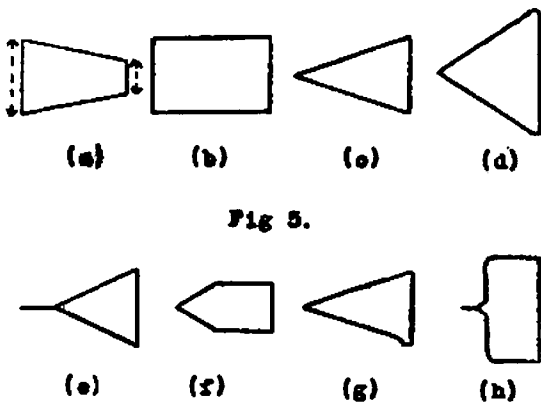


Fig 5.

## Where North Meets South

VK7 STAGES A STATE FIELD  
DAY.

By 7PA.

As the outcome of an inspiration of some 12 months ago, a committee of three, Messrs. C. Wright (7LZ), C. Parish (7CP), and J. Wallis (7JW), representing the Northern districts, met Messrs. H. Moorhouse (sec.), W. T. Hooker (7JH), and J. Morris, who represented the South, at the club rooms, Hobart, on March 9th last, and as a result, a State Field Day was arranged—the first of its kind in Tasmania—to take place on Sunday, March 31st.

The district of Campbell Town (approx. 80 miles from Hobart), was chosen as a satisfactory area although nearer to the Northern end, the reason being, that the North Western members would be better met for travel distance.



The VK7 Gang  
(Pop Medhurst is the guy with the striped tie in the centre.)

The arrangements were well carried out, and the enthusiasm with which the whole affair was accepted is manifest in the muster that resulted. Here I would like to say, that, as all who know him are aware, a big proportion of this success must be attributed to the untiring effort of our very active secretary, and with due credit to the committees that assisted him.

Cars were all at the starting point in time for a line up at 09.45, when those with cameras indulged themselves in photography. Then sealed instructions as to location of transmitter were issued to each car, these for use of unsuccessful searchers, and a start was made.

Weather conditions were perfect, although earlier a heavy fog had made the prospects look bad.

The transmitter was in the hands of 7LZ and 7JW. The 80-metre band was used, and 'phone, the order of the day, the limit being 20 miles radius from the starting point.

The time set out for transmission was 10.00 to 13.00, and a punctual start was made. Unfortunately, either owing to local conditions of some sort or other, or the position of the transmitter itself, signals at the start were nothing more than a very weak carrier, and it proved to be a pretty knotty problem, and although the winning car was in within an hour and a half, most were forced to take full advantage of the time, in fact, the transmission was carried on till 13.05, owing to a couple of the cars being seen approaching the locality at the time scheduled to close down.

The transmitter was situated on the road between Epping Forest and Cressy, approximately 13 miles air line from Campbell Town, with two roads by which it could be approached, one, an open road from Epping; the other, a road from Campbell Town, barred by gates innumerable, much to the annoyance of those who happened that way.

It was not until within about three miles of the transmitter that the modulation became readable, but from then on, the location was easily made.

It was an ideal situation, a small clearing surrounded by low trees of wattle and honeysuckle, good, both as a hiding place and also as a picnic ground.

The transmitter consisted of an Electron Coupled Oscillator 224, and a 59 Power Amp., with 10 watts input, Suppressor Grid Modulator was used, power for the F.F. end was taken from a 500-volt generator,

driven from the rear axle of 7JW's car, the wheel being removed and a pulley fitted in its stead, while the Audio Amplifier and Modulator were battery fed. The outfit was complete even to a gramo. motor, and the microphone was of the P.M.G. variety.

All cars in, lunch was the next on the programme, and all did justice to this very necessary adjunct, which, in some cases, even consisted of grilled chops, done by the use of the camp fire, and with the aid of a forked stick.

Appetites appeased, and a rest taken, cameras were again produced.

A variety of receiving equipment was to be seen, from the detector and one, up to a four valve with an R.F. stage, also, loop aerials of all sorts and sizes, some outside the cars, others inside, directly attached to the receivers, were used.

7CK "landed the bacon" an hour and a half after the start, and this is possibly attributable to some extent to his using an R.F. stage, giving him a better lead off in the early stages when signals were so weak; not wishing in any way to discredit his ability, for he was far ahead of the rest. 7PA was second in for the day, and first for South, others following in in fairly close succession.

Our secretary and others, visited Lake Leake, to investigate the possibilities of a fishing excursion—hi!—but owing to it being in the opposite direction to the transmitter, they were nearly late for the kill!

Lunch and photos finished, an hour was spent in general chatter between Northern and Southern gangs, after which, owing to the distance from home, au revours were exchanged, and a start for home was made, each as the mood suited.

There was the variety of incidents usually associated with such gatherings, some amusing, some printable, and others not so printable, as those concerned will recall. Of course, one or two mishaps must be, or things wouldn't be complete; amongst these, one car had to be towed home after an attempt to run without lubrication—another wrecked a couple of wheels and a running board and mudguards, but was fortunate in being able to procure a second spare wheel

in time to take part in the event; these two were the major troubles, others had tyre and other minor troubles.

### Federal Headquarters Notes

#### GRAMOPHONE COMPANY'S REPLY.

The gramophone companies have informed us that their records may be used by amateurs for test purposes as much as any amateur wishes, but they must not be put out in the form of a musical programme, as this, in their opinion, constitutes an entertainment. Fuller details are given by their statement printed elsewhere.

#### W.A.C. CERTIFICATES.

Several applications have been made for W.A.C. certificates, and these have been accepted, and the I.A.R.U. written to and requested to forward the necessary certificates. Among these applications are:—

VK2DA, VK2HY, VK2LZ (fone), VK3BJ, VK4EL, and VK7JB.

#### DX CONTEST.

Permission to the Victorian division of the W.I.A. has been granted for them to stage a contest, similar to the recent centenary contest, which was so successful. This is to be held during the month of October this year.

#### PRESIDENT'S FALL.

The work of the Federal Executive has been interrupted by the fall from grace of the worthy president, VK2HZ, BILL MOORE, who on the 13th April, took unto himself a YF. However, we feel certain that the amateur fraternity wish him the best of luck and happiness. By next month, when his fellow executives have got over the shock, the work of the Federal Executive will be resumed, and we trust by then that Bill VK2HZ will be in a position to attend the usual meetings of the Executive.



## Station Description

### VK2HP

VK2HP is another pioneer who has watched the growth of amateur radio from the early spark days, and then some! The station is located at Coogee, N.S.W., and is one of a group of six in the same district, and needless to say, QRM becomes very bad when any three of them are on the air together.

VK2HP is conveniently located on top of a high hill, in fact, one of the highest in the district, and commands an excellent view of the sea on one side and of the local panorama on the other. The power used is extremely QRP, but the station gets out all over VK very well indeed. The station is owned and operated by Mr. H. F. Petersen, who is also a Water Board Inspector, and whose son Geoffrey is well known to station 2UE listeners.

The present transmitter is the result of careful planning, and hours of hard work. Rack and panel construction has been adopted as illustrated, the top deck accommodating the RF stages of the transmitter.

The initial RF oscillations are generated in a crystal osc. using a 59, followed by a 46 buffer, driving a UX210 mod. amp. The power input on telephony **never** exceeds 7.5 watts to the mod. amp. On CW, a fourth tube is employed, being a class B linear amp. employing a Philips TB1/50 running **cold** at 100 watts.

The next deck down houses the speech input equipment, and a phonograph turntable and pick up. We ask you—does it look compact? The speech amp. has a 75 tube on the voice pick-up, a 609 on the phono. pick-up, followed by two transformer coupled voltage amplifiers using 609's. A Philips eliminator supplies anode power, and an accumulator excites the cathodes.

Power supply and rectifiers for the whole "works" are housed on the following rack. The first three

stages of the transmitter—co, 46, mod amp., and UX250, mod—operate from one supply consisting of two 1561's, delivering 900v at 250ma. This voltage is broken down to suitable values for the various stages through a bank of lamps.

A large power supply, using two 1762's shown mounted on the left-hand end of the deck, serves the Philips 100 watt "Bottle."



Single choke heising modulation is the system employed, and very good quality is radiated on each of the three bands, 20, 40, and 80mx.

Since the photograph was taken, a new receiver has been in operation—a nine tube super of advanced design. The lineup of same reads, 58RF, 2A7 1st det, two 58's int, 2AY 2nd det, 2B7 AVC, 56 1st AF, 2A5 and 5Z3 rec, it brings 'em in alright!

All kinds of antennae have been tried, and the old zepp resorted to. A collins matched impedance network was put into operation with little difference in results.

The address of the station is: "St. Mena," Hamilton Street, Coogee, N.S.W.

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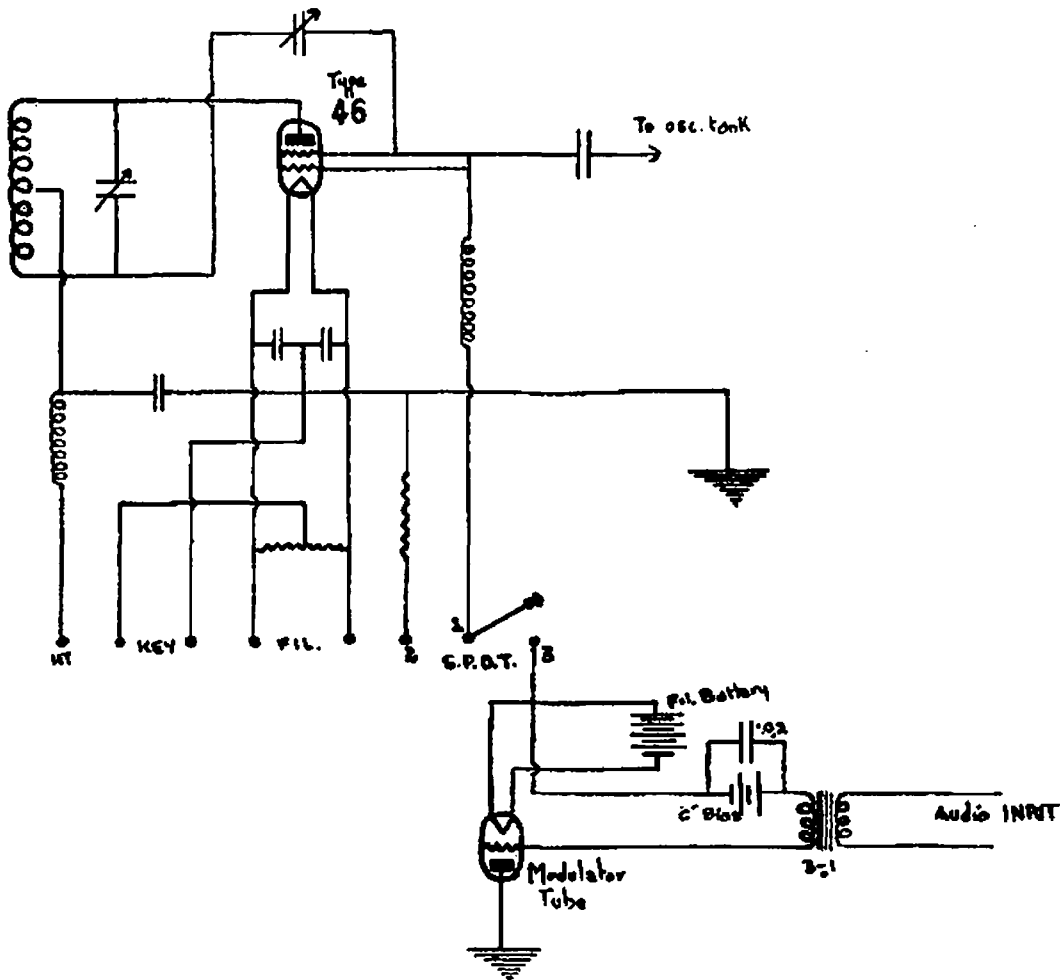
# Low Power Modulation

"Telefunken."

By VK3DQ.

There many C.W. Hams who would like to install an inexpensive quick-change-over fone outfit for local rag-chewing, and here is the system that will meet all requirements in that direction. Truly, Telefunken, or, to give it it's correct title—the Schafer Method of DC grid control—has some

At VR3DQ, a M.O.P.A. transmitter is used with a single 46 in the final stage, and a class B amplifier, and this is modulated with a 201a which is excited by a 2-stage speech amplifier consisting of a 57 impedance coupled to a 27. Only a quarter of the gain is utilised with a Reiss microphone



disadvantages, and it is quite useless for the chap who wants 100 per cent. modulation, but then it has several qualities which will appeal to the C.W. gang. In the first place, it is extremely economical, and is easy to construct and operate, and can be used without the addition of an audio-frequency amplifier. A change from C.W. to fone, or vice-versa, can be made by merely throwing a single switch.

driven from 4 volts. All VK states have been worked with an input of not more than seven watts.

Although a maximum of only 85 per cent. is possible with Telefunken, excellent quality can readily be obtained by judicious selection of the audio equipment. It is essential to shield the entire modulator unit as hum is very readily introduced, and feedback often occurs; then, if properly shielded, the unit can be

built into that spare corner of the transmitter rack. If A.C. is used on the filament of the modulator tube, the centre-tap resistor must be true and of good quality to avoid bad hum.

### ADJUSTMENT.

First swing the S.P.D.T. switch to position 1-2 for normal C.W. operation, and tune the transmitter for maximum antenna current, then swing the switch to position 1-3, and adjust the bias on the modulator until the antenna current drops to half its original value. This is now the correct working position, and the audio voltage may be fed in.

When the modulator is operating at maximum efficiency, it will be found that a hard-back microphone and a good pick-up will swing the grid satisfactorily. Good modulator tubes for this system are the types 201a, 227, A425, and UX240.

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### Keying the Crystal Oscillator

For some time now many Hams have been resorting to keying the crystal oscillator as a first step to both the elimination of key clicks and the use of break-in operation. Some chaps have, however, found that the keying is apparently not as clean as it should be, and a slight chirp is heard in the note. Usually this is blamed on to the crystal not being as active as it might be, and so intro-

ducing a slight lag in the starting and stopping of oscillation. In many cases, however, the crystal is not the real cause of the trouble.

In the majority of crystal oscillators using a penthode tube, and most do nowadays, the screen voltage is obtained through a series resistance from the plate supply. When the filament centre tap lead is opened in the usual form of keying, the current stops flowing through the screen circuit as well as through the plate circuit, and so there is no longer a voltage drop across the screen grid resistor, or in other words, the voltage on the screen becomes equal to the plate voltage. When the key is closed, current again flows through the screen resistor, causing the screen voltage to drop down to normal again.

This drop to normal voltage does not take place instantaneously, however, and the slight lag is often the cause of a pronounced chirp in the note. It is obvious, then, that to cut out the chirp, we must keep the screen voltage fairly constant, irrespective of whether current is passing through the circuit or not, i.e., during keying. The most convenient method of accomplishing this is to obtain the screen voltage from a voltage divider rather than from a dropping resistor. Admittedly, this does not keep the voltage absolutely constant, but it is usually quite steady enough to avoid the chirp in the note.

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## The Use of Instruments in Modulated Amplifier

The amateur who has been operating a transmitter of proved stability on telegraph signals is often surprised to find that upon the addition of a modulator of approved design, his modulated stage may be quite unstable, give very poor modulation, fail to modulate except at very low percentages, have undesirable harmonics or produce hash in the broadcast band, much to the annoyance of his neighbors. All these troubles often lie in the modulated stage itself, and may persist even though the plate power supply has excellent regulation, the modulator capacity is ample, and the modulation system correct.

When employing plate modulation systems the modulated amplifier must operate over a wide range of power inputs, the reason being that amplitude modulation, as its name implies, is obtained by varying the amplitude of the emitted carrier at modulation frequencies. To obtain 100% modulation, it is necessary to vary the amplitude from zero to twice the unmodulated value. Another way of saying this, is that for 100% modulation the operating plate voltage of the Class C amplifier is varied at modulation frequencies from its normal or no-modulation value down to zero and up to twice its normal value. This voltage variation or modulation is carried out by the modulator circuit. Thus when the amplitude is twice the unmodulated value, the power required is four times the unmodulated value. This means that the tube must function over this range and give a radio output amplitude directly proportional to the audio modulation wave.

With this in mind it may repay us to review the operating conditions in the Class C amplifier, and to discuss the reasons for its use. This may be done easily with the aid of Fig. 1, which gives a picture of the instantaneous relations of tube voltages and currents in the Class C oscillator.

The following conditions are fundamental in this service:

1. The grid excitation, obtained from the

driver or excitation stage is practically pure sine, unmodulated, and swings up and down about the negative or d-c. bias as an axis. On its upward swing the grid is driven past zero, well into the positive potential region, as shown in Diagram A, Fig. 1, and therefore takes electron current.

2. Due to the high value of operating bias, usually twice cut-off, the plate current flows through the tube for only a small fraction of the upward swing of the grid voltage or the corresponding downward half-cycle of the plate voltage, and has the general shape shown in Diagram C, Fig. 1.
3. On account of the "fly-wheel" or "inertia" effect of the tank circuit, the tank r.f. voltage and plate voltages are practically pure sine.
4. It is evident from Fig. 1 that the oscillator efficiency can be increased by supplying the plate current pulse to the tank circuit when the plate voltage is at its lowest value. This means that the oscillating tank voltage is as large as practicable, which for a given antenna load, means that the grid excitation voltage amplitude is large enough to swing the plate to its lowest practical minimum voltage.

What is the limit of increase of this grid excitation? This question can be answered from the characteristic tube curves or experimentally. In the chart of plate characteristics, Fig. 2, we see that as soon as the plate current curves begin to crowd at the left, shown in the dotted lines, an increase in grid excitation produces little or no change in the plate current. This crowding will, of course, vary with the loading of the tube. Experimentally this might be called a quasi-saturated condition. This is shown in the saddling of the plate current curves in Fig 1, Diagram C. If grid excitation is still further increased, the grid current rises abruptly, robbing electrons from the plate, and the plate current saddle becomes very prominent, the power out-

put ceases to increase, and may even decrease.

Thus the excitation for Class C operation must not be so low as to give low efficiency, or so high as to put a heavy load on the driver without contributing measurably to increase in power output.

5. Negative bias for the Class C amplifier can be obtained either from a separate source, from a grid leak of the two. The grid leak and condenser, or from a combination develops a voltage difference due to the leaking off of the charge on the blocking condenser acquired during that fraction of the grid cycle when the grid current flows in the grid circuit. The values of the grid condenser are not critical for ordinary service, although "blocking" of oscillations may occur with very high grid resistors or very large blocking condensers. The combination of self and separate bias is usually used, as it protects low Mu tubes against excessive plate current if the radio-frequency excitation should fail.

### Adjustment of Modulated Amplifiers.

There is available to the amateur a means of checking the adjustment and operation of his modulated amplifier. He can determine the amount of R.F. power available and make his adjustments so as to produce a 100% modulated carrier. He should first adjust the stage for best efficiency as described in a previous article, "The Use of Instruments in Amplifier and Doubler Stages," part of which is given here.

Briefly, this method of adjustment consists of inserting a low range d-c. milliammeter in series with the choke or grid leak at the ground end. This instrument then reads the rectified component of the radio frequency exciting voltage applied to the grid of the tube from the preceding stage, or, in other words, it is an indicator of the excitation voltage delivered by the preceding stage under load.

This instrument can be used to determine proper neutralizing of the stage in which it is located, to make proper selection of grid leak or choke, and to improve the coupling of the grid to the exciting stage. The methods are given below.

Here is the procedure in neutralizing. Apply the exciting voltage to the stage to be neutralized. Tune the exciting

stage to maximum indication on the grid current indicator. Now change the tank tuning condenser of the stage under adjustment. As you pass through resonance, the reading of the grid indicator will drop (unless you have accidentally set the neutralizing condenser at the proper point). Now continue to swing the tuning condenser through resonance and at the same time slowly change the neutralizing condenser. At some point on the neutralizing condenser, it will be noted that there is no effect on the grid current. This point is the proper setting of the neutralizing condenser. In the course of the adjustment, the grid current may have fallen or increased. This is due to the detuning effect on the tank circuit of the exciting stage. It will be necessary to readjust the tank condenser of the exciting stage during the neutralizing procedure. At all times try to keep the grid current at a maximum by correcting this detuning effect. When no change is noticed on the grid current indicator when passing through resonance, the stage may be considered as properly neutralized. For low power stages, this method is the only one available that will give exact adjustments, and it certainly is extremely sensitive. This method of neutralizing is the same whether the neutralizing be effected through a split plate coil or split grid coil. Keep the tank circuit of the exciting stage in tune at all times.

The next use to which a grid indicator may be put, is the proper selection of the grid leak, or to determine if the choke is operating satisfactorily. If the grid leak is varied, say, from 1,000 to 100,000 ohms, at some point it will be found that the product of the value in ohms times the grid current in value in ohms tunes the grid current in amperes will be a maximum. This indicates the most favorable operating condition.

The choke should preferably be wound so as to have a minimum distributed capacity, and be of such form as to have a small external field. Such a choke would be space wound for high frequencies, and for lower frequencies could be layer wound, but divided into several sections. In either case the choke should be several times longer than its diameter. A long choke is usually less influenced by the surrounding metal parts of the amplifier.

When the choke operates properly it will be found that although the grid current as indicated by the instrument may be somewhat lower, the output of the stage will be higher. It is advisable to insert another grid indicator in the grid circuit of the following stage so that the output of the stage under adjustment may be noted as adjustment proceeds. It is not necessary to apply plate voltage to this following stage since all that is being used is the rectifying action of its grid.

It is also often possible to improve the coupling of the grid to the exciting stage by noting the effect of changing the value of coupling capacity, and choosing one that gives the greatest value.

These adjustments may be quickly made, and when completed will assure getting the most from each stage.

It will be noted that no mention has been made of applying the plate voltage to the stage under adjustment, and this is not necessary except to check the completed adjustment. The application of the plate voltage will cause the grid current to fall, as most of the electrons will not flow through the grid mesh to the plate.

### Operating Characteristic Curves.

A simple and satisfactory way of determining whether or not the amplifier is operating properly is to observe the plate milliammeter on the Class C r.f. stage during modulation. If the plate current remains steady during modulation, the amplifier must be operating properly. The modulation will not be straight line if the Class C amplifier plate indicator shows a deflection with application of modulating power. A downward deflection of the milliammeter during modulation will indicate insufficient excitation or wrong bias. An upward kick probably indicates regeneration in the amplifier. A kick either way indicates improper modulation.

The adjustment of the modulated amplifier can be accomplished experimentally by running an operating characteristic curve. Then when the limit of modulation has been determined, the amateur can either correct for low excitation or else reduce the unmodulated plate power so as to be able to produce a fully modulated carrier.

One procedure in determining the operating characteristics of an amplifier which is intended to be modulated is that of actually running a curve of radio frequency output against plate voltage. Provide a means for varying the plate voltage from zero to the normal operating value. This is best done by using a separate plate supply and reducing the primary supply by means of a rheostat, a variable inductor, or an auto-transformer. Adjust this new plate voltage to the value formerly obtained when the stage was

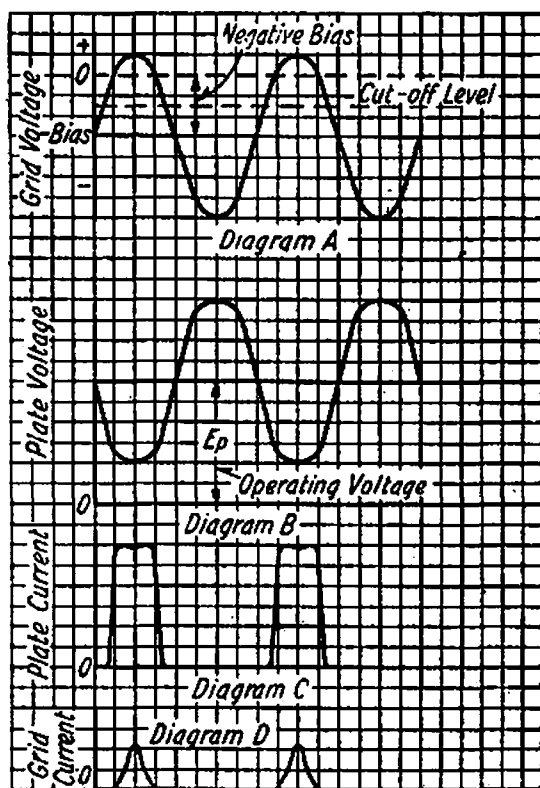


Fig. 1—Fundamental relations to a Class C Oscillator.

unmodulated but the modulators were drawing their load. Note the plate current, the plate voltage, and the antenna or feeder current. Now start decreasing the plate voltage in about ten per cent steps to zero voltage. After each adjustment of plate voltage note the instrument readings mentioned. The range covered is one-half the region over which the stage will operate when subjected to 100 per cent. modulation. Now plot a curve of power input against the square of antenna or feeder current, or a curve of the square root of power input against antenna or feeder current. When plotted on cross section paper this curve will be a straight line if the stage is capable of 100 per cent. modulation. The other half of the modulation curve, from normal to twice normal

can be taken in the same manner, now increasing the plate voltage in 10 per cent. steps. Extreme care must be taken not to exceed the plate dissipation rating of the tube.

If the curve should rise sharply towards the upper end it is a sign of feedback or regeneration.

A curve that tends to flatten towards the upper end may indicate several things. If the plate current increases uniformly with the plate voltage, the excitation is low. This is usually accompanied by heating of the tube. Should the plate current start increasing rapidly, the tube is probably soft, and the complete test should not be attempted. Should the plate current

become unstable. This practice causes mush and smattering of modulation, and is often heard on nearby broadcast receivers.

If the amateur is unable to make any adjustment that will cause the curve to straighten up, he is limited to the peak power indicated at the point where the curve tends to bend. In terms of percentage modulation this is approximately the per cent. increase of the plate voltage above the normal unmodulated value. As an example, if the plate voltage at this point is 525 volts and the normal value is 350 volts, the per cent. increase would be 50 per cent, and the stage is capable of 50 per cent. modulation without introducing distortion.

It is better to reduce the power input and be able to produce a 100 per cent. modulated carrier than to run with a large input and be able to modulate only 25 per cent. This means better receiver operation, clearer speech and certainly a minimum of interference.

In running the characteristic curve, it is desirable to use a voltmeter having a range about twice the normal plate voltage. When the modulators are disconnected and the chokes shorted out for telegraph service, the plate voltage sometimes increases considerably and there should be no danger of damaging the voltmeter.

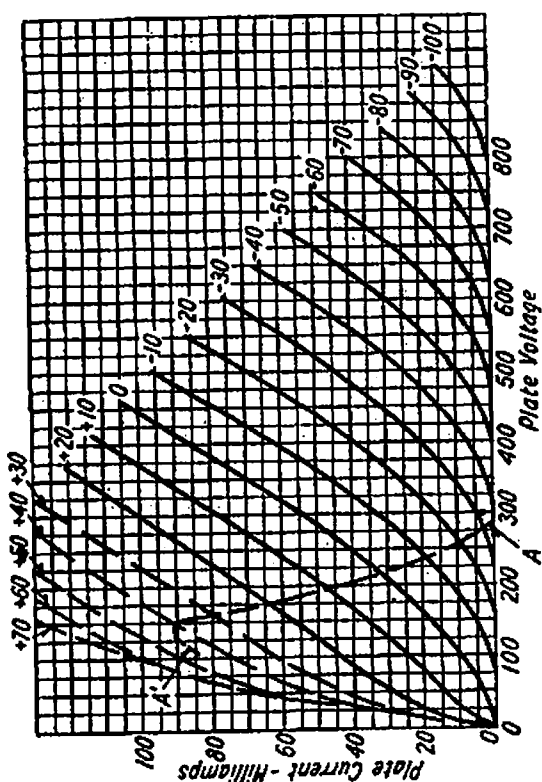


Fig. 2—Characteristic Curves of a transmitting tube.

increase slowly or cease to increase, it is usually a sign of low emission, either due to an old tube or low filament voltage. In case of low filament voltage, a correction should be made and the curve run again.

It is often found that if the readings are continued for still higher plate voltages, the antenna or feeder current may finally indicate a power output four times the unmodulated value. But the modulation characteristic is no longer a straight line. Should one attempt to modulate under this condition the result will probably be serious audio frequency distortion or the stage may

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## IMPORTANT NOTICE

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All Members having meters on loan from the Library are requested to return same IMMEDIATELY for stock taking.

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NOTES OF RESERVE ACTIVITIES  
MUST REACH HEADQUARTERS  
NOT LATER THAN THE 18th OF  
THE MONTH.

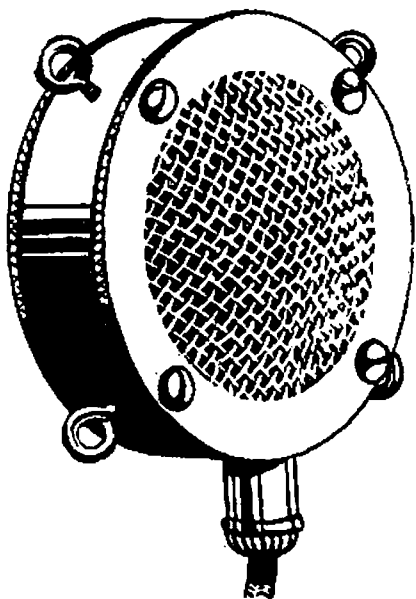
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## Victorian QSL Bureau.

R. E. JONES, VK3RJ.



### QSL NOTES FOR MAY.

Cards are on hand at the Bureau, 23 Landale Street, Box Hill, for the following Victorian stations, and listeners, and will be forwarded on receipt of postage:—

AN, AX, AY, BK, BL, BX, CF, CK, EM, EQ, ET, FC, FH, FM, FN, FW, GJ, GM, GU, GW, HE, HR, JG, JK, JL, JX, JZ, KG, KO, KQ, KT, KY, LG, LP, LT, LX, MX, MZ, NA, NW, OP, OZ, PC, PW, PZ, QP, QX, RS, RW, TK, UJ, VW, XD, XK, YD, YP, ZJ, ZK, ZL, ZX, Messrs. Dinan, Nye, Sebire.

This Bureau has just completed its 4th year of existence and the following statistics may prove of interest:—

Year	Outward Cards Handled	Inward Cards Handled	Total
1931/32	5792	3998	9790
1932/33	9706	8627	18333
1933/34	9157	9529	18686
1934/35	9412	12631	22043
Grand Totals	34067	34785	68852

A further batch of cards is to hand from FB8VX of the Reunion Island. His Highness, Prince Vinh-San, has just recovered from a six months' illness, and hopes to be active shortly.

Large quantities of cards have arrived from overseas for unlisted Victorian stations, and shows that numbers of pirates are active in this state. The favorite call signs of the "pirates" are:—3BP, 3BM, 3EX, 3LA, and 3ZT. These cards will be handed to anyone desirous of claiming same, in the presence of the Radio Inspector.

Mr. S. Hawarth, Melbourne manager Amalgamated Wireless Valve Co. Ltd. has come down in the world. Metaphorically only, of course. He has transferred his offices in the A.W.A. Building in Queen Street, from the fourth to the third floor. Mr. Hawarth expressed pleasure at the response from Victorian amateurs to the circulars sent out giving designs, layouts and circuit diagrams. He extends a cordial invitation to hams to visit him.



## Operating and Experimental Section

Conducted by VK3WY.

There is very little indeed to write about conditions in the various bands during the last month. The DX season seems to have just about passed now, and conditions generally vary from only average to poor.

3.5mc—Have not heard of any consistent DX on this band, but it is certainly improving, owing to the gradual lifting of QRN.

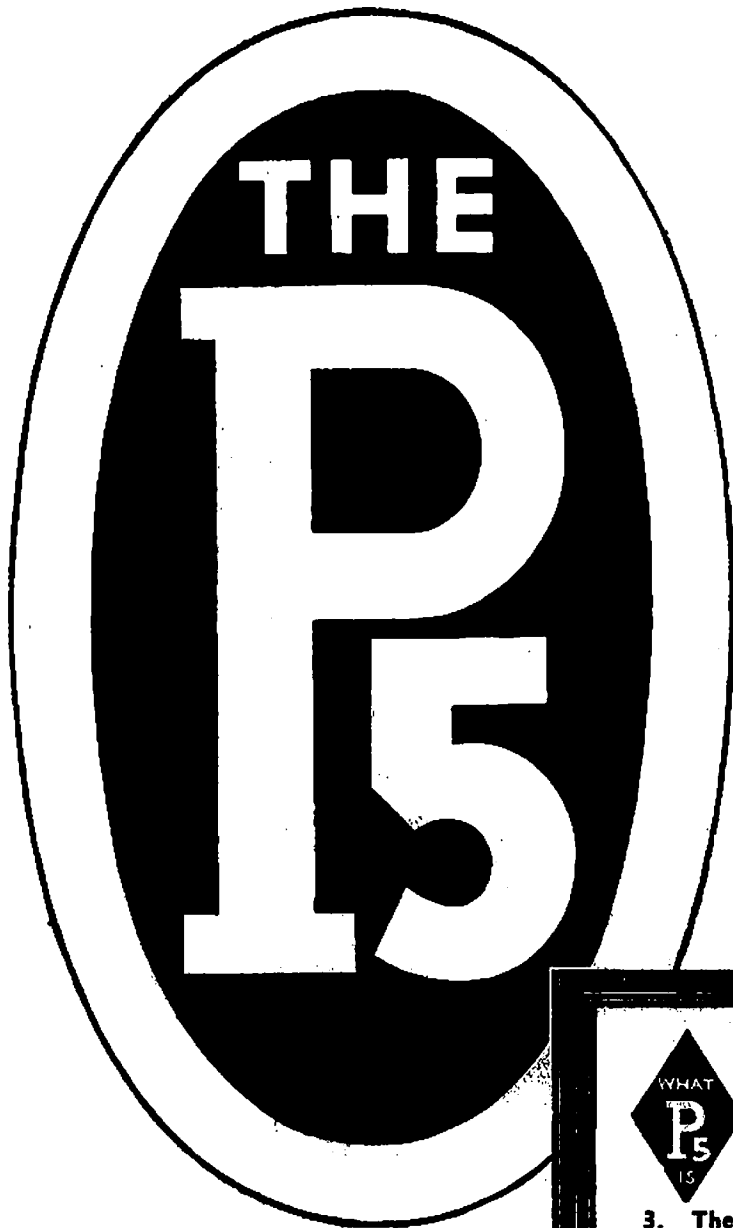
7mc—Early morning DX is now practically dead on this band, and in the evening, only the usual winter DX, i.e., W, J, KA, OM, XU, and an occasional X is heard.

14mc—There are generally two fairly decent periods on this band at present. These are from 14.00 to 16.00, when W sigs. come through, and from 14.00 to 01.00, when Europeans, and occasional South Africans, may be heard. ZS2B has been heard fairly consistently at this time.

28mc—There was a particularly good burst on this band at the beginning of the month, when W and J were worked with very good signal strength, but these conditions do not seem to be holding.



"Centenary Contest" Prize Winner Presentation at Studio of 3DB by Mr J. Malone  
(Block by Courtesy "Listener In".)



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keeps  
Working  
when  
others  
have  
Stopped**

**DIAMOND TORCH REFILLS  
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## Divisional Notes

### Association of Radio Amateurs

#### NORTH SHORE ZONE NOTES A.R.A. (N.S.W.).

By VK2HY.

The past month has provided some real DX thrills on most bands. 80 mx showed up during the first week-end of Yankie test, when W6HXP romped through on fone at R8-9 for three to four hours. He evidently was not worried about working DX, as calls by VK's were unsuccessful. He was using 1.KW. input, so this accounts for his considerable strength. 40 mx during the ARRL test, was practically useless to those who were not taking part in the contest. 20 mx came to light on the first afternoon of the test, and many VK's secured their 1000 points bonus by contacting on this band. The rest of the week, however, was practically dead. Towards the end of March, European DX has been coming through in the afternoons with W1, 2, 8, etc., at night. 10 mx has been the real surprise. After five years' of comparative quiet, those old faithfuls to this band, were rewarded by some real DX in the shape of W's and J's. W6VQ who uses 1K.W. to self excited rig, was R max for 4 hours on Sunday 31st.

2AE has developed the speed craze, having acquired a "bug." Hi! Dave is to be congratulated on his fine performance in the Z.B.R.C. test, it looks like a fight between 2AE and 2LZ for first place. 2DA made a good score in ARRL test. He never seemed to miss on a CQ, and at times dozens of Yanks could be heard calling him. Jack 2HG has been on considerably, evidently has a new xtal on high frequency end of band. We understand 2BA has been transferred to Solomon Islands, so we wish him the best of luck, and hope to contact him shortly.

2LZ has been making and breaking records on 10 mx. Con. was the first VK to contact the East Coast of U.S.A. by working W2TP. Also QSO W4, W9, and about 10 W6's, all on 10 mx. Con. also worked X1AY and J2HJ, J21S, so he has had a great time. 2HY not so successful, as he can only get on for a few hours on Sundays. Managed to work W6VQ, J2HJ, few ZL's, and VK6SA several times. The majority W sigs heard in VK are T9, and operating is usually first class, and it is a real pleasure to work these stations.

2VQ has rebuilt, and is now using link coupling to last stage. His signal varies from T9 some days, to T5 others. 2VG, Rex, has found more time for radio lately, and is heard on quite often. He works a lot with 2HA, who also puts out a very nice T9 sig., and good fone. We understand 2VP is following the example of 2HZ, and getting "spliced" very shortly. Jim 2YC is very excited over conditions on

10 mx. He was rewarded for his patient listening over the past few years, when he worked W6VQ. Jim also worked VK26A, so he has now worked all VK States, ZL and W on 10 mx FB. The last heard from Jim is that his transmitter is giving up the ghost. Must be the shock of working DX on ten after all these years. Hi! 2SS has been doing well on 20 mx. Worked OH3NP after many tries. He has an exceptionally nice sig. for S.E., and must get T9 reports from majority QSO's. 2WW been on very little owing to QRL study. He is interested in 10 mx, and often comes to help 2LZ work the DX. 2XC did very well in ARRL test, and should be well up among the leaders. Ian sure puts a hefty sig. over to W, but says S.S. Super necessary for tests. 2FM, 2PV, and 2XC are the only Hams active in Mosman at the moment. 2FM is on fairly consistently, and puts over a good sig. to the States. He is preparing to rebuild his 4-stage xtal rig into a panel job, and judging by reports, it should be the goods. 2PV has been on more often now his Uni. exams are over, and will probably be on during the ZBRC contest. He is having a 10-tube SS Super built—it's really a necessity for Peter as he gets terrific QRM from 2XC and 2FM. 2XC just arrived back from the bush in time for the Yank. tests, and all the QRM. Both 2EL and 2DA are fairly close by, and both use QRO, but fortunately have very decent T9 sigs. 2EL puts a mighty sig. over to W, and is doing very well in the ARRL contest.

#### ZONE 8 NOTES.

ByVK2OJ.

VK2CP has been here for the past five weeks relieving at the BC station 2AY.

Some of the Albury gang invaded 3EG again last week. The party included 2IG, 2YI, 2CP, 2OJ, and ex marine, op. H. Marshall. VK2QD back in zone 8, but will be heard with a different call sign, as he let his old one lapse. VK2IG will be working on 7000 kc band by the week-end. VK2YI has installed grid modulation, using a 56-tube as a modulator. VK2VF of Corowa, surprised us by a visit last week. He was badly screened and surrounded with AC lines at his old QRA, but new location is fairly clear. 20 mx band fairly active with Q5 sigs. from OH, XU, VU, and W.

#### LAKEMBA RADIO CLUB NOTES.

(Affiliated with the A.R.A. (N.S.W.))

The meetings of the Lakemba radio club are held every second Tuesday, at the club rooms, 79 Park Street, Canterbury. By the time these notes appear, the annual re-union will have been held. On this occasion it is usual to have representatives from the Radio Inspector's Department (Sydney), the

A.R.A., various radio magazines, and all suburban radio clubs. The evening usually proves a great success, and for the past two years the catering has been conducted in a very excellent manner by Mrs. Plcknell. This year, three silver cups will be presented to members as prizes in the recent contests. Prizes will also be available for the visitors.

It is hoped that everybody present will have a good time, and the full details will appear in next month's notes.

## Victorian Division

### KEY SECTION NOTES.

By VK3YO.

The April meeting of the key section at H.Q. with an attendance of 74, was one of the most successful ever held.

VK8UK gave report on the council meeting with reference to 3WI. The only hitch is the installation of the generator, otherwise the station is almost ready for the air. It is hoped that when 3WI starts operations, it will be used for S.F. transmissions, and the clearing of traffic between divisions. A roster for operators will be needed, and any member who would like to have his name included on the list is asked to get in touch with 3OX.

The 28 mc. contest recently concluded was won by VK3NM, mainly on local contacts, and it is indeed unfortunate that conditions on this band did not come good a week or two earlier, as a fortnight after the test concluded, many VK's worked J's and W's to their hearts' content.

VK3MR gave an interesting discourse on Antennae, after which Mr. Kenna (ex. VK4FK), and Mr. Billin, both from P.M.G.'s research department, demonstrated some wonderful 56 mc gear. Two-way 'phone communication was established with a portable 56 mc transceiver in the street below, and by means of a loud speaker in the meeting room, those present were able to follow the progress of the mobile station, along Queen Street.

The practical manner in which our P.M.G. friends conducted their show, particularly the introductory remarks by Mr. Kenna, captivated the fancy of the meeting, and the whole business was voted a huge success.

After such a demonstration, it should not be long before quite a number of stations are heard on 56 mc.

The number of stations on the various bands since the A.R.R.L. contest seems to have fallen off, particularly on 7 mc, most of the active operators apparently forsaking their keys for sleep.

3YP has held on looking for DX on 14 mc.

3MR was heard calling CX1CG on 3.5 mc.

3ML has now returned to 56 mc where he hopes to get good results, and is installing a beam antenna for this band.

3WG is busy organising S.F. transmissions.

3BQ is now using an 800 as a neutralised P.A. on 28 mc, and has also found that the use of a crystal gate in his S.S. receiver makes the DX signals almost unreadable at this frequency.

3UK has installed his gear in a roll-top desk. He is now building a 56 mc portable, and also a more elaborate outfit for home use. The latter rig will have a rotating beam antenna on the roof.

Our famous country Ham, 3RH, in between servicing asthmatic BCL sets in the bush—apart altogether from trying to kid his baa-lambs to grow two coats of wool per year—has been busy turning out a portable transceiver which will be used mainly for bushfire co-operation work.

A new departure in the notes this month, is the description of an interview with VK3OC at his shack. We hope to publish one interview each month, and perhaps, in this way, we may get some station descriptions from those who are too modest to write their own articles.

With swiftly beating hearts we knocked timidly on the door of the shack. "Come in," called a voice from inside. Gently we opened the door and stepped over a wrecked chassis into the famous operating room. "Is this VK3OC?" we asked, and an affirmative grunt came from the great man himself. "We are representatives from 'Amateur Radio,' and would like an interview with you for publication in the Mag.," we informed him. Sweeping aside a litter of packets, tubes, screws, and half-made chassis, our host cleared a space on the couch, and asked us to sit down, whilst he finished off his A.R.R.L. Test Log.

"When did you start operation?" we inquired. Diving under a pile of papers on the desk, he produced his certificate, dated August, 1928. "The station was first operated on 200 meter phone," he told us, and I have now worked right through the bands to successful operation on 28 mc."

"When did you work your first W?" was our next question, and after wading through stacks of QSL cards, he found that it was W9ECZ during September, 1930. "Why don't you put your cards on the wall now?" we asked. "Well there's not much space for them you know, and, at anyrate, the silverfish eat them."

Pop! Pop! went the battery charger, and OC stopped rolling a smoke to adjust the charging rate, knocking over a package of nuts as he did so. The adjustment made, he switched on the X/mitter, and casually lighted his cigarette on the P.A. plate tank.

"I used a TPTG for years," he said, "but now I have built up this 4-stage job consisting of a 47 co., 46 dblr., TCO/4/10 Buffer, and 800 P.A."

At this moment, 3WL walked in, and promptly fell over the chassis in the doorway. Whilst 3OC was pacifying 3WL, we had a chance to look over the X/mitter, which is a wonderful piece of work, built on a relay rack system, with link coupling between stages. The

# Amateur Radio

receiver used is a TRF job, having 6-volt tubes permitting operation on either AC or DC.

We asked 3OC how many countries he had worked, and he told us it was about 75, but he had lost count. "I shouldn't wonder," broke in 3WL, "when you stand your battery charger on your log book." "You use telefunken modulation, don't you?" "Yes," he replied, "but I want it placed on record that I prefer loop modulation on self-excited X/mitters." We doubted this, but duly recorded it. "I suppose you don't get many kicks out of working DX now that you are WAC and WBE," said our leader, "tell us, what was your biggest thrill in radio?" "Well," said OC, "it may sound strange, but it was when I heard KDKZ (Hi!) on my old SW receiver—which reminds me—it's time for a drink."

After having partaken of some liquid refreshment, we thanked our host, and departed.

## GOULBURN VALLEY NOTES.

By 3DW.

Some time ago, we Shepparton Hams put our heads together, and it was proposed that we endeavour to have a space allotted to us in the "MAG."

The first attempt did not meet with success, so once again we try, and trust that this effort will be the commencement of a regular series of notes in the "Mag." each month. (What say Ed.?).

By way of introduction, I might mention the resident Hams, and their various vocations.

3SN—Jack (Dud) Bell—Gives you six or more postal notes to pay your 30/- licence with.

3CN—Snowy Harrison—Listens to the pennies dropping, and counts 'em one by one, at the Bank of Australasia.

3DR—Bill Bennett—Fruity! Eats what he can, and cans what he can't, at the Mooropna Cannery.

Ex. 3RW—Roy Milledge—Wrestles with a theodolite around the Borough offices, and elsewhere.

3UX—Geoff. Steane—Airs his eloquence over the local BCL station, also twirls the dials.

3FD — Harold Longmore — So far hasn't taken out a licence, so in the meantime chases bugs out of BCL sets.

3DW—Doug. Tacey (The original voice of Shepparton)—Shows the gang the Latest Talkie productions at the Lyric Theatre.

Last, but not least, Alec McBride, second Op at 3SN, and Ex PMG Op, 40wpm artist, and AOPC aspirant, makes those shiny containers for SPC fruit.

Two more Hams we will be reporting on next month, are 3EP Rochester, and 3FN Nathalia. Notes from these Goulburn Valley members not, so far, to hand, but we'll have 'em next time for sure.

3EP—Ted Perkin—Pokes pins into watches, and nickel-plates your tank coils.

3FN—Bern. Ferguson (The Big Noise at the Court House Hotel)—Has a slight "Ale-ment" in his sigs.

And now for the gear in the various shacks:—

3SN—Xmtr Nrl so far used exclusively on 7mc, and for Dud's short time on the air, has raised plenty of DX, details next month.

47CO, 46FD, and 46's, in parallel for PA.

Xmtr Nr2—47CO, 46PA, used on 3.5mc only.

Power supplies, using 280 and 83.

Rx is TRF a la 3WL/3OC in June, 1934, Mag. and Dud. swears by it.

Antenna is the usual half wave 7mc Zepp.

3CN Ex 7CH—46 is TNT with both grids tied together, used on 7mc to date, and used with 7mc Half wave Zepp gets out nicely.

Rx is "Wide World" two AC using 58 and 56.

Power supply from 280. common to Xmtr and Rx.

3DR—At time of writing is wrestling with 3 stage Xtal using 47 CO, 46 FD and PP 210's, input 25 watts (!!!?!).

Also indicates he is trying the FD portion with 46's in parallel.

Power supplies from 280's and 281's. Rx same as 3CN.

Antenna is Half wave 7mc Zepp.

Ex3RW has TRF as per 3WL/3OC.

3UX and 3FD are silent members.

3EP and 3FN—No details to hand for this month.

Alec McBride can be heard from 3SN on 7mc Sunday afternoons, and any Ham who is looking for FB QSO, don't forget to call 'em.

3 Doug. W. so far alone on fone, recently installed Xtal mike, and uses it on 3.5 and 1.5mc bands. Keeps the local BCL's amused with canned music on Sundays. ZL reports on 1.5mc very prevalent.

Xmtr Nrl—1.5mc uses 47CO es 210 PA input 12 watts. 250 modulator Single choke Heising, 3 stage speech amplifier.

Xmtr Nr2. 3.5mc is 47CO es 46 PA and used mostly for RAAFWR work.

Well gang, that's QRU for the present, so 73 from GV. Hams until next month.

## MALLEE NOTES.

By 3WE.

With the last few cool days, conditions in the north have steadily improved, although QRN is still very fierce. The improvement in 20's signals from other VK States—particularly VK4—is most noticeable, but owing possibly to the "Chief" I have heard no 20 or 10's sigs. from VK3. 40's has also improved, particularly in the late afternoons, but is still patchy on the whole. The biggest general improvement is on 80's sigs. from beyond a radius of 250 miles, which have gone up a couple of points at least within the last fortnight. Signals within that radius, however, have commenced to behave somewhat erratically, and to suffer from fast QSB. 3.5 mc has filled up very rapidly, and on good nights one can hear SE X/mitters slipping up and down the band in the vain hope of finding a clear spot to "parlu the perlu." W & K phones till coming in, but not quite as well as last month, but ZL are easily worked in early evenings (In fact, I worked ZL2MT at midnight—guess he must have suffered from

insomnia). The 3XJ gang, with Mari-byrong Jean, and numerous second ops. still hold the palm for most consistent use of 3.5. Rumour says that Geo. is so "interested" in a certain YL at Eltham, that he works her duplex. Much QRM has also been caused during past weeks by 3WE's impending trip to VIM (Hope the YL's were not disappointed when they saw him). Going out for a marathon QSO, 3ZK, aided and abetted by 5HD and 5KL, put in all the night—7½ hours with power for the three stations aggregating about 20 watts. Jimmy says if this doesn't break the record, he'll have another go.

Half VK must have been listening when the YF at 3WE threw a party, and the OM introduced new talent—a dinky di Scottish comedienne—to the mike (wot say, 3RG). Requests for invites to the next "do" have been so numerous that the 1st OP will have to hire local town hall.

Stations heard or worked (mostly latter) during the month were: ZL's 4CR, 4CU, 2PD, 2MT, 2BE, 2DC, VK2's ZM, VJ, JA, YW, XT, BK, TA, TC, EX, DF, VK3's XJ, ZK, CE, KR, OR, TL, DW, WN, PW, EP, JO, KE, TM, FW, RZ, EQ, RZ, GM, OS, PL, HT, HG. VK5's GL, QR, KL, HD, WJ, IV, MD. 7's, JW, RC, XL, CK, mostly on 3.5.

Heard little of the celebrations of the Kerang gang, though 3TL has made himself heard on 80, but guess Ken. is still on the DX, and Murray still waiting for that new geucy.

3CH, OC local power station, complains that I harp too much on power house QRM. The retort, of course, is that his remedy is obvious—clean up the QRM.

## SHORT WAVE NOTES.

By G. W. MANNING, VK3XJ.

Since last writing, the question of co-operating with the various other sections of the Institute in their experiments on the 56mc bands has been discussed, and am pleased to mention that the group will do everything possible to assist the Hams who will be using this frequency.

A few members of the group have actually had a little experience as to the operation and idiosyncrasies of 56mc transmissions.

Ere these notes are published, the group will have paid a further visit to the transmitting centre of the Amalgamated Wireless Australasia at Braybrook, and no doubt will have gained an idea of what actually takes place in a broadcast station.

Some of the Mallee gang, the most prominent member being 3WE, have signified their intention of being present, and judging from the previous visits which have been paid, everyone should have an enjoyable and interesting evening.

Quite a number of the members have received a small recording from the German short wave station at Zeelson, and have expressed delight at the novelty of it, and also appreciate the gesture by the broadcasting station.

## WESTERN DISTRICT NOTES.

3HG—3OW.

3NQ sends first of his promised monthly reports, is using 20 watts on a '45, hoped to raise lots of DX in contest, but found QRM too fierce.

3PG now W.A.C. three times over, with 35 countries worked, and reports up to R8, all with 4 watts on a 201a!!

3KR still works DX between Reserve skeds.

3OR on Reserve work mainly.

3TL chasing bugs from his 'mitter, and is starting to step out.

3KI using two stage xtal rig, with 40 mx xtal, and an RK20 in PA/doubler, and is getting out well.

3XI and 3AC have their 200 metre permits, but haven't heard them here yet.

3JA now has higher power with RV258 in final, and using a 40 mx xtal.

3OW working some DX, but the long wanted South American still eludes him.

3HG on phone almost entirely, except for Reserve work; has lost the DX bug. Recently spent a most enjoyable week touring the northern district of the state, visiting some dozen Hams.

3JE sees enough radio with service work, and is very inactive.

3WW now on C.C.

A newcomer is 3FN in Nathalia, and there should be at least two more new men on soon in this district.

Congratulations and best wishes are extended to 3YL, who entered into married life on April 17th. In the past she has been VK's most active YL operator, and we trust that she will continue these activities from her new QRA. (Congratulations.—Editor).

## Queensland Division

On April 5th, the annual meeting of the Queensland division of the W.I.A. was held at the Astoria Cafe.

The meeting commenced at 8 p.m., and an attendance of 40 was recorded, including Mr. Andrews, of P.M.G. Department, and many country visitors.

At the president's table sat: president VK4AW, secretary 4WT, assistant secretary Mr. P. Kelly, treasurer VK4UR, publicity VK4UU, minute secretary, VK4US; Mr Andrews, P.M.G., Mr. Johnstone of the "Courier-Mail,"

The members of the council read the reports on their activities for the past year. The T.D.S. report in particular proving extremely interesting, as it contained particulars of the activities of the 56/112 mc group, including the breaking of the Australian distance record of 70 miles, also duplex contacts between two moving 'planes, two moving cars, and the 'plane directing a moving car around the suburbs.

Plans are being prepared for a big 5 metre test up the north coast, about 150 miles.

# Amateur Radio

The new council and officers for the new year were elected as following:—

President—A. E. Walz, VK4AW.  
Secretary—J. Bates, VK4UR.  
Treasurer—W. N. Chitham, VK4UU.  
Assistant Secretary—P. Kelly, T.D.S. Advisor.  
QSL Officer—C. A. Miller, VK4US.  
Councillors—M. Cran, VK4KX; W. T. Wishart, VK4WT; H. Scholz, VK4HR; T. Shorten, VK4TS.

After the election of officers, the feast commenced; after which, the proposal of toasts to the King, P.M.G., Old Timers, and New Hams, etc., were given.

The sumptuous repast was greatly enjoyed by all present, and a general "rag-chew" ensued on the many items of interest to Hams

Trophies were presented to VK4GK—"Sports and Radio" Cup for the QRP contest.

Pennants to VK4UK, VK4EI, VK4BB, VK4AW, and VK4US.

It was decided that four cups and pennants for 2nd and 3rd places would be awarded for contests during the ensuing year.

Country members were introduced, and many new friendships were established. Those present included: 4WA, 4AH, 4HL, 4LB, 4BB, 4CR, 4WO, 4TS, 4WD, 4NJ, 4HR, 4MM, 4NW, 4JF, 4ZX, 4RJ, 4AP, 4GK, 4UX, 4JY, 4EL, 4HA, 4HB, 4JA, 4KX, 4MC, 4WB, and many students.

If there is any further space, here are some personal pars.

VK4BB is down on holidays. Bob should pull off both junior and senior awards in the B.E.R.U. contest, as he got over 12,000 points in both sections. Has also been QSO in Yank. on 28 mc.

4UR, the new secretary, is using parallel 46's T.P.T.G with 30 watts to matched impedance aerial. RX is 4-tube AC, and a swell job.

4LB using P.P. 46's with 30 watts, and a 2-tube electron-coupled AC RX.

4RC now W.A.C., clicked an elusive LU4 on 7 mc. Bob is using 4-stage xtal with pair 46's in P.A.

4UU got 6000 points in Yank. test with his old P.P. 210's.

4US using P.P. 46's, but constructing 4 stage job for VK test. 2A5 C.O. 46 fd. para. 46's Bfr and 825 P.A.

4AP working fb DX with his xtal rig and 800 in P.A.

## South Australian Division

By VK5SU—VK5MY.

Conditions on 40 mx not so hot. Few W stations, but more QRN. An old-timer in 3JK comes back to the game, and puts an R8/9 sig. into VK5 at night, on 40 mx.

3EG tearing in—working ZL3AN. ZL3AN ditto few nights.

5LP working few Yanks. now and then on 40 mx.

5KL has no difficulty in raising DX on 20 mx in afternoons.

5LD using telefunken phone on 40

mx, Sundays.

5MY also trying phone, and also listening on 28 mc without success—also QSO'd KAIHR!!

5HG worked a few VK's and 2L's on 28 mc. Heard W6, but reports condition worse. Has now had 931 QSO's with W2CC.

5GR worked ZL on 28 mc.

5FM giving code practice on 7314 KC each night, excepting Tuesdays and Fridays, at 1915 AMT.

5KL and 5MZ on 80 mx phone. Other VK5 Hams preparing for 80 mx for winter QSO's.

Frequency checks from 5WI proving unqualified success. They are getting more QSO's than the rest of the gang put together.

5SU using P.P. grid modulation on F443's, and working a little DX between studies and RAAF work.

W7AYO reports VK signals on 28 mc.

7RC heard on phone one recent Sunday afternoon.

HC1FG heard R8 working F8EO. R7 on 14 mc at 0830 GMT. recently.

5KY now shifted QRA from Victor Harbor so he can get close to 5MY and 5WW!!

PK1VH and PK1BO heard with phone working VK stations, 1BO being particularly good.

Morning DX on 7 mc rapidly dropping off.

Annual general meeting of WIA held recently, three lady members being present, also 5LP, South Australia's unfortunate bed-ridden Ham, who was brought along by several members.

New WIA council for 1935-6:—

Richardson, 5YK, President; Ragless, 5GR; Walker, 5WW; Barbier, 5MD; Peimann, 5JO; Huppertz, 5GW; Taylor, 5AT; Howie, 5RF, Hilder, and Osman:

5LD new traffic manager.

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# R.A.A.F. Wireless Reserve Notes

## OUTLINE OF ORGANISATION.

### MEMBERSHIP.

The R.A.A.F. Reserve, Wireless Section, is a unit of the Air Force Reserve composed of licensed amateur wireless operators as members. The organisation covers all States of the Commonwealth.

### OBJECTS.

1. To train, during peace, a large number of wireless operators whose services would be available to the Royal Australian Air Force in an emergency.

2. To provide channels of communication between Air Force aircraft and their permanent bases when operating at considerable distances therefrom.

3. To form a group of meteorological reporting centres to provide weather data supplementing that available from other sources.

4. To provide information-regarding the condition of official and other landing grounds, and seaplane alighting sites.

### TRAINING.

1. The training of members is done by W/T. Sufficient material in the way of procedure instruction, books, etc., is provided for home study. Exercises are conducted twice-weekly in each State by means of traffic handling.

2. On occasions, members are called upon to co-operate with the Air Force during flights to distant centres, and thus put their training into actual practice. In this manner, the work is made exceedingly interesting.

3. Members are supplied with Air Force call signs and are allotted special frequencies for Reserve working.

### DUTIES AND REQUIREMENTS.

A reservist is expected to devote sufficient time to the Reserve to become proficient in the subjects laid down in the yearly syllabus. This requires approximately 1-2 hours each week of active work on the air. However, the

work has proved to be so interesting to date, that time has been no object to keen and enthusiastic members. The work is neither onerous nor exacting, but provides a field of absorbing interest.

The term of enrolment is four years, but members may resign after 14 days' notice.

### PRIVILEGES.

1. Members are supplied with an official log-book, message forms, etc., for use in connection with Reserve work.

2. A lapel badge is issued to each member to identify him as a member of the Reserve.

3. An official membership badge is available for use on stationery.

4. A section of the monthly publication "Amateur Radio" is devoted to Reserve notes and activities.

5. Awards are made in this magazine for traffic handling by Districts, Sections, and individual members. Some attractive trophies are available for contest.

### GENERAL CONSIDERATIONS.

The above paragraphs have briefly outlined the purpose and activities of the R.A.A.F. Wireless Reserve. The Wireless Reserve was first formed in 1929 as an amateur body co-operating with the Air Force, and in 1933 it was absorbed into the newly formed Air Force Reserve. Official training commenced on March 1st, 1934.

The Reserve provides something for the amateur that has been wanting for some time—a branch of radio to follow on after his general amateur activities have dwindled owing to lack of interest.

To the country man especially, the Reserve has been a means of constant communication with metropolitan and other country stations. This has been known to be the only reason why several stations have not completely "gone off the air."

## ARE YOU A MEMBER?

Subscriptions to the W.I.A. (Victorian Division) are as under:—

Full Member, 20/- Associate Member, 16/-

Country—Full Member, 14/6; Associate Member, 8/9

Student Member, 7/6 Entrance Fee, 2/6

Write to Secretary, Law Court Chambers, 191 Queen St., City

Traffic handling is something that, for the Australian amateur, is forbidden. As a Reservist, he can engage in this practice, and handle as much Air Force traffic in his section as time will permit. The Reserve is something different—it does not permit the usual amateur conversations because, when a member is operating under his Air Force call-sign, and on an Air Force frequency, he is no longer an amateur—he is a "traffic station," and as such, learns to develop his operating ability in a simple and standard procedure.

## ENROLMENT.

Enquiries regarding enrolment should be made to the secretary, Air Board, Victoria Barracks, St. Kilda Road, Melbourne, S.C.1, who will forward the necessary application forms on request.

Australian Engineering Equipment Co. Pty. Ltd. of Evans Hoses, 415 Bourke Street, Melbourne, announce that following on their advertisement in our April issue they quickly sold out their stock of Birnbach Insulators.

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1935

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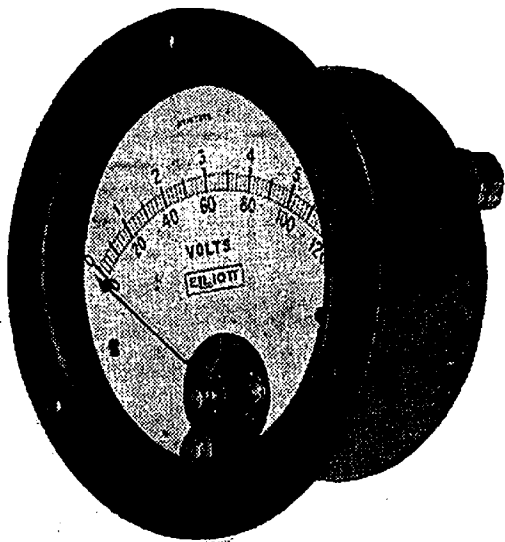
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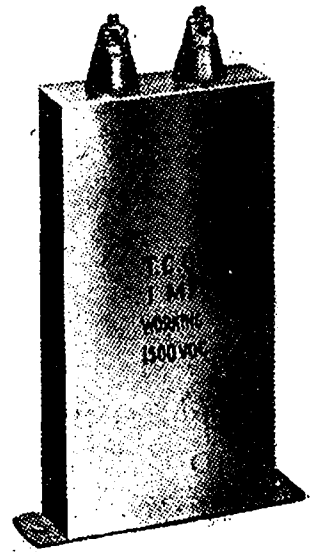
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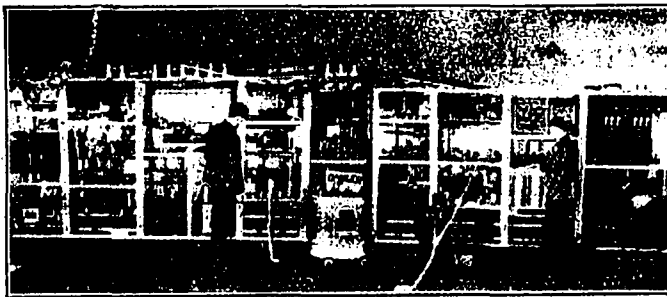
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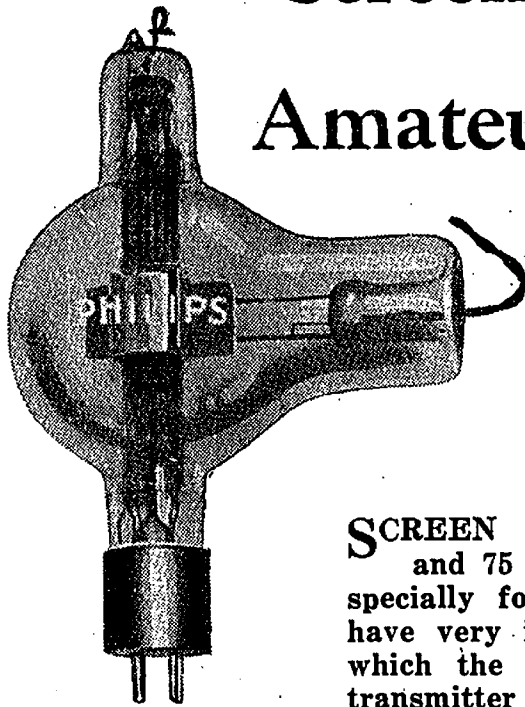
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# Screen Grid Valves

For

## Amateur Transmitters



Types:  
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SCREEN GRID Transmitting Valves for 15 and 75 watts have been designed by Philips specially for use by amateurs. These valves have very important properties, as a result of which the construction and adjustment of the transmitter can be greatly simplified. The control-grid and anode of these valves are screened from each other by a screen-grid, thus reducing anode-control grid capacity to a minimum. When used as H.F. amplifier or frequency multiplier in controlled transmitters there is practically no reaction of the anode circuit on the grid circuit, and self-oscillation is impossible with screening outside the valve. Neutralisation is unnecessary, so it is very easy to alter the wave-length at short notice. These screen-grid valves give greater amplification than triodes under the same conditions.

Table A shows the various electrical properties of the Philips amateur transmitting valves:—

### CHARACTERISTICS:

Table A. Type.	Screen Grid Valves	
	QC 05/15.	QB 2/75
Filament Voltage .....	4.0	10.0
Filament current* .....	1	3.25
Saturation current* .....	400	2,000
Anode voltage .....	480-500	2,000
Screen grid voltage .....	75-125	300-500
Max. anode dissipation .....	15	75
Anode dissipation on test .....	20	100
Max. screen grid dissipation .....	3	15
Amplification factor* .....	225	200
Mutual conductance (slope)* .....	1.4	1.4
Int. resistance* .....	160,000	150,000
Anode-grid capacity .....	.001	.02
Max. diam. of bulb .....	50	100
Max length .....	160	210

\*Approximate values.

# PHILIPS

## TRANSMITTING VALVES





## Editorial . .

---

### COUNCIL.

As this coming month will be the last one for councils elected for the 1934-5 period, it seems necessary and important to outline the duties of the controlling body, so that all members might clearly understand the responsibilities of that group.

After elections, the new council finds that one of its most important obligations to the membership is control of finance, this problem is, of course, simply a question of balancing budgets, but is one in which most councils have quite a lot of difficulty. The general membership can help a lot, by prompt payment of annual subscriptions.

Whilst the policy of the council is not to interfere with the internal working of sections, it still has a duty to make suggestions to each group for the improvement of the Institute as a whole.

Council has in the past had to accept responsibility for the policy of division with regard to conventions, contests, and organised experimentation, these jobs have to be efficiently arranged, and are generally placed in the hands of a sub-committee, who finalise and carry out the work.

The question of Technical Development has always been one of great difficulty, as anything on a very grand scale would entail great expenditure as well as considerable research; however, with an attempt at combined experimentation, our members will justly uphold their "Experimental" status.

However, council has to attend to instrument and book libraries, as well as such items as head-quarter stations, standard frequency transmissions, etc.

One of the most important duties of the council is to organise classes,

for, to quote our articles of association: "The provision of a centre of information, instruction, and advice on all matters pertaining to radio communication, or any development thereof." Such classes are effectively doing this work at the present time.

Our magazine, "Amateur Radio," has been one of the biggest ventures financially, and from a point of effort involved that council has yet tackled; happily its reception has encouraged us to continued effort and improvement.

The attention to section and country representatives' requests, and the appointment of such groups as a house committee to look after our club rooms, furnishings, decorations, etc., all demand serious and helpful consideration.

Considerable time and effort is given to members' problems arising out of breaches of the regulations, and in most cases, effective settlements have been arranged.

The degree of correspondence and general business received and transacted keeps our treasurer and secretary, together with their assistants, very busy indeed, in fact, every one of the members has generally two or three jobs to do.

The policy of the council is largely the responsibility of the members, who, by the exercise of their franchise at election time, put the respective councillors in this position of trust.

From the duties outlined, it is clear that every member must be a worker. The job is no sinecure, and these gentlemen deserve your co-operation in all things which will benefit the Institute and improve its value and services to members.

## The Use of Instruments in Amplifier and Doubler Stages

The average amateur transmitter consists of a crystal or master oscillator, followed by a buffer stage, usually of the screen-grid or neutralised type, and then a power amplifier. Should the desired frequency be higher than that of the crystal or master oscillator, a harmonic amplifier, usually called a doubler, tripler, etc., is placed between the buffer and the power amplifier. Should the frequency be considerably higher or the desired power be great, there will usually be several stages of neutralised amplification, combined with the harmonic amplifiers.

When one proceeds to adjust a transmitter employing several doublers and intermediate stages, it is rather difficult to get the maximum gain per stage with the methods ordinarily employed by the average amateur. He usually depends entirely upon the plate current indicators, and keeps his eye on the antenna or feeder instruments, trusting that random adjustments will cause the pointer to hit the peg. His method has been to adjust for minimum plate current, or the greatest decrease in plate current, when the stage is tuned through resonance. A plate current indicator is a necessary instrument in any stage, as it indicates the power drawn by the tube, and also aids in the determination of efficiency. Its use alone cannot give all the facts, because there is no method of determining the adjustment of the input side of the tube, namely, the grid circuit. What the amateur should do is to make careful adjustment of each stage for maximum output with best efficiency. If this is done, he can expect longer life from his tubes, dependable operation of his transmitter, and good reports on all his contacts with other amateurs.

Here is how all this can be accomplished.

All tubes—triodes, pentodes, etc.—whether they are used in straight amplifiers or harmonic amplifiers, employ either a choke with fixed bias

or a so-called self-biasing grid leak. Sometimes an initial bias is employed, with the self-biasing grid leak, to prevent damage to the tubes should the exciting voltage fail. If a small d-c. milliammeter is inserted in series with the choke or grid leak, at the ground end of course, it will be found that a small current is flowing, the value of which depends upon the tube used and the power employed in that particular stage. This direct current is the rectified component of the radio frequency exciting voltage applied to the grid of the tube from the preceding stage. One will notice that, if the preceding stage is detuned, the current will fall, or if the stage is brought into resonance, the current will reach a maximum. If a 25,000 ohm grid leak is used, and the current is two mills., it indicates a drop of fifty volts across the leak since Volts equal Current times Resistance. The milliammeter therefore becomes an indicator of the excitation voltage delivered by the preceding stage under load.

The uses to which the indications of a grid current milliammeter may be put are numerous.

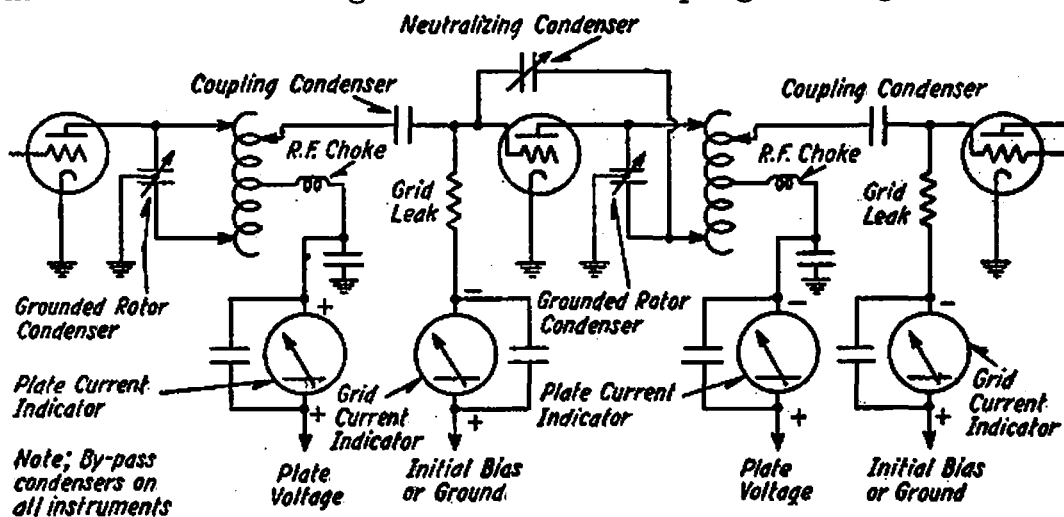
### In Amplifier Stages.

The first logical use is in neutralising the stage in which grid circuit it is located. Here is the procedure in neutralising. Apply the exciting voltage to the stage to be neutralised. Tune the exciting stage to maximum indication on the grid current indicator. Now change the tank tuning condenser of the stage under adjustment. As you pass through resonance, the reading of the grid indicator will drop (unless you have accidentally set the neutralising condenser at the proper point). Now continue to swing the tuning condenser through resonance, and at the same time slowly change the neutralising condenser. At some point on the neutralising condenser, it will be noted that there is no effect on the grid current. This point is the proper setting

of the neutralising condenser. In the course of the adjustment, the grid current may have fallen or increased. This is due to the detuning effect on the tank circuit of the exciting stage. It will be necessary to readjust the tank condenser of the exciting stage during the neutralising procedure. At all times try to keep the grid current at a maximum by correcting this detuning effect. When no change is noticed on the grid current indicator when passing through resonance, the stage may be considered as properly neutralised. For low power stages, this method is the only one available that will give exact adjustments, and it certainly is extremely sensitive. This method of neutralising is the

longer than its diameter. A long choke is usually less influenced by the surrounding metal parts of the amplifier. When the choke operates properly, it will be found that, although the grid current, as indicated by the instrument, may be somewhat lower, the output of the stage will be higher. It is advisable to insert another grid indicator in the grid circuit of the following stage so that the output of the stage under adjustment may be noted as adjustment proceeds. It is not necessary to apply plate voltage to this following stage, since all that is being used is the rectifying action of its grid.

It is also often possible to improve the coupling of the grid to the excit-



came whether the neutralising be effected through a split plate coil or split grid coil. Keep the tank circuit of the exciting stage in tune at all times.

The next use to which a grid indicator may be put is the proper selection of the grid leak or to determine if the choke is operating satisfactorily. If the grid leak is varied, say from 1000 to 100,000 ohms, at some point it will be found that the product of the value in ohms times the grid current in amperes will be a maximum. This indicates the value which gives the best load or impedance match, and at this point the exciting voltage is the highest.

The choke should preferably be wound so as to have a minimum distributed capacity, and be of such form as to have a small external field. Such a choke would be space wound for high frequencies and for lower frequencies could be layer wound, but divided into several sections. In either case the choke should be several times

ing stage by noting the effect of changing the value of coupling capacity, and choosing one that gives the greatest value.

These adjustments may be quickly made, and when completed will assure the amateur that he is getting the most from each stage.

It will be noted that no mention has been made of applying the plate voltage to the stage under adjustment, and this is not necessary except to check the completed adjustment. The application of the plate voltage will cause the grid current to fall. This is due to the change in grid impedance which accompanies the change in plate impedance when the tube is under load. Normally, this change will be fairly small, but should the tube be working at several times its rated plate voltage the change may be quite large. It might be advisable under these conditions to try a slightly different value of grid resistor.

## In Harmonic Amplifiers (Doublers, Triplers, etc.).

The ordinary amplifier is designed to give maximum output on the frequency at which it is excited, whereas it is the purpose of the harmonic amplifier to produce distortion in its output, which is due to the presence of harmonics. Its function is to produce harmonics of sufficient value, so that they may be amplified through the tube, and then picked off its tuned plate circuit. Ordinarily, harmonics of small magnitude exist in the exciting voltage, and these may be amplified and picked up in the tuned plate circuit. If a high gain is desired through a stage in the course of doubling, it is customary to use a high Mu tube, and operate it with a high bias, Class C, and over-excite its grid. A tube operating under these conditions will often generate harmonics as strong as the fundamental frequency.

This is what the amateur wants, since he does not care to employ one or more stages of amplification between each doubler. It is possible to get voltage gains as high as four through a doubler and three through a tripler. These gains may fall off at the high frequencies, but they are to be expected from a properly adjusted harmonic amplifier.

Another form of harmonic amplifier, known as a "saturated" amplifier, is used in connection with synchronised broadcasting, and also in some forms of frequency standards. It is a tube whose grid is over-excited so as to drive it positive to a point where the plate current saturates the filament. This produces a "square" top wave which is rich in harmonics, and it is possible to pick off harmonics of lower frequency than that of the exciting voltage. It has little application to amateur radio.

Since it is not customary to neutralise a harmonic amplifier, the main use of a grid indicator is to obtain best adjustment of leak or choke, and coupling capacity, and, of course, the highest exciting voltage. It is desirable to use another grid indicator on the following stage, so that the adjustment which favors the desired harmonic may be checked. It will be necessary to apply power to the plate of the harmonic amplifier to watch these adjustments.

The method of determining when

these adjustments are correctly made follows that outlined under the heading, "In Amplifier Stages."

### General Notes.

It is considered excellent practice to use condensers with split stators and then ground the rotor, a custom which is readily adaptable to neutralised amplifiers or push-pull amplifiers. A stage so equipped is quite free from parasitic oscillations. A tank circuit, depending upon a by-pass condenser at the ground potential point of the coil, to by-pass parasitic oscillations, causes them to follow a high impedance path from the plate to ground. There is also a possibility that they may circulate through the power supply, and cause feed-back. When a grounded rotor condenser is used, a low impedance path is provided, and a small choke between the centre of the coil and the plate supply will prevent parasitic oscillations from entering the plate supply.

Regarding neutralising, good practice requires an exact physical balance on the inductance. By this is meant, for example, that if the plate tap is exactly ten and one-fourth turns from the ground point or centre of the inductance place the neutralising tap at exactly ten and one-fourth turns on the opposite side of the centre of the coil. This insures that, when the stage is neutralised, not only will the feed-back voltage be the same, but it will be exactly 180 degrees out-of-phase, and phase relation of the feed-back voltage is quite important. When a different number of turns are used in the neutralising winding, the voltage balance may be exact, but when power is applied the stage will be badly off neutralisation. This physical balance is very essential when operating at the higher frequencies, say ten to sixty megacycles, and quite important if the stage has considerable power. Care should be taken to keep the plate and the neutralising leads the same length. Use of a single small neutralising condenser is better than several larger ones in series, as the losses in such a combination of condensers may be quite large.

The split-plate-coil type of neutralisation may be combined with the split-grid-coil type, and by this method a stage that is inclined to be cranky can be freed of extra connections.

# The Angle of Radiation

By R. BEURING, B.Sc., B.Eng., VK3RB.

This subject was brought up over the lunch-table the other day, among several Institute members. It immediately resolved itself into several sub-headings:—

1. What is the most desirable angle of radiation?
2. How can one get it?
3. How can one measure it?

The answer to the first question calls for a discussion on short-wave propagation. The idea of a reflecting layer in the upper atmosphere is familiar, but it is worthwhile to consider its behaviour in some detail.



On the short-wave bands, radiation directly along the earth's surface is rapidly absorbed, so that for communication over distances of more than thirty or forty miles, we must depend entirely on indirect or reflected radiation. The height of the reflecting layer varies from, say, fifty to two hundred miles, so that, for communication with a station distant fifty miles, we depend on radiation directed upwards at an angle of over 45 degrees to the horizontal, as in the ray path shown in figure 1 from T to R1. As the distance to the receiving station increases, the direction of the useful radiation approaches nearer the horizontal; but it is found that reflection takes place at the surface of the earth as well, so that radiation may reach a distant station by several different paths, involving different numbers of reflections. Three possible paths—of one, three and five reflections—are shown from T to R2 in figure 1. It does not, however, follow that the amount of signal energy reaching R2 will be the sum of the amounts carried over the separate paths, as these are of different lengths. The atmospheric conditions giving rise to reflection are constantly varying, and the phase relation of the signals at R2 from the various paths

will likewise vary, resulting in fading and other effects. It would then seem reasonable to restrict the emitted radiation as far as possible to one path. Reflection of the signal will always be accompanied by a certain amount of absorption, and to keep this as small as possible it is advisable to depend on a transmission path involving the smallest possible number of reflections; this, for long distance transmission, will be a path meeting the earth's surface tangentially. In addition, and particularly on the shortest waves, under some conditions radiation striking the reflecting layer at a steep angle will not be reflected, but will pass out into space and be lost. This will be the case when the skip phenomenon is evident at moderate distances, as in interstate work, and is the rule rather than the exception below 15 metres. It appears, then, that for short and moderate distances, one should aim at distributing radiation over all angles to the horizontal; but, for long distance work, radiation should be concentrated in a direction fairly close to the horizontal, thus avoiding fading to some extent when reflection conditions are good, and making fullest use of the available power when conditions are bad. On the 10- and 5-metre bands, where reflection takes place only rarely, high-angle radiation is practically valueless.

Control of the angle of radiation is a matter of aerial design; and it may be stated immediately that the higher the masts available, the more closely it is possible to concentrate radiation in a nearly horizontal direction. The general theory of aerial design will not be discussed at length; but a few points of theory will be mentioned, and some typical aerial systems discussed.

A half-wave aerial in free space—not near the earth—does not radiate in the direction of its length. The field strength at different angles to this direction varies in accordance

with the well-known circle diagram, figure 2.

More complicated aerial systems are usually regarded as assemblies of half-wave units, and the interference effects in different directions between the radiation from the various units is calculated. Downward radiation reflected from the earth's surface must also be considered; assuming the earth to be a good conductor, this is

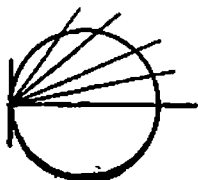


Fig. 6.

most simply done by imagining another aerial, a mirror image of the actual one with respect to the earth's surface. The polarity of any point of the image is opposite to that of the corresponding point of the actual aerial.

A quarter-wave Marconi type vertical aerial, with its image, is of similar properties to a half-wave aerial in free space. No radiation takes place in a vertical direction, and the field is a maximum in a horizontal direction. At an angle of 30 degrees to the vertical, the field strength is half of the maximum value. The field strength will be the same in all horizontal directions; this applies to all systems using a single vertical radiating wire.

A vertical half-wave, with its lower end insulated, gives rise to interference at steep angles between the radiation from the actual aerial and the image; horizontally, however, the two are in phase. Such an aerial, then, is a step nearer our ideal than the quarter-wave Marconi.

A full-wave aerial in free space produces interference at right angles to its length. If, however, a phasing coil (a quarter-wave Zepp feeder will do for this) be inserted at its centre, we have the same condition as in the half-wave vertical aerial near the earth. If we stand our full-wave aerial with phasing coil on the ground, we obtain a still sharper concentration. This suggests, as a possibility for amateur work, where a 70- or 80-ft. mast is available, a 40-metre half-wave vertical aerial with a current feeder connected directly into the centre. On the 20-metre band, where

low-angle concentration is even more valuable than on the 40 band, the feeder will act as a voltage feeder, giving the necessary phase reversal, and the system conforms with the full-wave system last described.

In commercial practice, units of several half-waves separated by phasing coils are often used; but the system just described makes as heavy demands on space and the pocket as most amateurs are prepared to meet. Where space is available, however, a long horizontal harmonic aerial—two or three wave-lengths—in the direction in which communication is desired, should be considered.

The third question? Well, strictly, it calls for a balloon and a field intensity set. But the aerial systems suggested are pretty fool-proof, provided that there is half-a-wavelength or so of clear ground, and no obvious screening round them. If interstate reports fall off, and DX reports increase, however, it is a fair sign that the aerial is doing its job.

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# Testing Crystals

By VK3PY and VK3AG.

Grinding crystals is at any time a tedious and thankless task, and any device for reducing hazard of expending unnecessary energy on a faulty piece of quartz should be an acquisition to the shack of all budding crystal grinders.

Such a device was invented by Dr. D. W. Dye, F.R.S., and later modified by P. Langevin; however, before dealing with the construction and application of actual apparatus, it is essential to clarify certain theoretical aspects of the problem.

First, let us consider main causes of failure, and queer behaviour of crystals, namely, twinning, low piezo-electric-effect, and structural faults.

**Twinning.**—The effect of twinning is that any given plate cut from a crystal may exhibit opposite polarity at adjacent points of the same face.

Twinning takes various forms, such as:—

(1) Half of each side of crystal may be at opposite polarity to other half of same side, due to right-handed portions of crystal being joined to left-handed portions, so as to have the same principal axis.

The right-handed or left-handed portions may develop their electric axes either in the same sense or in opposite senses, thus giving two varieties.

(2) The crystal may be twinned so that various parts of it develop their electric axes in opposite senses.

(3) Twinning takes place across a plane passing through a pyramid edge and making equal angles with the faces on either side of the edge, so that two crystals of ordinary appearance are joined nearly at right angles. This form of twinning is generally apparent from the shape of crystal.

There are really two methods of examining quartz for twinning:—

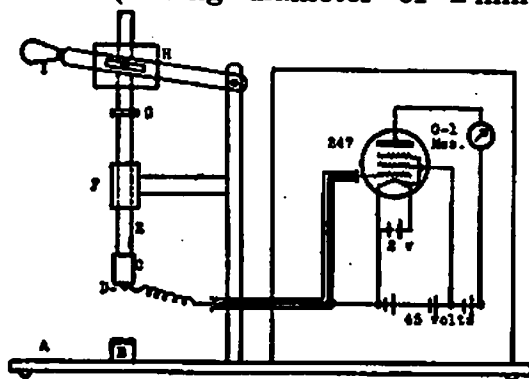
(a) Optical examination with the aid of Nicol-Prism and polarised light.

(b) Electrical examination with "free-grid" V.T.V.

The former method is only effective in certain cases, and necessitates polishing surfaces of crystal prior to

tests; whereas the latter method may be applied to all cases from raw to finished product without any preparation.

Fig. 1 depicts apparatus required. On the left of figure is shown the mechanical portion of the device. It consists of base plate A, hollow cylinder B (having diameter of 2 mm.),



Quartz testing apparatus.

isolantite or ebonite insulating rod C attached to metal rod E, and surmounted by metal ball D. Rod E slides in tube F, and at the top of rod E, a weight H is mounted, which is free to slide up and down E, and exerts downward pressure on collar G, attached to E, whenever handle I is lowered.

The apparatus as shown is very crude, and is open to improvement, but suffices to illustrate the principle involved. Whatever the design, care should be exercised in selecting material for C, as leakage here will upset the entire operating characteristics, and result in disappointment.

As previously stated, the electrical portion of the apparatus consists of "free-grid" V.T.V., and diagram is almost self-explanatory.

The main feature is the shielded connection to D, which should be as short as practicable, shielding being connected to base-plate A. A short length of shielded Belden wire does the job admirably.

The other important feature is the earthing of apparatus. Unless entire outfit is properly shielded, and the earth connection is short and efficient, it is far better to isolate unit from all possible sources of pick-up, and

operate without earth; because an inefficient earth will only reduce effectiveness of apparatus, and introduce false readings.

**Modus Operandi.**—The theory of operation of the device is extremely simple. When a crystal is compressed or expanded, a voltage is generated. The grid of the tube is "free," and normally assumes small positive potential dependent upon the voltage gradient of space-charge in its vicinity. When the voltage generated by crystal is applied to the grid of the tube, the plate current either increases or decreases, depending upon whether applied voltage is positive or negative, respectively. Normally, the plate current should be about 0.75 Ma., and a good lively crystal should be capable of reducing this current to zero.

To test piece of quartz, hold it on cylinder B and allow ball D to press slowly down on it by lowering handle I slowly. The weight required depends upon the size of crystal—a raw specimen may require seven pounds or more. Remember, a slow gentle compression is far more effective than a hard jab.

By this process one is able to prospect the raw quartz, and discard worthless sections before attempting to cut it. After cutting out apparently good section, it may be subjected to further tests to ensure that both axes are not twinned before proceeding to grind it.

As grinding proceeds it may be regularly checked to make sure that no faults occur, and, moreover, points of low piezo-electric-effect may be detected, and ground thinner than other portions of crystal to equalise output. In other words, we have a device which eliminates all guesswork, and enables us to forecast accurately whether or not a piece of quartz is worth handling, and how best to treat crystal at every stage in order to obtain maximum output and stability, by the elimination of low spots, and indicating where a slice can be ground off the side of crystal to remove twinned portion. and so make a crystal, that would otherwise be either erratic or a complete failure, a really excellent slab.

It is interesting to note that an X-cut crystal may be perfectly O.K.

(Continued on page 25)

**New Vice-President.**—The Executive has just begun to settle down to work again following the lapse of our President, and the first duty was to elect a new Vice-President. Mr. Pinnell, the previous Vice-President, was unable to attend meetings, so it was decided to elect Mr. Peter Adams, VK2JX, as our new Vice-President and fellow-member of the Executive. Mr. Adams has a very wide technical knowledge and his experience will undoubtedly be a great asset to the Executive. Mr. Adams, we welcome you to your new position.

**W.A.C.**—Cards continue to roll in for W.A.C. applications, and the latest applications come from VK7JB, VK3PG, and VK2MT. While on the subject of W.A.C. applications, may I mention that the applicant must be a member of the local division of the W.I.A. before these can be granted, and, furthermore, cards should be sent to the local division of the W.I.A., who will in turn forward cards to the Executive, and at the same time state whether the applicant is a financial member of the Division. Failure to follow this procedure will result in much undue delay.

**Standard Frequency Transmissions.** According to a recent note in Q.S.T., the first transmissions of this sort in Australia are to take place in Adelaide this year. Perhaps the writer of this information is not aware that Standard Frequency Transmissions were made in this State as early as 1926 by the W.I.A. (N.S.W. Division), and in 1929 by the W.I.A. (Vic. Division).

**Tasmanian Convention.**—All matters concerning this Convention and its minutes have been dealt with fully by the Federal Executive, and the majority of the motions acted upon.

While on the subject of the Federal Convention, it might be as well to emphasise the fact that the Federal Representative, VK5GR, and Ford Wells, Recording Secretary, went to Tasmania at their own expense, and not at the expense of the Federal Executive.

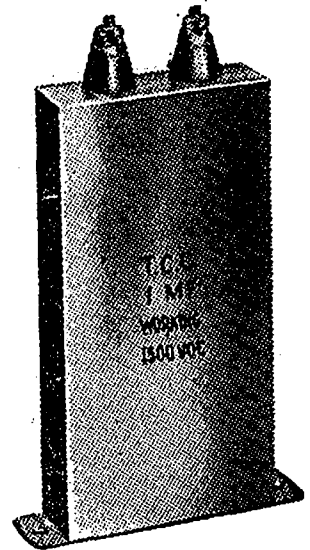


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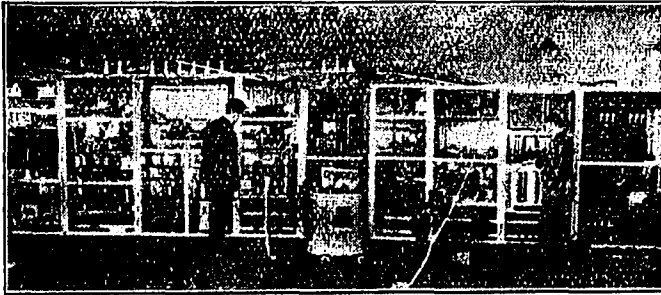
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## Station Description

VK2WJ (Maroubra, N.S.W.).

1920 first saw 2WJ experimenting with a rolling pin coil and slider attached to a hunk of galena, and a pair of Brown's type "A" 'phones, on which heap of junk were received the local press signals from VIS, and when conditions were good, the coast stations in New Zealand were readable.

At the end of 1921 started a roving life as wireless operator on coastal and overseas ships, but still keeping

The present transmitter and general layout was commenced in 1930, and completed lately, and consists of a four-stage crystal-controlled job, working on 10, 20, 40 and 80 metres.

The transmitter stands six feet six inches high, being a rack and panel job. The bottom shelf houses all transformers, switches, rheostats, fuses, etc. The next has all filter con-



up the Ham spirit by pulling the ship's gear to bits, and trying out all kinds of receivers, especially short-wave hookups, as soon as they came over the horizon. During 1926, was transferred to shore job, and VK2WJ came into being as 201A self-oscillator transmitter, with battery supply, on which job he worked all states and New Zealand. About twelve months later, was on the air with a T250 self-oscillator and 1000 volts H.T. and grid modulation, on which rig did quite a lot of DX. This tube didn't last many years, as when I came by it, the filament was broken and had to be thumped and bumped with the filament juice on so as to unite the stray ends, when 2WJ would be on the air again till next time.

densers and chokes, two 281 rectifiers and small power pack for first two stages. The third shelf has the 47 crystal oscillator and 46 first doubler. The fourth shelf has the 210 second doubler and the 211E modulator, also the speech choke. The next one has only the power amplifier stage, which is a DET. 1. On top is a Collins coupler unit, and a big 10-inch dial hot wire ammeter, which acts as aerial meter.

The antenna is a single wire fed Hertz, half-wave for 40 metres, thirty feet high at both ends. This antenna has given best all round results to date.

The receiver consists of a 58 rf, 57 det 56 1st audio for 'phones, and 2A5 output for loud speaker.

## THIS MONTH'S INTERVIEW.

Accompanied by VK3MR, a visit was made to VK3DP, of Preston. We found him at home, and, on stating our mission, we were invited into the lounge room, where upon we staggered back in amazement, for, lo and behold! here was the complete station parked in a corner like a B.C. set. There was a nice fire burning in the grate, and, as we thought of our own cold shacks, we moved a step nearer, dimly to realise what "Ham Radio de Luxe" really meant. "Oh," said 3DP at our dazed question. "It wasn't always like this. I was in the R.A.N.R. at one time, in the days of the Poulsen Arc, and I had enough of the cold," and he went on to give an amusing account of the way they used to tune for signals, covering a thousand metres or so with a flick of the dial.

The first thing we noticed about the transmitter was a figure of "Minnie" on top of the Relay Rack assembly. "No, it's not a signal director," said DP. "It was given to me as a DX mascot, but, it's a funny thing, I haven't worked any DX since 'Minnie's' been there." 3MR murmured something about YL's and DX don't go together, but was quickly put in order by Mrs. 3DP.

"What type of transmitter do you use," we asked. "C.C., of course," he replied. "I have a 47 co., followed by a 46 doubler, 46 buffer, and two more 40's in parallel as P.A."

Having a closer inspection of the transmitter, we saw a lot of little pea lamps acting as centre tap resistors, all having their tops painted a nice red color "to match the furniture," as 3MR would have it. All the power transformers are home-made, and certainly looked very efficient.

Looking at the framed certificate on the wall, we saw that the Station was licenced in November, 1933.

"Actually," said DP, following our glance, "I have been in Radio for a number of years, but I only took up the Amateur side a short time ago. I've worked 45 countries, and have W.A.C. and W.B.E., practically all my contacts being on 7mc., owing to QRM on other bands."

"Did you ever use 'phone on forty?" queried 3MR, threatening DP with a duplicate mallet to that owned by the key section chairman. "No! No! A

thousand times No!" cried DP; then added: "The dashed thing wouldn't work, or I might have done."

"You've worked quite a few South Americans, haven't you?"

"Oh, yes," he said; "they're quite easy to work on a good receiver." We were not quite sure what he meant, but let it pass. Turning our attention to the receiver, we discovered it was a T.R.F. A.C. type, using a 58, 57 and 2 A5, with plenty of punch on DX signals.

We would like to have tried out the home-made "bug" key, but, as the hour was late, we decided against it, and plodded our weary way home, thinking out schemes to build fireplaces in ham shacks.

## ANNUAL ELECTION OF COUNCIL MEMBERS.

Election time is upon us again, and every financial full member is expected to use his franchise, in order to obtain a council for his division who will work for the advancement of the W.I.A. and Amateur radio generally. Nominations for councillors must be in the hands of the divisional secretary not less than 21 days before the annual meeting, which is expected to be held about July 17th, 1935, full details, however, will be given next month re this meeting.

Each nomination must be signed by the two members proposing the candidate, who must state in writing on the nomination form, his willingness to stand for election, together with his signature appended.

Not less than ten days before the annual meeting, ballot forms will be posted to all full members, and must be returned to the secretary by 12 noon on the day preceding the annual meeting.

No ballot paper which is signed or which contains more than the number of names required, will be valid, so take care to observe this rule.

Attached is a list which indicates, to date, attendances of members for this year. Total meetings, 14:—

W. R. Gronow, 14; A. Mildern, 13; B. Dalton, 13; I. Morgan, 12; M. Howden, 12; B. Cunningham, 11; G. Thompson, 11; J. Marsland, 11; O. Holst, 10; H. Kinnear, 8; V. Marshall, 6; L. T. Powers, 6.

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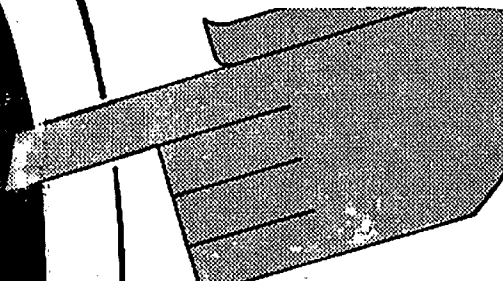
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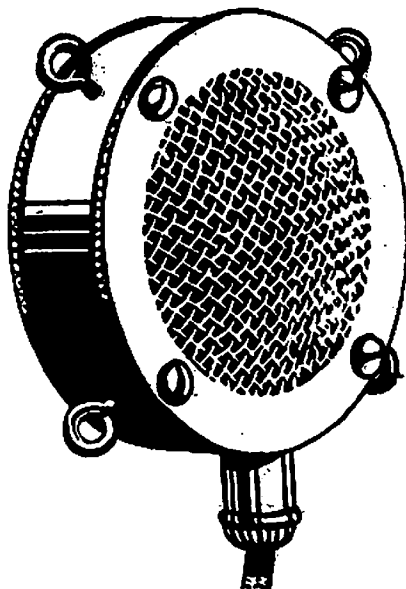
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## Operating and Experimental Section

### 28 AND 56 M.C. SECTION.

Conducted by VK3JJ.

The conditions prevailing on 28 mc. during April were again suitable for DX work, and proved that the contacts made in March were not due to the abnormal weather at the time.

W6VQ, W6DIO, X1AY, and J2HJ have been the most regular DX stations heard, and the former has had over 100 QSO's with VK and ZL. He is using a self excited transmitter with 1 K.W. input, and has worked the following VK's:—2EP, 2LZ, 2HC, 2HY, 2YC, 3BW, 3YP, 3NM, 3OC, 3HK, 3JJ, 3BQ, 3WL, 3KX, 3MR, 4BB, and 7NC. That log should be enough to induce dozens of W's to try 28 mc. X1AY has a rather chirpy DC signal obtained from a pair of 210's in P.P. at 60 watts input.

The increase in strength of ZL and VK6 signals over those obtained in December, when they last came through, was really surprising; and, between 11 a.m. and 3 p.m., ZL1BA, ZL2GQ, ZL2BN, ZL2KK, ZL2PC, and VK6SA, often reached R8/9, the latter having quite a number of contacts on 'phone. He reports hearing W6VQ, R3, ZL3AJ, ZL2GY, and has worked J2HJ, J2IS, and several VK2, 3, and 4's. VK6RA got going again, and had his first interstate QSO with VK2HY.

The results obtained by VK2LZ and VK2EP have eclipsed all others, and they have clearly demonstrated what the 28mc. band is capable of. 2LZ had a particularly good run on March 31 by working W2TP, W9FFX, X1AY, J2HJ, and 10 W6's, much to the amazement of 2NS, who visited him on that day. 2EP has had 110 QSO's with North America, and at times a CQ is answered by quite a number of W's. Amongst those worked are X1AY, J2HJ, J2IS, W4AJY, W3AWN, W4TZ, W4MR, W6DIO, W6CIS, W6JN, W6UP, W6DGW, W6CAL, and many other W6 stations. He seems to have an excellent location, and is using a 7mc. pentode C.O., TC04/10 F.D., 800 F.D. and P.P. 800's in the P.A. This is modulated by two 210's

in Class B with 700 plate volts, and several DX 'phone contacts have been had. 2EP also tried an 8-wire Franklin type beam antenna, but owing to the QRM brought in by it, he discarded it in favor of the single wire full wave antenna.

In Vic. considerable difficulty has been experienced in raising the DX, and apart from W6VQ and J2HJ, the only other QSO was between VK3YP and X1AY. Some of the stations heard are W4TZ, W4AJY, W4AJX, W9NY, W5BDT, W8DL, W6DIO, W6ALD, J2IS, and J2BY, but their signals have generally been weak and all efforts to contact them have failed. Several VK3's have made improvements to their gear, the most noticeable being 3BQ and 3YP, who are now using their 800's as neutralised P.A.'s, and are very much stronger locally. VK3MR and VK3KX who have been very successful on 7 and 14 mc., have now timed up on 28mc., and it did not take them long to work W6VQ! 3KX's signals have been logged by 3NM, at a distance of 100 miles, but as slight fading was noticed, it was thought to be a reflected wave.

VK2HY and VK2YC have a suspicion that their TRF receivers have nothing on 2LZ's super, and their results are more in line with those obtained in Victoria, W6VQ being the only W QSO. The former seems to be somewhat directional to the west, as 6SA reports him as the most consistently strong East Coast station. 2YC might have missed his contact with W6VQ but for the prompt action of 2BX! The latter's Xmitter was dismantled, and while listening to the DX and hearing no sign of 2YC, he thought something might be wrong with Jim's receiver. He took his receiver over to 2YC's, whom he found in a frenzy after chasing a bad connection all the morning! 2BX's receiver was put into action, and W6VQ was the next QSO. Mrs. 2YC then came in and had a chat with W6VQ, so now claims to be the first YF to work W on 28 mc.!!

Judging from the stations heard calling them, VK4BB, VK4GK, VK4XN, and VK5HG must have done fairly well, but at present it is not known what DX they actually worked.

Reviewing the work performed on 28mc. over the past few months, it becomes apparent that conditions are fast approaching those of 1929 and 1930. The 14mc. band has also shown a gradual improvement during the past eighteen months, which seems to indicate that the 11-year cycle theory is correct. If so, the period of minimum refraction at high frequencies must have taken place somewhere in 1932, and not 1934 as is generally supposed. It is probable that 28mc. will be useful for DX for the next five years, with a possible peak in 1937.

56mc. work is at a standstill in Victoria at present, but reports in N.S.W. and Queensland, considerable success is being obtained with beam antennas, and distances of 50 miles are being worked with ease.

## VICTORIAN 28MC. CONTEST

Owing to the extremely poor conditions existing on each of the four days selected for this contest, practically all points scored resulted from local working. On the first two days about eighteen VK3's were taking part, but on the concluding days in March, only about ten were active. The winner, VK3NM, scored 35 points and was followed by VK3JJ and VK3XK, with 26 and 18 points respectively.

## INTERNATIONAL 28MC. CONTEST.

Approximate points scored during March and April, were:—

VK2LZ, 1550; VK2EP, 1358; VK2HY, 486; VK4BB, 350; VK3BW, 332; VK3YP, 254; VK6SA, 220; VK3JJ, 174; VK3HK, 159; VK2HC, 151; VK3BQ, 142; VK3NM, 134; VK3OC, 108; VK2YC, 96; VK3WL, 87; VK3KX, 73; VK7NC, 73; VK3MR, 72; VK2XY, 50; VK5HG, 50; VK4GK, 48; VK4XN, 36; VK5GR, 21; VK6RA, 20; VK2BX, 6.

Conditions generally seem to be improving slightly at present. Particularly is this the case with 3.5 mc. and 14 mc.

3.5 mc.—The QRN season is practically at an end now, and this band is becoming extremely popular. ZL

sigs. are coming through exceptionally well, and much 'phone work is being done at present between VK and ZL. All the 'phone and would-be 'phone on this band causes a lot of QRM, which makes copying a rather weak key sig. A very interesting job. HI!

7 mc.—This band is rather dead at present, and I have not heard of any DX, other than the usual J, W, VE, KA, etc. On most nights lately, there has been more room on this band than on 3.5 mc., which is surely rather unusual.

14 mc.—Conditions on this band have improved steadily during the month. The best time of day is the middle afternoon; i.e., from about 1400 to 1600. During this period, European sigs. are numerous, and are fairly easy to raise. An occasional W or VE may also be heard.

28 mc.—Although the DX on this band seemed to fall away a bit about a month ago, it has been gradually looking up again, however, and has now come good again. Many W, J, and ZL sigs. have been worked.

## FREQUENCY MEASUREMENT.

Frequency measurement is a matter which, for some reason or other, not very much attention has been paid to in VK3. This is a remarkable contrast to other countries, notably the United States. Of course in U.S.A., the bands are crammed chock full, and so they cannot afford to waste any of their precious space. Over here, we have not had that trouble quite so badly, but certainly the position is getting worse each year. It has now got to the point where quite a few hams seem to be crowding round the edges of the bands, particularly the 7 mc. band, and, in many cases, they are getting over the edge of the band. All of which brings us back to where we started—frequency measurement.

Perhaps one of the reasons that we have not taken up frequency measurement as we should, is because of the difficulty of obtaining some standard against which we may check our frequency meters.

I believe VK5 and VK2 have made a good start in this direction, and now I wish to draw attention to a move which is being made in this direction in VK3. The chairman of the Council of the Vic. Div., VK3WG, has lately been rebuilding a frequency meter belonging to the Institute, and, after seeing it the other day, I can say that he has certainly made a very fb. job of it. This meter will be checked against standard crystals, in the possession of the Institute. In a short time now, this meter will be available for frequency checks. We are letting you know a little prior to the time at which the frequency checks will be available, but we have done this in the hope that a good few hams may see fit to construct new frequency meters, or else polish up old meters which have been out of use.

I am sure that we shall do well to be prepared in this regard, as the time is undoubtedly coming when we shall need to be far more careful in matters of frequency measurement than we have in the past.



## Divisional Notes

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### Association of Radio Amateurs

#### NOTES FROM HEADQUARTERS.

5 mx. work has been given a lot of attention during the past few months by many amateurs, and very successful results have been obtained by using various directional arrays. Although communication between Sydney and Newcastle has not yet been made, the Newcastle Amateurs, besides 2NO and others, have been concentrating at these points. The record now stands at 73 miles.

The Q.S.L. system has been re-organised so as to give the members of the A.R.A. benefits not gained by non-members. No doubt the arrangements will create a storm of protest from a few outsiders. The A.R.A. Council saw that it was futile to run the Association's QSL Bureau as a Benevolent Society for non-members' cards any longer. Some drastic changes are to be expected during the next few months, as the new Council are determined to organise to the fullest degree.

The use of the name; W.I.A., in N.S.W. is still in abeyance, although the matter has been proceeded with further than ever before. The Association was unlucky to lose VK2BA, a councillor; but Bruce has changed his abode to Makambo, in the Solomon Isles. VK2FQ (J. N. O'Dea) has taken over the distribution of "Amateur Radio" in this State, and R. H. W. Power, and his Secretary (Miss R. Butterfield) are to be congratulated on the fine work done by them in building up the sales to their high standard. (Hear, hear.—Editor.)

#### WESTERN SUBURBS NOTES. ZO2MY.

Here's a very good argument for the recognition of only one Qsl Bureau. On arrival home one day shortly after a Yank mail was greeted by a demand from the OW for 1/6, which she had laid out on surcharged cards. On checking up, was surprised to find that some of them had been Qsp from a Northern Qsl Bureau, which had merely written my address on the back of the cards, and shoved them in the letter box. The average Ham frequently is called upon to Qsp for the Yanks, and always does so cheerfully. It would be quite in order (though never to my knowledge done) for them to post the cards on, minus a stamp. For a recognised Qsl bureau, however, I reckon it's over the fence. They should have been handled in the usual way, and passed on to the Sydney Qsl branch. 2ZR was another sufferer.

Congratulations to Charlie Richardson, 2PT, on his dual success in his Navigation and Engineering exams. FB, Chas. Also took third prize, and, incidentally, the only individual prize in the Radio show with a transformer

that made all the lads' mouths water. 2CT at Drummoyne is using MOPA with a pair of 46's in last stage, and gets a fair share of DX. Thinks his location is FB, but will probably find the problem a bit more acute when 2RY's bug starts to squirt shortly.

2IO at Marrickville uses MOPA with 46 Osc. es 46 in PA input 10 watts, with a nice sig., and does really FB for Qrp on 7 Mc. F7 on W ZI, etc., being among his bag.

2KS at Marrickville, using a 3-stage Xtl, but his Pa has the same fault as mine; it seems inclined to wander away from the osc., and his Qri suffers accordingly.

Congratulations to Ivan Brown, 2RY, on the arrival of a second Op. When he eventually comes on the air he will sure have a reputation to keep up for punching a bug.

The high voltage transmission lines have been playing havoc with the local conditions during the last month or so, 2FD, 2PT, 2FO, es myself, have frequently had to close down, as working conditions were impossible. 2PT did a bit of DF work, and traced the QRM to the lines outside, carrying 33,000 volts. The electricity department, however, were not very sympathetic, and suggested it would be easier for the lads to move their Qra than for them to move the cables.

If he can be persuaded to part with it for the Ham Exhibition in August, Bill Macgowan's Sniggle Snooper should be one of the star exhibits. Have not yet had a personal demonstration, but believe it contains several improvements not found in the FBX line, including chromium plating.

Bumped into Bill McNaughton (2ZH) down in Sydney, taking a temporary holiday from looking after the gadgets at 2MO. Sez that any time any of the "A" stations want a few lessons in transmission and modulation, all they have to do is look 2MO up. I think 2MQ has nearly convinced him that he requires a S SS, and it's more than likely that Mac. will wend his way back plus the necessary junk for the construction of same, plus a couple of RK20's.

Who is that Laddie that grinds out canned music for listeners on 40 MX several nights a week? I wish he would move up towards the centre of the band. It would save him being Qrm'd, es also let some of the DX thru. Speaking of 40 fone, there were a couple of VK4 stations on the other night, R Max, plus 4ZL was one. Forget the other, but they sure come in very solid down here.

Frank, of 2FD, on occasionally at night, mostly CW, and getting out solid, put up a western suburbs record the other night with 17 Qso's from 17 Cqs after tea. Some going. Keeps a sked with Dr. Robert, XU3FK, so should be set for free medical advice.

# Amateur Radio

Congratulations to Rex, 2VG, on his WAC, hooking the elusive LU on 40 at last FB, old son.

Talking of Sth. Americans, some Secretaries of State must take their geography lessons per correspondence course. About a month ago, when I got R9 from a VR who was in turn R9, it looked like a case of Dead Had-dock. An hour later, when another of them passed my sigs. as R8, I smelt a rat, and commenced a few inquiries. VR2CA turned out to be one, William Podmore, who was Ex-VP1AL of the Gilbert Islands. It appears that the Secretary for State decided that the Fijian prefix of VP was confusing with the other VP's so far away, so he decided to alter it to VR. Looking at the world map, British Guiana, which is only over the other side of South America, must have appeared convenient, so Fiji becomes VR also. Some of those VK5 laddies who clicked some of the VR and Qrt in case they lost them, may not think much of the S for S Geography.

## LAKEMBA RADIO CLUB NOTES.

(Affiliated with the A.R.A., N.S.W.)

The 5th Annual Reunion of the Lakemba Radio Club was held on Tuesday, May 7, 1935.

The various bodies represented were: The Radio Inspector's Dept., "Wireless Weekly," A.R.A., Waverley Radio Club, Zero Beat Radio Club, Newcastle Radio Club, Hurstville Radio Club, and Inverell Radio Club.

Mr. Carroll, representing the Radio Inspector's Dept., presented the various silver cups and replicas to the winners of the recent club contests. The winners were as follow: "Chanex-Dulytic Cup," won by 2ED; "The Slade Cup," won by 2IC; and the Receiving Members' Cup, won by Mr. W. Ellis. Prizes were also given for second place in each contest.

Community singing was very popular, many well-known tunes being played through an amplifier. The evening was voted by all as a great success, concluding at 11.15 p.m.

At the Annual Meeting of the Club, the following were elected to hold office for the ensuing year: President, Mr. A. I. Clarke, 2IC; Vice-President, Mr. E. Hodgkins, 2EH; Hon. Secretary, Mr. E. C. Delmar, 2XZ; Treasurer, Mr. H. Ackling, 2PX; Publicity Officer, Mr. W. Phelps, 2DL; Librarian, Mr. G. Brown; QSL Officer, Mr. L. Hughes, 2QP; Committee of three, Messrs. Luckman, 2JT; Warren, 2QX; and Alsop, 2CY.

At the present time there is a good deal of experimental work going on in the Club on 5 metres. Various members have constructed portable transceivers, and are carrying out many interesting experiments.

All enquiries regarding the Club will receive the immediate attention of the Hon. Secretary, 79 Park Street, Canterbury.

## NEWCASTLE HAMFEST.

The Newcastle Amateur Radio Club were responsible for a very fine Hamfest, staged in Newcastle during the week-end of May 4 and 5. Some 40 Hams journeyed from Sydney to attend,

making a total of 70 odd Hams in attendance.

The majority of the visitors arrived during the Saturday afternoon, and the first official event other than the visit to club-rooms was the dinner, which was opened by the President, 2ZW, Mr. Stan. Grimmett, with some 75 present.

The usual toast to the King was observed, and then the President, Mr. Grimmett, proposed the toast, "Amateur Radio." In his speech he referred to past and present, and the spirit of comradeship present amongst amateurs. He welcomed and thanked the visitors for the attendance on the N.A.R.C. first event, incorporating the amateurs of the State. The toast to "Amateur Radio" was replied to by VK2HZ, Mr. W. Moore, who mentioned that the Ham game was possibly the greatest hobby that anyone could take up, and that the spirit prevailing in the amateur ranks was of the highest order.

The next toast was to the visitors, and was proposed by VK2ZC, Jimmy Cowan, who thanked the many visitors for their attendance.

The President of the A.R.A., VK2UX (Mr. Goyen), in replying stated it was a very great pleasure to be present, and congratulated the N.A.R.C. on their effort in organising the first event of its kind in Australia.

Mrs. Mackenzie, well known in the old days as Miss Wallace, and holder of call-sign VK2GA also replied.

Mr. Bailey, of Amalgamated Wireless Valve Co., gave a lecture on the manufacture of receiving valves, and the reason for certain processes.

The next item was the presentation by Mr. J. Moyle, representing the editor of "Wireless Weekly," of the "Wireless Weekly" Cup, won by the Club in the recent competition. Mr. Glassop responded, and thanked the donors for their generosity in awarding such a suitable trophy.

During the dinner, a "Mistakes in a Circuit" competition was being run for the major prize of the Hamfest, a type 800 valve. The circuit was of a 3-stage crystal variety, with Heising modulator and speech amplifier to match. The circuit contained 17 recognised mistakes, and the winner, VK2LZ (Con. Bischoff), recorded 23 marks out of a possible 51, 2DY and 2HU running second.

The dinner was concluded by 2YS ex 2KB (Allan Falrhall), who thanked the donor of the prizes.

The 75 Hams then retired to their various hotels, to possibly gain a little sleep before the events of the morrow. Representatives of Lakemba, Manly, Zero Beat, and Waverley Radio Clubs were present.

At 9 a.m. on the Sunday, the Company was again assembled, and divided into parties, either going to the B.H.P. steel works or visiting the ham shacks.

The steel works visit was much appreciated, and the visitors were shown over the major portion of the works. After spending the morning at either of the above places, the company then adjourned to Toronto, on the shores of Lake Macquarie, some 20 miles from Newcastle, and the scenery along the way was enjoyed by many. After lunching at the Hotel Toronto, the

hams were moved back to Speer's Point to the local picture theatre, where the main events of the programme were to be run. Approximately some £30 worth of gear was donated by the trade for the prizes in competitions.

The first competition was of a novel nature. The company were shown an L.C. circuit in a small transmitter, and each in turn was asked into how many amateur bands would it tune. The successful answers to this question were then asked to state to what frequency the L.C. circuit would tune at a given dial setting, the frequency happened to be 7054 k.c., and VK2CY was the winner, stating 7100 k.c.; second, VK2QR, open order for 10/6 on Lawrence & Hanson; and Mr. Finlayson, third, a set of transposition insulation.

The next contest was the speed Code at 25 to 30 words, and it was sent by VK2EL. The winner was VK2CR's second op., who won a 300 mile meter; 2WU, second, a morse key; and third, 2YL, a set of transposition insulators. 2QC ran fourth, and his efforts were highly commended, as he is unfortunately blind, and the code had to be copied down by another as he read it out. He was awarded a special prize of an accumulator.

The third contest consisted of three things; firstly, ten international prefixes were read out, and the country which each represented had to be written down; secondly, ten countries were read out, and the prefixes for each had to be noted; and, thirdly, ten Q signals were read out, and the answers as a question had to be written down. VK2LZ (Con. Bischoff) was again a winner, receiving a TCO 4/10 and TCO 3/5; VK2YL second, pair of Burnback Standoffs; and VK2EL third, a set of transposition insulators.

The fourth contest was another code test, which had to be copied letter by letter, the code being sent by VK2BV. 2 QR was the winner, a Lemek superhet. coil kit; second, 2CR second op., a pair of Burnback Standoffs; and third, 2WU, a set of transposition insulators.

The fifth competition was a memory test. 25 articles were placed in a box, and each one was given one minute in which to view the articles, and then write a list down. VK2TX was the winner, and received a Lemek all-wave superhet. kit, and VK2QC a second pair of standoffs.

A novel competition was then run, termed code under difficulties. The talkie plant was turned on, and morse was also sent, the idea being to copy the code through the din. The bagpipes seemed to be worst type of Qrm. This test was won by VK2QR, TCO 4/10, and TCO 3/5; 2CR, second op., one pair of standoffs; and 2EL third, set of transposition insulators.

The literary talent was then tested, and an ode to a dead bottle was required.

Fare thee well, good bottle mine,  
Many's the time I've seen thee shine,  
In my TX just five in line,  
O Treasure Dear, etc.

The above and some more won VK2XU (Gilbert. Pollock) an 1 mf.

2000 v. D.C. working condenser; VK2CS, second, an 80 ma. transformer, and Bob Best, third, a set of transposition insulations.

The last prize was awarded to the Ham present from the furthest distance, and 5PK (Ralph Nancarrow) received a morse key.

A Buffet Tea was then partaken of, and afterwards the prizes were presented to the various winners by the Club President, VK2ZW (Mr. Stan. Grimmett).

The N.A.R.C. are again to be congratulated on organising such a successful Hamfest.

## NORTH SHORE ZONE NOTES.

A.R.A. (N.S.W.).  
ZO2HY.

The conditions on the various bands have been only fair. 80 mx. will be improving once again as winter conditions set in, and, if conditions overseas are any criterion, we may expect some good DX. 40 mx. has shown very little DX other than a few Yanks and Japs., etc., and we cannot expect conditions to improve here for a couple of months or so. 20 mx. night DX has practically disappeared altogether, although we still hear a stray European or the East Coast Yanks occasionally. This band, however, is quickly settling down to winter conditions, and Yankie fone stations may be heard by the score almost any afternoon. A number of European stations also came through during first part of April in the early afternoons, and quite a number of the boys were after them. 10 mx. is still fair, and Yanks are still heard; but it looks as though, by the time these notes are printed, it will have resumed its old deadness.

2AE has not been heard much since the Zero Beat Contest. What are you going to do with that tube, Dave, OM? 2DR is evidently giving radio a spell for a while. Don has been QRL "biz" lately, and finds little time to spare. 2LA paid me a visit the other day. "Smatter of fact, I thought I was pinched when he asked for me. (He's a traffic Cop, boys, so get to know him.) He is going to build an E.C. 3-valve A.C. Receiver. Reckons his old Receiver doesn't get out as far as the TX. (I've always found the reverse the case, Hi.) Anyway, he has a very nice T9 sig., and works plenty of Yanks. Rig is 3-stage job with pair of 46's p.p. final. He has a very nice location away up in the heights of Wiloughby. Jim, 2YC, having all kinds of trouble with his outfit. First his xtal stops oscillating in 40 mx. rig, in middle of QSO, then his 10 mx. rig blows one of filter condensers, with resultant weird sigs. coming from 2YC. Then his Receiver won't perk on 10 mx. properly, and, when these are all going O.K., he loses 10 mx. altogether. Never mind, Jim, when you get to that new location, guess you will work everything. It has always been a source of wonder to me how you work anything from your present location. 2DA been fairly quiet since A.R.R.L. test; also 2YC, 2XC, etc. 2HZ and 2VP, as hinted in last notes, both took unto themselves a lawful YF, also a well-known BCL, in Bill Clive, did likewise, and I'm sure

the gang all join with me in congratulating them. 2HZ has been busy moving about since the event, and has been on lookout for ideal location, and, from all accounts, he has found it, so Bill will be happy. 2VP has been heard on since it happened, so he has evidently got the YF squared off pretty early. HI. 2LZ has been sticking to 10 mx. very consistently since the Yanks have been coming through. He also fixed the old BCL transmitter so that he could work 20 mx. so that the one rig now goes from 250 to 20 mx. He has separate 10 mx. rig, using about 6 toots, the last stage being TC1/75. Wow! 2VG and 2VM heard occasionally working each other on fone. Another nice sig. from that district is 2HA, who works plenty of DX. 2VQ been comparatively quiet, but heard frequently. Say, Jim, that note much better now, and am inclined to repeat T9. HI. Jack (2HG) still going strong, and, when no DX going, he works locals. Jack likes a rag chew, so any of you chaps hearing him, give him a shout. 2HY has not been on much during last month. Been concentrating on 10 mx. for past six months; but, unfortunately, is unable to get on much on Sundays, when DX comes through. HI. 2SS still persisting with S.E. rig; but you would never guess from his T9 note. 2WW built a single sig. super, and at last succeeded in making it perk. Next thing, he is rebuilding transmitter to xtal, with 210 final, so he will be off for a while. 2PV is heard often, but note is very rough; especially does it sound so in these days of T9 sigs. Why not try to improve it, OC?

### NOTES, ZONE 8. ZO—VK2OJ.

VK2IG now active on 7 mc. band, with P.P. 171A's in TNT rig, and 6 watts input. Antenna is a doublet, and appears to function nicely.

VK2QE regularly on 7 mc., and occasionally 14 mc. Antenna is SW fed Hertz, and reports are good, with 10 watts input.

Ex-VK2QD again in Albury, and has built new cc. xmitter with link coupling from doubler to buffer stage.

VK2YI indefinitely QRT, as he is now at Griffith.

VK2UE is a recent addition to amateur ranks, and should soon be heard on 7 mc.

VK2CP gone back to Sydney after couple of months here.

Conditions on 20 mc. mostly good during daytime for the past few weeks. 80 mc. becoming more popular.

### NEWCASTLE AMATEUR RADIO CLUB NOTES.

(Affiliated with A.R.A., N.S.W.)

The Newcastle gang are making a comeback on 5 mx., and from now on will be very active on this band. 2ZW has a pair of pp 10's going strong, and is just erecting a beam antenna, with a view to working VIS and 2BP. 2ZC has a transceiver, and works 2ZW consistently. 2MS has almost completed a 56 mc. superhet. Receiver, and 2KG is also busy on a Receiver for the same band. With promises of co-

operation from 2UF and 2DG, it seems as though 5 mx. will be kept busy for some time to come.

Hams generally will be wondering what has happened to 2OF, of the copper-plate "bug" fist. Gerry has had to scrap his rig to avoid the temptation of going on the air, as he is very QRL with exams. this year.

2DG is a new ham on the air at Stockton. Best of luck, Keith, with your pp 45's.

### VK3 'PHONE SECTION NOTES.

By J. R. Kling, 3JB.

There was a fair attendance at the last month's 'Phone section meeting, which was held on Tuesday, April 30, 1935.

The meeting commenced at 8 p.m., and the following stations made application for wave-lengths on the "Publicity Band": 3DH, 3BY, 3JB, 3AM, 3LU, 3ZO, 3BH, 3GY, 3FW, 3RI, 3HK, 3OV, 3JR, 3PA, 3CB, 3CR, 3FY, 3HF, 3SB, 3XL, 3LM, 3GK, 3KE, 3PQ, 3BT, 3FL, 3TM.

The Committee appointed to make arrangements for the Smoke Night made a report on the arrangements proposed, and was asked to have the night arranged to a later date, as a great many of the members could not get along on the night suggested.

It was also intimated by the Chairman that the "Ban" on the stations within five miles of 3AK had been lifted, excepting 3FL, 3FW, and 3XL.

There was also mention made of the section co-operating in another competition which was being arranged by the New Zealand DX Club on behalf of their members. Owing to the absence of Mr. Jim Kerley, the Allocations Committee members present had to carry on without his help, and the Section had to wait some time for the allocations to come out, as the task of allocating all the stations was not an easy matter. There were 27 stations to be drafted, and some wanted to operate at special times, as they were unable to operate at some periods of the day.

The Chairman drew the members' attention to a meeting which was being arranged for the following Tuesday night, at which there was to be a lecture on 56 mc. activities.

Mr. Ivor Morgan (3DH) produced a letter giving praise to the hams on the "Publicity Band," and the members received its contents with interest. The Secretary was requested to write on the Section's behalf, thanking the writer of the letter.

3JB had the pleasure of a 3-way QSO with 3DH, 3OY, and 3KW in the early hours of Monday morning a few weeks ago. 3KW, who was in Geelong, was putting out some good fone, but his music was a fair bit louder than his speech.

3DH was, as usual, at my end R plus plus, and 3OY was nearly as loud as him, though he was some distance away in Camberwell. Say, Alan, ob you certainly had some kick that night with your new rig.

There was a fair bit of discussion on 56 mc. doings coming from Ivor and Scottie, too. Say, Scottie, have you got the new Mollars yet. HI! HI!

3PA does not sound as good at West Preston as he did at Westgarth. What's the trouble, Percy ob?

## GOULBURN VALLEY NOTES.

3DW.

Shepparton! Greetings, Gang. We welcome to our fold Mr. Carlisle, of Nathalia, recently passed A.O.P.C. exam., and, although at present not in possession of a call-sign, we expect to hear him on the air very soon.

3FN has had good results with his 3-stage xtal rig, and in the short time he has been active has had FB results. First QSO was with W8LEC, and, out of 157 contacts, has raised 27-W's, 2-K's, plenty of ZL's, and the rest practically VK2's. Contemplates coming up on 3.5 mc. for the winter, and hints at fone.

3SN busy rebuilding his gear into rack form. Recently issued forth with fone using 250 modulator, 3-stage speech amplifier, and Reisz block type mike. Heising system, using single choke, and reports have been coming in fine.

3CN getting back into his old stride, and has almost completed MOPA with 47-CO, and pair 46's in parallel, for PA. Would like VK7's to look out for him on 3625 and 7250 kc.'s. Snow recently had the misfortune to pull down portion of the boardinghouse chimney during the erection of his antenna, and not being satisfied with that, followed the damaged portion off the roof himself. No injuries, and both doing well, HI!

3DR considering Telefunken modulation, the rest of the gang in opposition, so Mill may yet reconsider, as he is QRL at the Cannery, and not finding much opportunity to spend time in shack. Now has his 3-stage xtal rig going O.K., using 47 CO, pair 46's in parallel for doubler, and PP 210's in final.

3DW relining shack for winter months, and although still running Saturday midnight skeds with 5RH, has by mutual agreement postponed the 8 a.m. Sunday morning skeds with 3KR until the winter is over. Br-r-r-r, it's too XYZ cold, HI!

Waiting on notes from 3EP, 3SN trying to collect 'em per telephone, so, while QRX for him, will give you his DX list as promised last month. All W States three times, VS6, J, K, KA, VQ, EA, PJ, ZL, PK, and not forgetting locals. SN arrived back, and EP says that the concrete floor in his shack is not conducive to ham work, so his only times on the air at present are Sunday afternoons, when he works skeds with Jim, of 3ZK, and George, 3XJ. Not giving particulars of rig, as it's in the 2 watt class at present, and Ted is QRX for the A.C., which is expected at Rochester in August. Actually, the lines are there now, although it will be some time before the reticulation is complete. Abyssinia Samoa, next month.

## KEY SECTION NOTES:

By C. Woodward, VK3YO.

The combined All Sections meeting held on May 7 was well attended. Several visitors were welcomed, in-

cluding Mr. S. Haworth, of the A.W.A. Co., and Messrs. Ehrlund and Quist, the W/T. operators from the Swedish sailing ship, "C. B. Pedersen."

It was learnt from Mr. Symonds, the representative of VK3RI, that their station was now operating on the 3.5 and 7 mc. bands, using a T.N.T. circuit, and they would be glad to QSO any member of the Key Section.

Uno Ehrlund gave an interesting account of the trip out from Sweden, and expressed a desire to see some of the Amateur Stations whilst in Melbourne. VK3UC kindly consented to arrange some trips for them, and as he speaks fluent(?) Swedish, he will be of great assistance.

VK3UK read extracts from a letter which arrived that day from our ex-President (VK3KN), who is in London on a trip, and who hopes to contact VK from some of the G Stations.

Papers were presented by Mr. R. Cunningham (VK3ML) on 56 mc. directive antennae, and by Mr. W. Gronow (VK3WG) on 56 mc. transmitting circuits. Both of these papers were accorded a tremendous ovation, and they will count in no small measure toward increasing the interest already aroused by the demonstration last month of the P.M.G., Research Dept., on practical 56 mc. communication.

VK3MR and VK3XF are now both actively engaged in 56 mc. 'phone work, and are getting good results. They are both using Transceivers with Class B modulation.

It was heard also that VK3XD, together with VK3AS and VK3FZ are working along similar lines.

On 28 mc. conditions seem to have petered out in VK3, although the other States are still doing good work.

14 mc. is quite good in the early afternoons for DX, and on the American 'Phone bands there are usually plenty of W's waiting for a contact. On 7 mc. the usual number of stations appear to be around, although DX is not so good as it was a month ago.

VK3RX has changed to a new QRA, and is busy getting his gear in order.

VK3XD is pounding the key with one hand, and holding a new Junior Op. on his knee with the other.

VK3JH is still threatening to go on the air.

VK3RJ was in Melbourne for the meeting, and produced over 600 QSL cards for distribution.

VE1FN has informed us that Walter Wooding, VE1ET, is on the way to VK as Radio Op. on one of the Canadian ships, and expects to arrive in Brisbane about the end of May. He hopes that he will have an opportunity of visiting Sydney and Melbourne, and meeting some of the hams before going back.

## VK4 (QUEENSLAND DIVISION).

The monthly meeting of the above division was held at headquarters, Heindorff House, Queen Street, Brisbane, on Friday, May 3, before a large attendance.

After the general business a talk was delivered by VK4RY, on his recent visit to Tasmania.

On Saturday, 25th, an Aero Pageant is being held at Archerfield, and sev-

eral members will be stationed at various points near the Aerodrome to check the planes as they pass. Fone is to be used, and transmission will be on 56 mc.

Student classes are in full swing, and those desirous of joining up should get in touch with the Secretary, B1524V, G.P.O., Brisbane.

4UR (Jack Bates) is putting out a hefty signal from his 46's in Push Pull.

4LB uses 46's push pull T.P.T.G., and seems to be doing well, has an A.C. Election Coupled Receiver.

4LK is now in Cloncurry, and is at present using B Batts. Hopes to be QRO in a few weeks.

4UZ, of Toowoomba, will be off the air for some weeks, as he has accepted a position on the staff of a "B" Classer in V.I.B.

4US and 4WD are still giving code practice every Tuesday night at headquarters for the benefit of student members, and both report that their boys are doing well.

4TS appears to be busy selling tickets for Picture Benefits in aid of the W.I.A. funds.

4WT rebuilding everything from power supply to sky wire.

4AP giving 20 mx. a good try-out, only requires two Continents for his W.A.C. on Fone.

4HR has just finished rebuilding, and was recently heard testing out his fone. Quality seemed very good.

4RC continues to put out a good signal. Has now worked all Continents. Congrats.

4HA has been heard quite a lot testing out his fone. Quality does not seem the best yet, but time will tell.

A letter recently received from W6AMC advises that his call-sign has been changed, and will in future be known as W6MDJ. He is still on the same frequency, and will be looking out for all the boys.

## VK5 NOTES.

By F. M. Gray, VK5SU.

1.2mc.—Same old gang.

3.5mc.—Few 'phone stations having FB rag chews.

7mc.—Rather poor. Few Yanks at indifferent strengths.

14mc.—Patchy. Sometimes good in afternoons. Yanks on 'phone, also Canadians.

28mc.—3HG, 5GR, 5JC, 5MY, 5SU, and 5FM heard recently; also W6, J, and ZL.

56mc.—5BY, 5IT, and 5DA, are still active on this band.

300mc.—Oh yeah!

5FM still keeping skeds with 2DR, and we suspect him of trying to establish a record number of QSO's with any one station!! He has had to suspend his code practice owing to working overtime.

5MY has been transferred to Berri for a fortnight, and can be heard from 5IV on 3.5mc. during the evenings.

5LD still keeping W1A traffic schedules. Having tried every other system of feeders he now intends to put in a Collins' network.

A little bird whispers that 5EM has a note which cannot be listed in the "T" code without using decimals! Me-

thinks I have heard a rumour to this effect before!

Also, the quality of 5RI on 200mx. is not what we expect from a club of its standing.

Some other stations on this band have been rather lax as regards operating hours. This is not fair to the other chaps, as it is leading to extra restrictions on this band.

It is hoped that all active 200mc. amateurs will support the test being organised by the Zedders.

3ML arrived in Adelaide to-day, on his way to Perth. He was only here for about an hour, and reports R.A.A.F. Wireless Reserve very active in Victoria after the recent camp at Laver-ton.

## VK6 NOTES BY 6CP.

The usual meetings have been held during the past month, and have been fairly well attended. The President reports the AOPC classes having been finalised, and a new class is now in the process of formation. About seven students sat for last exam, and all passed the morse test. This is indeed gratifying, and great praise is due to 6LJ and 6RL for their unflinching loyalty to the students. Mention must also be made of the sterling work of 6JS and BN for the solid technical instruction given to the lads.

A new call to be heard soon is 6JG (J. Goddard). Jack is coming on with xtal Tritet for a kick-off, and anticipates adding stages as funds permit.

6AE now working M.O.P.A. Space will not permit of a full review of hams this issue, as we have on hand some dope from 6CB of the social committee.

Activities on the various frequencies are normal, but there is practically nothing to waste time about. 40 mx. in the evenings is a wash-out. On 80 mx., a few VK's and ZL's are coming in with moderate strength, and 6SA reports having heard a few W's, but failed to raise them. A keen watch on 10 mx. has produced nothing of a startling nature. On 40, there are occasional spasms of good signals in the evenings, but, taken collectively, I should say we are now going through the worst period of the year.

6GM on 80 puts out some first-class music on Mondays, Wednesdays, and Fridays, commencing 1200 GMT.

As these will be the last notes by 6CP, I take this opportunity of wishing my readers every success, and also herewith say farewell. I must thank all for the support given me, and would like to remind those in arrears to let me have subs. at once, so that I can give the new Journal Editor a good clean start for the ensuing year. Thanking you all.

One of the most successful outings yet held by the social boys took place on April 21. A mixed party of forty persons, all equipped with receivers, set out on the Kalamunda Road to find an 80 mx. xmitter hidden and operated by that sterling ham, 6BB, ably assisted by 6JW.

Many and varied were the receivers and antenna in use by the hunters. Here you could see a slap-up outfit, complete with revolving frame aerial,

and there a beautiful YL walking around her beau's receiver in circles, whilst the said beau tried to look extra specially wise as he turned the dials to find that elusive signal from 6BB, with a well-framed and technical excuse ever ready to keep the YL's temper under control. Truly we hams do expect great patience from our gentle sex!

To make a long story short, the winner turned out to be 6CX, who, arriving at the plant with a chart that would delight the heart and eye of the most noted Arctic explorer, and his directions unopened, gained top points.

Those who took part that I can bring to memory were:—

- CX, assisted by CB winner.
- GM, assisted by Ralph the Tiger.
- KO, assisted by Mr. Wright.
- RL, assisted by Mr. Weston.
- KM and mixed party.
- KZ with full equipment.

MN and JS, the inseparables; and many others whose names I do not know.

At the conclusion of the hunt Mr. Hayman, our very wise and technical friend, presented to the winner a handsome silver cup, which was donated by the worthy 6BN.

Several Cine-cameras were also on the job, and the films will be privately screened to the Council shortly. The Council will then decide, after censorship has been taken, whether they will allow the rank and file to view them at a future meeting at headquarters.

6CP (C. R. COOKE).

## VK7 NOTES.

By 7PA.

(Division address: Box 547E, G.P.O., Hobart.)

Extensive alterations have been made to the club rooms during the past two months, and we have been all upside down. This work is now completed, and we are getting settled again in our more spacious apartment. The membership list now tops the 100 mark, and everything looks rosy for the 1935-36 year. Amongst other improvements, a letter-box at the G.P.O. has been added. This is in accordance with the resolutions of 1935 Convention, and the principle is a good one, as any change in personnel will not now affect the receipt of correspondence.

The new address for all correspondence, which includes QSL Bureau material, should now be made full use of, and all secretaries' and QSL managers' attention is directed to same. (See head of these Notes and elsewhere.)

The last general meeting for the year was held in the club rooms on Tuesday, May 7, and the attendance was remarkably improved. The annual meeting was arranged, and it was resolved to have a smoke social in the club rooms this year as a change from the usual dinner, and a committee was charged with the arrangements. This gathering, as usual, is set down for the long week-end in June—i.e., Saturday, 1—and the usual field day associated with it will be held on Sunday, the 2nd, and is to be con-

ducted in the New Norfolk district, about twenty miles from Hobart.

On Thursday night, May 9, a sale of gear was held in the rooms, 7HL having gone out of the ham game for the present. We understand that he has hopes of a fresh start at some future time, and we trust that he won't change his mind. Other gear is being offered for private sale by 7NC, he also having decided to give the game a spell. Possibly the bug will bite again.

The conditions on the bands here lately have not been very enticing, and general operations have been quiet.

7BJ and 7KV have been doing some 40 mk 'phone between times, to break the monotony. A few QSO's have been had with our N.W. Coast members lately, on 40 meters, and 7CK has hopes of getting his punch back again from now on; says it has rained pretty well there lately, and the plant is showing a full 250 volts again. Bad luck that Nature's provision is not more consistent.

7AR now holds the job of Inspector of BCL licences, and should find quite a variety in it. 7JH, as treasurer, has been busy with 'stute affairs, getting squared up for the annual audit, and has not had much time to spare for operating.

We had hopes of two new call signs after last exam., but they were not forthcoming, the aspirants being unfortunate enough to fail; but we wish them better luck in their next attempt, possibly in July.

This year, for the first time, the Hobart Technical College has incorporated a radio class, and it shows promise of being worth while. I believe there are over twenty students on the register. 7JB is doing the code instruction, in conjunction with it, and one YL is included in its ranks, so VK7 may sport a YL operator in the near future, as I am told she is showing good progress and is very keen.

We join with the rest in congratulating VK4YL on her achievement, and wish her many years of unflinching enjoyment in the ham game, and hope to have the pleasure of a contact with her soon.

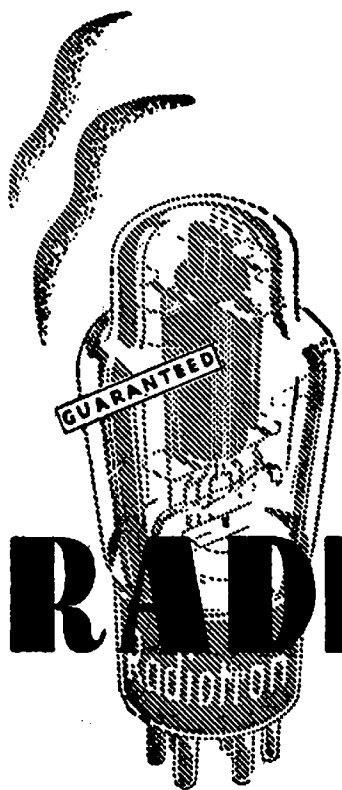
Had the pleasure of viewing the Gazette on which you were displayed in action. Must be thrilled at being screened, 4YL, and the OM must be proud of you.

(Continued from page 10)

when tested between faces, but badly twinned at numerous points along X-axis (between edges corresponding to X-axis). Many other forms of twinning, etc., can be observed, but space does not permit further discourse. Anyone interested in subject may obtain full details from "Quartz Resonators and Oscillators," by P. Vigoureux, M.Sc., published by H.M. Stationery Office and obtainable from McGill's.

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## Victorian QSL Bureau.

R. E. JONES, VK3RJ.



Writing from aboard the "Aorangl," en route to Auckland, Geo. Weston, VQ6AK, of Fanning Island, gives some interesting information on radio conditions and difficulties. When at Fanning Island he used a self-excited rig, powered by a 350-volt generator, driven by a 32-volt motor. He says: "It was impossible to keep the outfit clean, with spiders, wogs, and sea-spray hovering around all the time, whilst all the mosquitoes on the Island roosted in the shack." VQ6AK hopes to be in Auckland for some years, and will shortly be heard under a ZL1 call. He will shortly QSL all stations worked from the VQ6AK QRA.

Hams ordering new supplies of QSL cards should make sure that the size conforms to the usual postcard envelope. Big cards are cumbersome, and become damaged in the mail.

Cards are on hand at the Bureau, 23 Landale Street, Box Hill, for the following VK3 hams. A stamped envelope will ensure their despatch:—

AN, AZ, BK, BX, CK, EG, EL, EM, ER, ES, ET, EQ, FC, FM, FW, GJ, GU, GW, HE, HR, JG, JK, JL, JT, KG, KY, LP, LY, LQ, NM, NG, OL, OF, OD, OZ, PC, PL, PZ, QP, QZ, RW, SP, TK, TW, TY, UJ, WD, WX, WC, XK, YD, YR, YW, ZC, ZK, ZL, ZR, ZX, Messrs. Nye.

Cards for VK3BX, EM, ET, FM, GU, JK, JL, LP, OZ, PZ, RW, WX, WC, ZC, have been on hand for some months, and will be destroyed if unclaimed by June 22.

VK3ML.—Bob Cunningham has deserted VK3 for a trip to Western Australia. We expect him back in time for the July issue of "A.R." to draw the circuits and edit our technical matter. Don't stay too long, Bob om.

The magazine committee desire to announce that the controller of our mailing department, Mr. L. Moncur, VK3LN, left Australia to visit the United States of America, where he intends to do a most comprehensive motor tour. In the meantime his department will be cared for by the secretary to the committee, Jim Marsland, VK3NY and George Manning, VK3, as his right-hand man.

Len. Moncur, we know, will represent VK amateurs worthily, and we wish him "bon voyage."

## R.A.A.F. Wireless Reserve

Federal Notes by the O/C.

The result of the Easter Reserve camp at Laverton was most gratifying, and not only did the 24 members who attended thoroughly enjoy themselves, but learned more about their work and duties in those ten days than they ever would in ten months over the air. The personal details will be found under VMC notes.

From the instructional point the camp was an excellent means of seeing exactly what the members' difficulties were regarding procedure, and many misunderstandings were cleared up in a moment. It also afforded the study of a different system of training to be brought about shortly. Every member present was requested to supply suggestions relating to the whole of the Reserve training, and the most frequently occurring demand was for more and more exercises and Morse receiving practice. It was realised by all that there is a tremendous amount of procedure to be learned yet before anyone may hope to call himself a proficient service operator. Exercise work is going ahead in VMC, in order to fulfil the annual training programme for the year just about to end, so that this district may start off next year with operators of a fairly high standard. It is hoped that the same spirit for work will be aroused in all other districts also.

"Be prepared!" is a great motto. It should be one belonging to any body or service whose principle excuse for existence is to do work in emergencies. The strong point of the Reserve is its power to operate with the permanent forces at a moment's notice, and carry out important duties, especially when the instructions are received as a surprise. This is being very much demonstrated at the time of writing these notes. R.A.A.F. machines seem to be scattered all around the Commonwealth, and communications to and from the detached aircraft with their bases have not fallen down for one moment. This function was simply due to the stations called up to do work being in instant readiness for operation. Reservists in Brisbane, Rockhampton, Alice Springs, and other places are handling hundreds of words of traffic daily. If these members had not been prepared they could not have succeeded in carrying out their job.

Therefore, briefly, it must be the aim of every member to have both himself and his station on the mark for official communications. If these are not available, why have a Reserve? The Reserve is an emergency service, and it is the duty of every member to BE PREPARED for co-operation at any time.

## Personalities

After hearing so many varied opinions as to the different "B" Batteries operating at present, we made enquiries during the month as to the best power, consistency and service for receiving, transmitting and everyday use, and to pass the information on to other interested experimenters. One battery stood out—the Diamond P. 5, which, by the way, has just recently been put on the market. We visited the Diamond P. 5 factory and settled down with their chief technician to an analytical investigation. Briefly the results of our investigations are as follow:—

1. "P.5's" will wear away only when actually in use. Reason: Electrolyte is the name given to the jelly inside dry batteries which eats away the zinc cells, so creating current. A corrosive electrolyte can eat away the zinc even when the battery is switched off. But, "P.5" electrotype, unlike that of other batteries, will not do this. This means longer life.

2. "P.5" recuperation—Recovering power overnight. Reason: The attacking of the zinc in a dry battery causes hydrogen to appear inside the battery and this has to be removed by chemicals in the negative electrode. A feature of the "P.5" is the use of high grade materials in the battery electrodes. The hydrogen cannot drag the "P.5" battery down—it is removed as soon as it forms. Because of these "P.5" treated electrodes, the "P.5" battery will actually recover power overnight, every night, for months on end.

3. "P.5" is noiseless and efficient at a low voltage. Reason: "P.5" will give undistorted current at a low voltage. Some batteries become noisy when their voltage drops, but "P.5" will continue to work a set efficiently down to the lowest possible drop. This also provides for maximum life.

4. "P.5" will not suddenly collapse. Reason: "P.5's" will carry on working with a gradual falling off in power. Ample warning will be given to the user before new batteries are required.

5. "P.5" Consistency. Reason: There is no marked difference in any "P.5's"—batch or individual batteries. The same standard of performance is maintained throughout.

6. "P.5" has been proved over months. Reason: The "P.5" is not an overnight production. Ever since the

Diamond Factory announced their Pertrix association the technical department of both companies have been seeking and testing for just what the "P.5" now is. The "P.5" has been proved in all its features—it is not offered as an experiment.

Amateurs who are realizing more and more the advantages of dealing with P. and L. Wireless Supplies Pty. Ltd., of 11 Hardware Street, Melbourne for their requirements, will be interested in a fresh announcement. This firm has installed a forming plant for electrolytic condensers, and their experts are at your service as always.

Australian Engineering Equipment Co. Pty. Ltd., at Evans House, 415 Bourke Street, Melbourne, whose advertisement appears in another column announce that they are in receipt of a further stock of the famous Birnbach Insulators, this time brown instead of white. Hams will be interested to know that the last lot that went like the proverbial hot cakes has been replenished.

## ULTRA HIGH FREQUENCIES

All VK3 stations operating on the ultra high frequencies are asked to mail direct to VK3WG, W. R. Gronow, 2 Anthony Street, Glen Iris, S.E.6, Victoria, their call signs and addresses (giving some idea of their location), to be included in the group map of U.H.F. stations now in the club rooms of the Victorian Division. By this map we hope to show experimental stations' locations in order to permit easy reference by members. Please indicate what bands you are operating on, 28mc., 56mc., 112mc., 224mc. Don't forget that the council have decided to award the "Gadsden Trophy" for the most outstanding work on these bands between June 1st, 1935—June 1st, 1936. Complete logs of experiments and results must be kept during this period.

It is the best trophy ever awarded in this division, and it will look nice on your shelf.

The trophy is to be awarded annually, so—Go To It, Gang—and be the first holder of this real experimenter's trophy.

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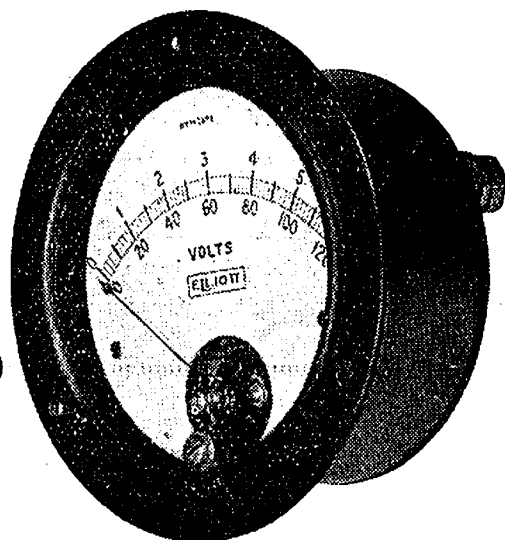
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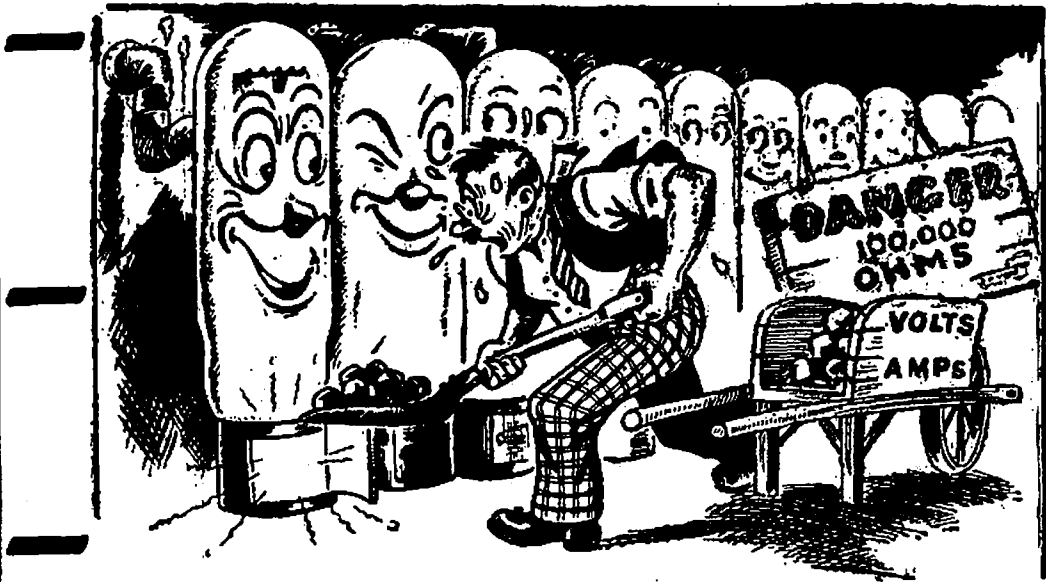
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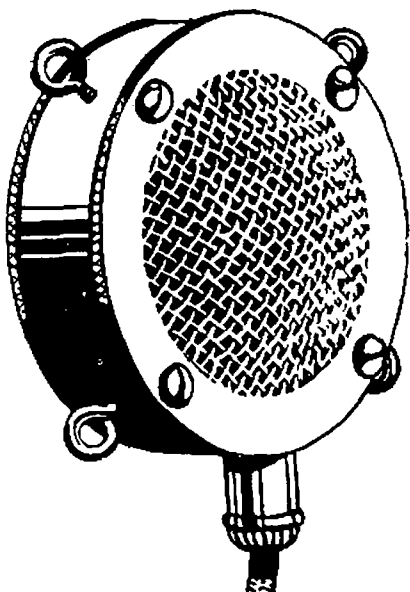
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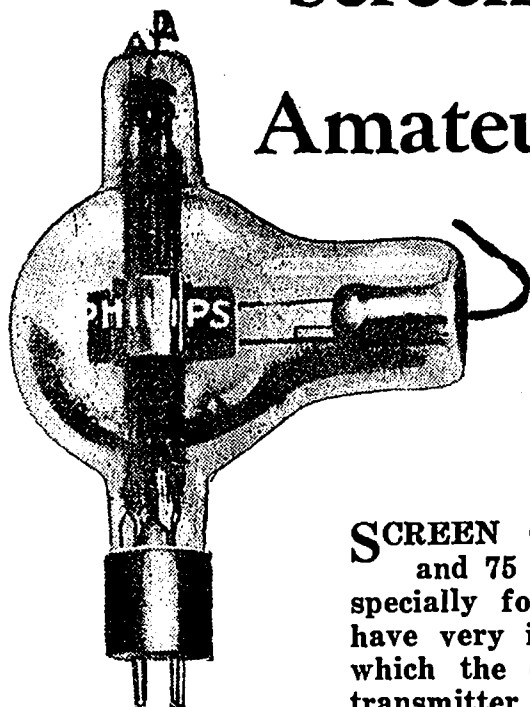
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### CHARACTERISTICS:

Table A. Type.	Screen Grid Valves	
	QC 05/15.	QB 2/75
Filament Voltage	4.0	10.0
Filament current*	1	3.25
Saturation current*	400	2,000
Anode voltage	400-500	2,000
Screen grid voltage	75-125	300-500
Max. anode dissipation	15	75
Anode dissipation on test	20	100
Max. screen grid dissipation	3	15
Amplification factor*	225	200
Mutual conductance (slope)*	1.4	1.4
Int. resistance*	160,000	150,000
Anode-grid capacity	.001	.02
Max. diam. of bulb	50	100
Max length	160	210

\*Approximate values.

# PHILIPS

## TRANSMITTING VALVES



# AMATEUR RADIO

Published by the Wireless Institute of Aust., Victorian Division.

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1st July, 1935.

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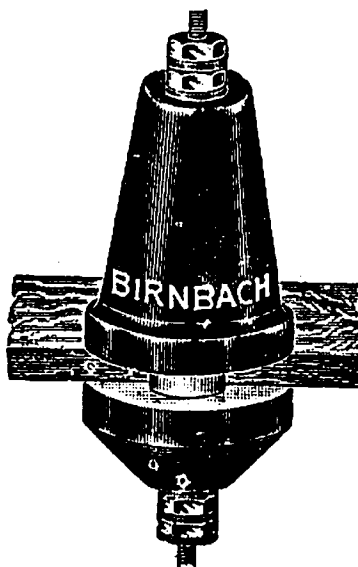
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## EDITORIAL . .

### JUBILEE WIRELESS INSTITUTE OF AUSTRALIA.

In March, 1910, a small group of wireless enthusiasts formed a society that was to become our present Wireless Institute of Australia.

Twenty-five years old this year, we commemorate our Silver Jubilee of the oldest National Amateur organisation in the World.

A year of celebrations and effort, it is hoped that every member will remember our age and standing, and make a special effort to enlist new members into our work. It's the personal contact that counts in this respect.

Co-incidental with our Jubilee, is the changing of the name in N.S.W. back to W.I.A. (N.S.W. Division) which no doubt will favorably affect the Institute, as the time honored title is well respected amongst the Amateurs of this State.

The past few years have been possibly the hardest that the Institute has ever passed through, not only due to the lack of the necessary amongst Amateurs, but also due to the fact that we have defined ourselves as being representative of the experimental side of radio only. This change may not have been too apparent, but it has been a decided underlying factor in our growth. The Institute should now be able to grow unfettered as a representative Amateur and Experimental body as, no doubt, our founders hoped we would. Personal effort is the watchword of effective growth, and we hope it is the aim of every member to carry our banner, display our inducement and reward to members, and to make 1935, for the world's oldest Amateur body, a year of prosperity.

In some States, the divisional Councils are making special efforts to commemorate the Jubilee, and it is hoped that every State will fall into line, and that our Silver Jubilee year will be long remembered.

### EXIT THE A.R.A. (N.S.W.)

Not only does New South Wales feel very jubilant at this moment, but all Divisions of the W.I.A. are joining with them in welcoming back the name Wireless Institute of Australia (N.S.W. Division). The secretary of the late Association of Radio Amateurs (N.S.W.), and his energetic fellow councillors, have worked hard for a long time to get the name W.I.A. back for the N.S.W. members, and have at last succeeded. Hearty congratulations VK2.

The loss of the name W.I.A. in N.S.W. was brought about, in short, by the difference that arose between two parties, one with commercial interests, and the other with 100 per cent. amateur. The former wanted to commercialise the Institute and the latter did not. Thus, because of the prevailing power being commercially-minded at the time of the split, the name W.I.A. was withheld from the members who were in the game from a Ham point of view. Undaunted, the non-commercial minds got together and formed a new Association, the A.R.A. (N.S.W.). This is the body that has made such great strides in VK2 during the past few years. Being unhampered by any commercially-minded members, the association was able to devote its activities to the amateur solely, and its results speak for themselves. Not being satisfied with the success of its activities, the Council continued to fight for the name W.I.A., and now it has achieved its ambition, and the VK2's are 100 per cent. W.I.A., not only in spirit, but in name. With the Federal Executive on its hands and a host of keen members, the W.I.A. (N.S.W. Division) will most certainly go ahead, and further show what that bulldog amateur spirit can do.

We are quite certain that all Divisions will join in wishing the W.I.A. (N.S.W. Division) all success in the future.

# Mixers — Attenuators and Pad Data

By H. R. James—VK3LH.

How often has an amateur, while working another Ham, wished to change from one type of microphone to another, and on doing so found that the results, much to their disgust, were not as were expected. This is probably because the matching is not correct, and the volume level control

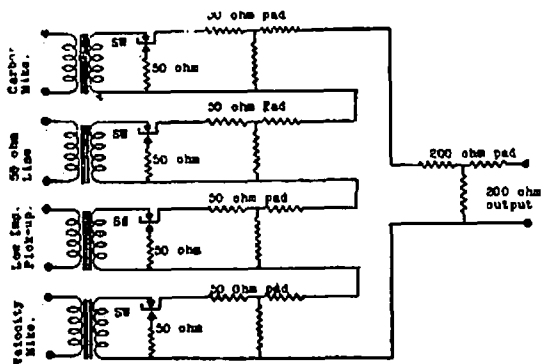


Fig. 1.

not suitable. In this article, it is intended to give a little data on mixers, fixed attenuators, and pad data.

The mixer system is used where a number of input sources, such as microphones, pickups, and land lines must be coupled, either simultaneously or individually, to audio equipment. For proper operation, it should be possible to set the output level of each source independently of the others, and at the same time, to increase or decrease the level of their entire combined outputs. Each input source is operated into the primary of a mixer transformer. The secondary output is controlled with a T or H pad, and then the output of these pads is fed into a master control. Up to a few years ago, parallel mixers were used extensively, and in this system, the outputs of the individual gain controls are connected in parallel to the main control. Unfortunately, with this method, the action of the individual controls is not independent, and mismatch often occurs. The series type mixer is more customarily used at the present time, and Fig. 1 shows a 4 position series mixer which is being used with modern equipment.

Each microphone or pickup, etc., is fed to a matching transformer, whose secondary is normally loaded with a 50 ohm T pad, and the combined output is in turn controlled by a 200 ohm pad. When the primary side of the transformers are not loaded, the 50 ohm dummy resistance should be switched into circuit, to effect proper impedance relationship. This same circuit can be used where 2, 3, or 5 channels are to be used, and the mixer gain controls work perfectly in a circuit of this type. Any one of the channels can be raised or lowered in level from max. to min. without effecting the level or quality of any other channel. For smoothness of control, the gain control should be in steps of not over 2 db.

Sometimes it is found necessary to mix a carbon mike with a dynamic mike, and if identical gain controls are used for both these inputs, the high level control would have to be turned to almost the off position to operate properly. At this point, control is poor, and frequency discrimination often becomes appreciable, so to compensate for this effect, a fixed attenuator can be inserted between the high level source and the corresponding variable gain control. This attenuator can be chosen so that the final level of both sources is practically identical, and good control is possible.

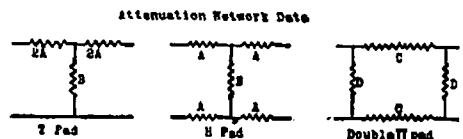


Fig. 2.

An ideal attenuator must maintain proper impedance on both input and output, and must show no frequency discrimination throughout this audio range. The customary pads used for such service are the T, H, and double pi TT. Fig. 2 illustrates a chart designed to simplify the design of such networks for any attenuation from 0.1 to 100 DB. To examine the use of this chart, let us assume that it is desired to mix the carbon and

# Amateur Radio

Note ZL (line impedance) = 500 ohms; f = 11513.

Attenuation	$A = \frac{ZL}{2} \times \text{Tanh} \left( \frac{Nf}{2} \right)$	$B = \frac{ZL}{\text{Sinh} (Nf)}$	$C = \frac{ZL}{2} \times \text{Sinh} (Nf)$	$D = \frac{ZL}{\text{Tanh} \left( \frac{Nf}{2} \right)}$
No. DB	A	B	C	D
.1	1.440	43420.	2.879	86850.
.2	2.878	21720.	5.755	43440.
.3	4.318	14480.	8.635	28950.
.4	5.758	10850.	11.52	21710.
.5	7.193	8685.	14.40	17380.
.6	8.635	7232.	17.29	14480.
.7	10.07	6198.	20.17	12420.
.8	11.51	5421.	23.06	10870.
.9	12.95	4818.	25.95	9656.
1.0	14.38	4333.	28.85	8690.
2.0	28.65	2152.	58.08	4364.
3.0	42.75	1420.	88.08	2925.
4.0	56.58	1049.	119.3	2209.
5.0	70.03	822.4	152.0	1785.
6.0	83.08	669.4	186.8	1505.
7.0	95.65	558.0	224.0	1308.
8.0	107.7	473.1	264.3	1162.
9.0	119.1	405.9	308.0	1050.
10.0	129.9	351.3	355.8	962.5
15.0	174.5	183.6	680.8	756.3
20.0	204.5	101.0	1238.	611.2
25.0	223.5	56.4	2216.	559.5
30.0	234.7	31.65	3949.	532.7
35.0	241.3	17.79	7027.	518.
40.	245.1	10.	12500.	510.1
45.	247.2	5.624	22230.	505.7
50.	248.5	3.163	39530.	503.2
55.	249.2	1.775	70300.	501.8
60.	249.5	1.0	125000.	501.0
65.	249.8	.5623	222300.	500.5
70.	249.8	.3163	395400.	500.4
75.	249.9	.1779	703000.	500.2
80.	249.9	.1	1250000.	500.1
85.	250.	.0562	2223000.	500.1
90.	250.	.03161	3954000.	500.
95.	250.	.01879	7027000.	500.
100.	250.	.01	12500000.	500.

velocity mike as shown in Fig. 1 The difference in level between these units is about 60 DB. If they were operated directly into this mixer, the lower pad would be set at minimum loss, and the upper pad at max. loss, and we still would not have proper operation. Instead of this, a 60 DB attenuator could be inserted in the carbon mike circuit, making both inputs readily controllable. Referring to Fig. 2, we see that for 60 DB attenuation, a 500 ohm T pad can be constructed with the use of two 500 ohm resistance and one 1 ohm resistance. There are many cases in public address work where it is found desirable to couple a

number of mikes, pickups or tuner into an amplifier, without too complicated an intervening mixing circuit. Through the use of simple fixed attenuation as described above, all inputs can be brought down to an equal level, and then a single volume control will govern the group. The most important accessory in speech input equipment is the level meter or volume indicator, generally indicated by the term VI., and is used to indicate the level at which output is held. This meter is generally calibrated from minus 10 to plus 6 decibel, and is connected directly across the output from the amplifier.

# Investigation of Solenoid Design

By W. H. Black, A.W.M.C.—VK3WB.

During the course of the author's experience in solenoid design and construction, it has become apparent that progress in the design of single-layer air-cored solenoids, and of resonant circuits, has been retarded through lack of knowledge of the relationship existing between Nagaoka's constant,  $K$ , and the function  $2a/b$  (vide infra). It was with a view to removing this barrier, and to extending the theory, that the present investigation was undertaken.

The inductance of a single-layer air-cored solenoid may be calculated from Nagaoka's formula—

$$L = \frac{0.03948 a^2 n^2}{b} K \quad (1)$$

Where  $L$  = Inductance in microhenries.

- $a$  = Radius of coil in cm.
- $b$  = Length of coil in cm.
- $n$  = Number of turns.
- $K$  depends on  $2a/b$  and may be evaluated from a table such as the following—

$2a/b$	$K$
0.00	1.0000
0.10	0.9588
0.30	0.8838
0.50	0.8181
0.60	0.7885
0.80	0.7351
1.00	0.6884
2.00	0.5255
3.00	0.4292
4.00	0.3654
10.00	0.2033

The usefulness of equation (1) would be increased if it could be simplified so as to render the use of tables unnecessary. Now, by plotting  $K$  for various values of  $2a/b$  we obtain the curve of figure 1, from which it will be seen that  $K$  cannot be a trigonometrical or exponential function of  $2a/b$ , but may be a hyperbolic function thereof. In investigation of this latter possibility, let us assume an arbitrary general relationship of the form—

$$K = \frac{x}{y + z(2a/b)} \quad (2)$$

Referring to the table, when  $2a/b = 0$ ,  $K = 1$ , whence substituting in equation (2)

$$1 = \frac{x}{y + z(0)} \quad (3)$$

When  $2a/b = 1.00$ , then  $K = 0.6884$ .

$$0.6884 = \frac{x}{y + z(1.00)} \quad (4)$$

Eliminating  $x$ ,  $y$ ,  $z$ , between equations (2), (3), (4), we obtain

$$K = \frac{10b}{9a + 10b} \quad (5)$$

Substituting this value of  $K$  in equation (1) gives

$$L = \frac{0.3948 a^2 n^2}{9a + 10b} \quad (6)$$

If  $A$  and  $B$  be the distances, expressed in inches corresponding to  $a$  and  $b$  expressed in centimetres.

$$\begin{aligned} a &= 2.54 A \\ b &= 2.54 B \end{aligned}$$

whence, substituting in equation (6)

$$L = \frac{1.003 A^2 n^2}{9A + 10B} \quad (7)$$

or approximately  
 $L = \frac{A^2 n^2}{9A + 10B}$

This equation, as well as rendering the use of tables unnecessary, and of being readily memorised is of considerably more value mathematically and practically than equation (1). It must be remembered, however, that equation (7) is purely an empirical relationship which, as can be shown mathematically, does not admit of any fundamental physical interpretation. Comparing the tabulated values of  $K$  with those obtained by the use of equation (5), and taking into account the error of 3 parts per 1000 in approximating to equation (7), it is found that the over-all error in calculations due to the use of equation (7) cannot exceed 2 per cent. if  $2a/b$  be not greater than 4, i.e., if the dia-

meter is not more than 4 times the length of the coil. Hence, the equation can be used in the design of almost all single layer solenoids used in practical radio work.

**Example 1.** — A single layer solenoid of 40 turns is wound on a former of 3 inches diameter. If the length of the winding be 2 inches, calculate the inductance in microhenries.

Substituting in equation (7)

$$\begin{aligned} A &= 1.5 \text{ inches} \\ B &= 2 \text{ inches} \\ n &= 40 \text{ turns} \end{aligned}$$

then  $L = 107.4$  microhenries.

**Example 2.** — What must be the radius of a coil 2 inches long, of 15 turns, whose inductance is 20 microhenries?

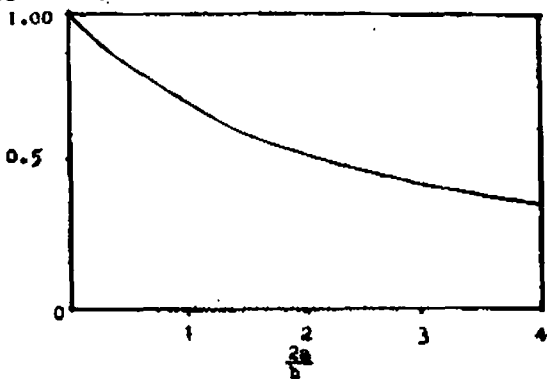


Fig. 1. SHOWING  $K$  plotted as a function of  $\frac{2}{b}$ .

Here  $L = 20$   
 $b = 2$   
 $n = 15$

Therefore, substituting in equation (7)

$$20 = \frac{A^2(15)^2}{9A + 10(2)}$$

$$225A^2 - 180A - 400 = 0$$

Solving this as a quadratic in  $A$  we obtain  $A = 1.8$  inches.

**Example 3.** — A coil of inductance 50 microhenries is to be wound to just fit on a former of  $1\frac{1}{2}$  inches radius and 3 inches long. What length of wire will be required?

$$w = 2 \pi A n$$

where  $w =$  length of wire in inches

$$\pi = \frac{22}{7}$$

$$\text{Therefore } n = \frac{w}{2\pi A}$$

Substituting this value of  $n$  in equation (7)

$$L = \frac{0.0253 w^2}{9A + 10B}$$

or, approximately

$$L = \frac{1}{40} \frac{w^2}{9A + 10B} \quad (8)$$

Now,  $L = 50$

$$A = 1.5$$

$$B = 3$$

Hence,  $w^2 = 40L(9A + 10B)$

$$= 87,000$$

$$w = 295 \text{ inches}$$

$$= \text{approximately } 25 \text{ feet}$$

## IMPEDANCE AND SELECTIVITY.

The impedance of a parallel resonant circuit is given by the expression

$$Z = \frac{Lh}{CfR} \quad (9)$$

where  $Lh$  and  $Cf$  are measured in henries and farads respectively, and  $R$  is the total resistance of the circuit at the frequency considered. The resistance  $R$  may be many times the direct current resistance. Owing to the gross uncertainty in calculating  $R$ , it is not possible to design a circuit of desired impedance by the use of equation (9) along. However, selectivity

$$S = \frac{2}{\pi R} \frac{Lh}{Cf} \quad (10)$$

$$\text{and } S = \frac{ha + h}{ha - h} \quad (11)$$

where  $h$  is wavelength at resonance  
 $ha$  is wavelength at which the current in the circuit is

$\frac{3}{10}$  of the current at resonance.

Then, from equations (9) and (10),

$$Z = 1.57 S \frac{Lh}{Cf} \quad (12)$$

Further, remembering that,

$$h = 1885 \sqrt{LC} \quad (13)$$

where  $L$  and  $C$  are measured in microhenries and microfarads, and combining equations (12) and (13),

$$Z = 2959 \frac{LS}{h} \quad (14)$$

or  $L = \frac{Z h}{2959 S}$

(Continued on Page 25)

## Using the 802 as an E.C. Oscillator

Practical Operating Details as Furnished by the Amalgamated Wireless Valve Co. Ltd., Sydney.

With the advent of R.F. Penthodes of to-day, the design of medium powered electron coupled oscillators presents an easy problem to the amateur. Highly adapted for this work is the 802 tube. Such an oscillator as described below should prove popular to those who prefer an unlimited variation of frequency not given by crystal control.

Operating under the following conditions in the attached circuit, the outputs obtained were as follows:—

Plate . . . . .	500 volts	45 mA
Screen . . . . .	250 volts	12 mA
Suppressor . . . . .	40 volts	

Fundamental Frequency Output at 7 m.c. equals 11.3 watts at 51 per cent efficiency.

Second Harmonic Output (14 m.c.) equals 6.0 watts at 27 per cent efficiency.

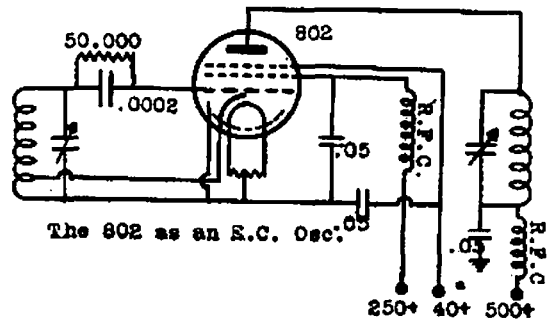
The output of the 802 as a straight oscillator under similar working conditions and input power is approximately 14 watts.

It is obvious that, for the frequency-doubling case, the plate dissipation is excessive, and for long valve life, means that the double-frequency output available is reduced to approximately 3.5 watts.

The relative inefficiency of the electron-coupled oscillator is due to the impossibility of fully exciting the control electrodes, but the resulting frequency stability is well worth while.

The electron-coupled oscillator must be regarded as an R.F. amplifier, the plate circuit of which is excited

within the valve by R.F. voltages on both control and screen grids. At the same time, the tapped-off portion of the oscillator coil provides an external R.F. voltage in the plate circuit which opposes the R.F. current produced by the R.F. voltage at the control grid. For this reason, the excitation tap on the grid coil cannot be moved very far from the earthed or screen end of the coil. Another factor is that increase of this excitation increases the R.F. voltage excitation of the screen with respect to cathode, which also



opposes the control grid excitation voltage, this being the main source of plate circuit excitation. This determines the optimum point for the excitation tap.

In order to reach a value of excitation voltage sufficient to obtain the efficiency equivalent to that of an ordinary oscillator, the control grid would require to reach a much higher positive value, to compensate for the "Bucking" R.F. voltage on the screen, and the portion of coil included in the plate-cathode circuit. This is impossible due to the heavy loading created by high positive values of grid voltage.

### QUARTZ CRYSTALS

Every Crystal tested to 50 watts input to Penthode Crystal Oscillator  
 Accurate grinding to .03 per cent.      3.5 M.C., 20/-;      7 M.C., 30/-  
 100 K.C. Xtals.      465 K.C. Xtal "Gates."      Prices on application

PROMPT DELIVERIES

MAXWELL HOWDEN (VK3BQ) CONS. RADIO ENGR.

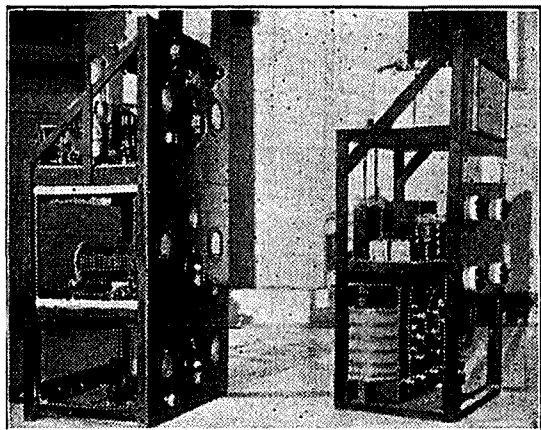
13 Balwyn Road, Canterbury, E.7.



## Station Description

### VK3WI.

The official short wave station of the Victorian Division has been completed and is now ready to handle traffic and make broadcasts to members from the rooms at Law Court Chambers, Melbourne. The original transmitter was built some years ago by VK3WG for the Institute's activities at the aerodrome, Essendon. During the past few weeks, it has been rebuilt by VK3ML and VK3WG, using modern equipment and circuits.

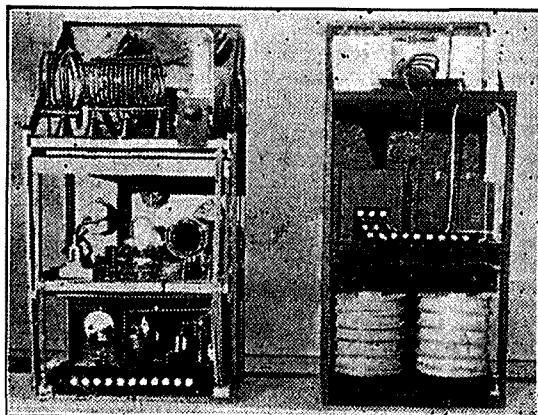


The power supply at VK3WI is obtained through a motor generator set (3 KW) from the 440 volt DC mains. The generator is mounted on the roof of the building, and the automatic starter and overload relays, etc., are encased in the power unit of VK3WI senior, which is still under construction. This panel carries meters for measuring the DC voltage, AC output voltage, total current drawn, and the frequency of the generator.

VK3WI junior, which is represented by the two photos here, is in two units. The power rack carries the crystal oscillator, 400 volt DC supply obtained from a 280, and the buffer and final amplifier supply which is common to both stages. This power is rectified by a Philips 1 KW rectifier, which can be seen mounted in front of the large power transformer. The bank of condensers on the top stage do the necessary

smoothing. All power switches are brought out to the front, and permit central control for the operator.

The R.F. portion of the works consists of a three stage unit, commencing with a type 42 tube as Tri-tet oscillator, followed by a 210 with split stator tank condenser. The final amplifier, a Philips TC1/50, is link coupled to the buffer; the link coil being apparent in the photo which also shows the flex lead to the grid coil of the power amplifier. Split stator tuning is again incorporated in the top stage, which greatly simplifies neutralising. As a matter of fact, when the transmitter was rewired, it



was found that one plate after another of the neutralising condenser had to be taken out, until four were left, and doubled spaced at that! The grid coil of the P.A. can be seen in the photo, behind the TC1/50 tube.

The aerial system employed is a standard full wave Zepp, strung between a 40-foot pole mounted on top of Law Court Chambers, and the lattice masts of the A.W.A. Company, four buildings away. Feeders of 99 feet form the transmission line.

VK3WI is capable of working on all frequency bands between 3.5 and 28 mc. The enrolment of operators is being carried out by the Council at present, and it is intended that this station be used for handling all W.I.A. traffic.

# Where and How the Gadgets are Made

## No. 1. — T.C.C. CONDENSERS

In this article, the first of a series designed to impart to Hams some information as to where and how the multitudinous gadgets of the radio world are made, a description is given of a visit paid to the works of the Australasian Engineering Equipment Co. Pty. Ltd. The works comprise a fine two-storied modern factory, at 476 Latrobe Street, Melbourne. Here are made, from start to finish, the famous T.C.C. condensers, which are distributed at 415 Bourke Street.

The writer was taken in hand by Mr. D. J. Doughton, who shares with Mr. Hipgrave the management of this truly progressive concern. The works manager, Mr. L. Murphy, received us and the interesting story of the making of the condenser was unfolded.

The whole of the eastern side of the top floor is occupied by girl workers who are assembling the parts. Bright sunshine and fresh air combine to make their lot a happy one. They are deftly putting together the foil and the mica which form the component parts of the wonderful little T.C.C. gadget. At this stage it is interesting to learn that all the mica used is mined in Australia. In fact, wherever possible, local material is utilised, and where not possible, British. These girls work on the mica in such a way that any defects in the mica is revealed.

The next processes are the closing, trimming of the edges, and cutting, all delicate operations leading up to the electric welding on of the lugs. This is a most interesting sight, and no less than 7000 condensers a day can be turned off the two welding machines.

From here the partly-built condensers are chuted downstairs, where they are scientifically dried in thermostatically controlled ovens. From there they receive a further handling to prepare them for the well-known bakelite jacket.

The bakelite is an extremely important factor of the outfit. It is imported from England, in powder form,

in large iron drums. The powder passes through clever little presses which compress it into the tablet shape. Each tablet becomes the coat of the mica and foil contraption already assembled upstairs, coated with a special hot wax, and then placed on trays, from which boy workers scrape and clean them off for the final process.

At this stage, the writer is shown the foil passing along from the original reels through an ingenious machine which ceaselessly and almost noiselessly clips it into the required lengths. This machine, which does its important job without any unnecessary fuss, was designed and manufactured at the works.

Upstairs again, where the all-important testing takes place. Along a face are rows of metal hooks, connected up with a 1200 volts testing board. Each single condenser is hooked up, and should there be a shorting or other defect, a miniature fireworks display takes place on that particular hook, a light flashes out, a bell rings, and, altogether, quite a funeral service is held over the faulty condenser which is at once relegated to the scrap heap. The testing board accommodates 1500 condensers at a time.

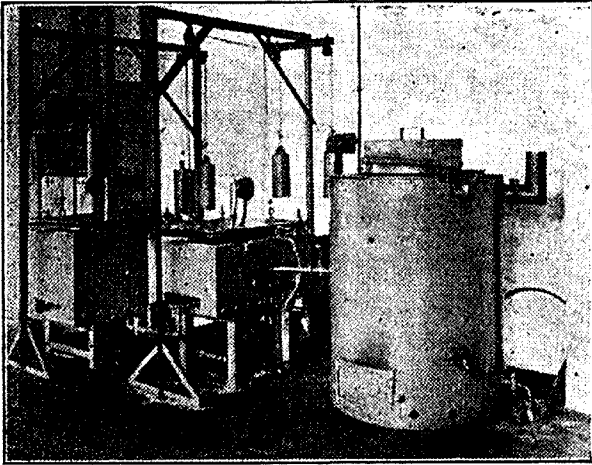
But "you ain't heard nothin' yet!" Each single one has yet to be tested for capacity. For this momentous job, visual reading capacity meters tick them off at 1, 2, 5 and over, per cent. Anything exceeding 10 per cent. is scrapped. At a bench sits an expert wearing headphones, whose job it is to still further detect any discrepancy, which, at this critical stage, is disclosed by a faint whistle heard through the ear-phones.

Capacity being declared A1 at Lloyds, the harassed and badgered condensers are next rushed along to a thousand volt motor-driven "megger," where they are required to "hold" the shock for a necessary period.

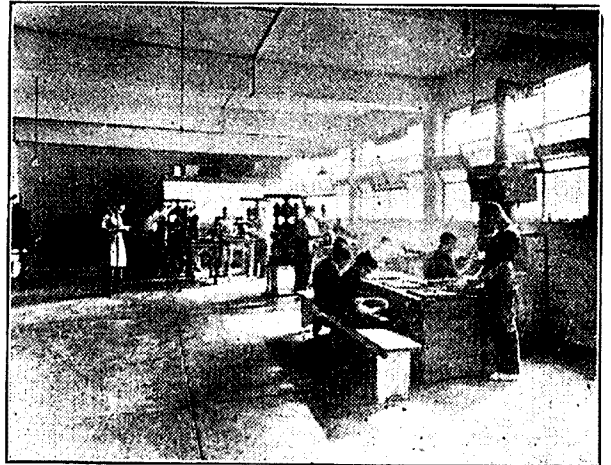
This last scene of all that ends

# Amateur Radio

## A Few Glimpses of the Fine Factory in Latrobe Street



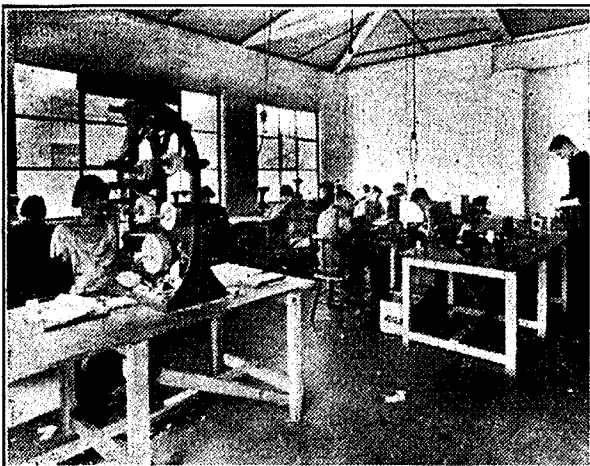
PORTION OF IMPREGNATION PLANT



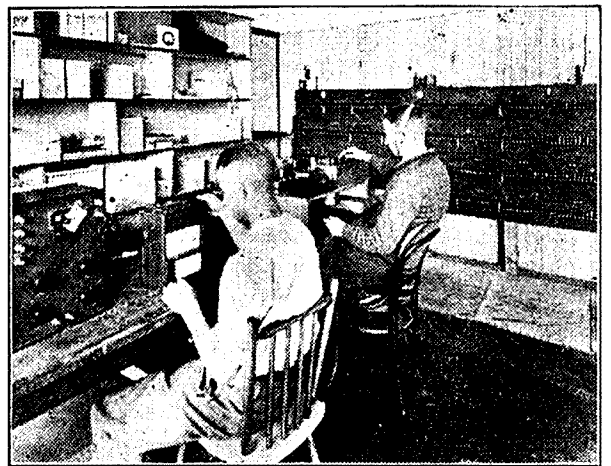
MOULDING AND FINISHING DEPARTMENT



ASSEMBLING MICA CONDENSERS



PAPER CONDENSER WINDING DEPARTMENT



CAPACITY TESTING, VOLTAGE TESTING BOARD AT BACK

their strange eventful history is the O.K., and it only remains to place on each the hall-mark of approval—the capacity stamp—inscribed under heat.

So is made the T.C.C. mica condenser that all the talk's about. The making of the paper dielectric tubular condenser is another story. This, still in the infancy stage, is rapidly becoming an important part of the company's activities. Dried in ovens for specified periods, each tube passes to a hot vacuum, where for many hours, all air is excluded. At the end of the period, a cock is opened, and an impregnating solution invades the vacuum. Emerging, the ends of the tubes are sealed with a Bitumen content, then dipped to provide an insulative coating. The tin lugs, having been already affixed by electric soldering irons, the by this time greasy and much abused looking tubular passes to the finishers, who bring it to a sense of respectability in the marketable form by which it is so well known.

The concern started operations on 1st July, 1931, in Little Latrobe Street, and was mighty proud of the fact that, during the first month, no less than 600 condensers were turned out. Last year, almost to the date, the present freehold factory was opened for business. To-day, the monthly capacity of the factory is over 100,000 condensers, and the store holds an average of £2000 worth of material at a time; 65 workers are employed, and the T.C.C. condensers are used by the "A" and "B" class broadcasting stations throughout Australia, as well as by leading amateurs, and hopefully the bosses of the concern say: "You ain't heard nothin' yet!"

## French Stations

We have had a request from Mr. F. Carville, of No. 10 Avenue de la Liberte, Becon Les Bruyeres, France, for the following to be published in an Australian Radio Paper,

### F 8WIL

41.17 Metres. 450 Watts P.H.

### F 8LA

41.8 Metres. 14 Watts PH-TG.

Owned and operated by F. Carville,

## Notes from Federal Executive Wireless Institute Australia

The work of the Executive has been progressing very smoothly of late, with Peter Adams as our new vice-president and chief prize winner (£50 "Wireless Weekly")—Congrats.—Ed.

**Re I.A.R.U.**—A scheme has been put forward by this organisation for the introduction of a relay net-work for the handling of Ham traffic, such as publicity, notes, etc., of the representative bodies in their respective countries. For a start, this net-work will handle notes between each country and the U.S.A. VK2EL has been appointed for Australia as its station. This is similar to the R.S.G.B. net-work, except that the U.S.A. is the centre of its activities.

**W.I.A. (N.S.W. Division)**—The N.S.W. Division of the Wireless Institute of Australia has now obtained permanent right to use this name. Previously, this State body was known as the "Association of Radio Amateurs (N.S.W.)" owing to legal difficulties, but these have been overcome, and the name Wireless Institute of Australia is now universal throughout Australia.

**Re W.A.C. Certificates**—Recent applications for W.A.C. Certificates include those from: VK5WK, VK5SU, VK3ZF, VK2NY, and VK4BB. The latter's cards are all dated 1928, so he should be eligible for W.A.C. and then some.

**Standard Frequency Transmissions**—The reference made last month to standard frequency transmissions concerned a certain Fullerton Radio Club, and not the transmissions from the W.I.A. Division in that State.

**Re Prefix Changes**—The prefixes for Ocean Island and Fiji have been changed from VP1 and VP2, to VR1 and VR2 respectively. VP1AN is therefore, now VR1AN, and VP1AM is now VR1AM.

of 10 Avenue de la Liberte, Becon Les Bruyeres, France, wishes VK's on similar KC's to attempt QSO's with either of the above stations on each Friday night, at 12.0 p.m., A.M.T., as from now until July 31st, 1935.

# Operating and Experimental Section

## 28 AND 56 MC. SECTION.

(Conducted by VK3JJ.)

Conditions on the 28 mc. band gradually declined during May, but several stations took advantage of the DX opportunities which appeared early in the month.

Up till May 14th, VK2EP had fairly regular contacts with W4TZ, W4MR, W6VQ, W6DIO, J2IS, and X1AY, but, after that, only one or two weak W's were heard. In Victoria, there was a slight peak on the 11th and 12th May, during which VK3YP worked W5BDT, W6DIO, and W9NY, while VK3NM had the first contact with J2IS, made from VK3. The latter has been heard and called many times, but seems to suffer with bad receiving conditions.

VK6SA worked VK2EP, VK2HY, VK4GK, and VK4AP during the month, and has received a QSA3 R5 report from W4TZ, which is very FB, considering the distance. On one Sunday, 6SA heard the harmonic of VK3EG at good strength, but no fundamental VK3 signals came through.

While on the subject of harmonics, May, 1935, "QST" quotes as follows:—"One of the best indications of whether or not the band is open is the reception or non-reception of harmonics from the commercial stations near the 14 mc. band. When distant commercial harmonics are heard, which is a considerable portion of the time, ham signals would come through." We are beginning to think that the reception of harmonics is not such a sure indication of the band being suitable for fundamental work. Many times strong harmonics have been heard when there has been no trace of stations in their vicinity, but, working on 28 mc. Observations on the Japanese commercial harmonics have shown that they are not a reliable check on fundamental conditions. Although at times they averaged the same strength as J2HJ and J2IS, there were a number of days when the latter were heard at good strength, with no sign of the commercials, and vice versa.

May "QST" devotes several pages to 28 mc. work, and the descriptions of gear being used in U.S.A. prove interesting. Contrary to expectations, the TRF receiver still seems the most popular. Several unusual schemes have been employed in their transmitters, most of which are C.C. W4TZ uses a high Q tank for the final stage, which consists of two quarter wave  $\frac{1}{4}$  inch copper tubes, tuned by a shorting bar. W6VQ uses 1 K.W. input to a self excited push pull rig, in conjunction with a multi harmonic antenna over 1000 feet long. In contrast to this, W9NY has been fairly successful with a small half wave vertical wire, fed by a transmission line terminating at a quarter wave matching section. As very few are able to erect an antenna similar to W6VQ, it is to be hoped that he also tried the smaller types to obtain comparisons.

## LINK COUPLING AGAIN.

(VK3WY.)

A large proportion of hams nowadays use link coupling between the buffer and power amplifier stages. It is surprising, however, the number who still cling to the old capacity coupling between the oscillator and buffer stages. This is of course due to a desire to cut out the extra equipment, and consequent complications caused by the use of link coupling.

In a transmitter that I was constructing lately, I kept to the capacity coupling, but I never seemed to get anywhere near the drive to the buffer stage that I should have. The tubes used were a penthode in the crystal oscillator stage, and a type 46 in the buffer stage. Trying to locate the trouble, it was realised that it was probably due to incorrect impedance matching between the tubes, as the penthodes high plate impedance was feeding into the low grid impedance of the 46.

Still trying to do without the link coupling, a type of autotransformer coupling was tried. This is merely the familiar method of tapping down the plate tank of the oscillator. Theoretically, it should be possible to match a low grid impedance to a high plate impedance by this method.

Whether or not this is so, however, it certainly caused trouble here by making it quite impossible to neutralise the buffer stage. It was found that this stage would always oscillate strongly until the tap was put back at the plate end of the oscillator tank. By following out the circuit, it can easily be seen that the buffer was acting as a type of T.P.T.G. oscillator.

After going through all the above, link coupling for this stage was tried, and all the troubles immediately cleared up. No difficulty whatever was found in neutralising the buffer stage, and the drive to this stage was nearly double that which had been obtained with straight capacity coupling. Another thing! The troublesome grid choke was no longer necessary, and so was junked.

There is still very little activity on 56 mc. in Victoria, but during the past month VK3KQ and VK3DH have connected on 'phone over a distance of several miles. Several Melbourne stations kept a watch for 3KW of Geelong, who was using a beam antenna recently, but, evidently due to the very low power used, the signals were not to be heard.

Five meters must be gaining popularity in Wagga, as VK2YW was heard relaying on 7mc., the signals from a 56 mc. portable which was carried around the district.

## INTERNATIONAL 28 MC. CONTEST.

Approximate points scored in May:—  
VK2EP 487, VK3YP 255, VK4BB 90,  
VK6SA 66, VK3NM 54, VK4AP 21,  
VK4GK 21, VK2HY 20, VK3BQ 16.

## Queensland Division Contest

The first of the contests to be held by the Queensland Division of the W.I.A., will be the VK4/ZL contest, to be held on the two week-ends beginning 13th and 20th July. The contest will commence on Saturday, 13th and 20th, at 1200 hours E.A.S.T., and ends at 0000 Sunday, E.A.S.T., both week-ends.

VK4 Stations will call "Test ZL."  
ZL Stations will call "Test VK4."

Points: One point will be allotted for receiving a report, and one for sending. Any band may be used, 10, 20, 40, 80, 160, and a bonus will be awarded for the multi-band working, consisting of 5 points for one band, 10 points for two bands, 20 points for three bands, 40 points for four bands, 80 points for 5 bands.

The same station cannot be worked twice on the same band, over the same week-end, but may be worked again on another band over that week-end, or on any band at all over the next week-end.

All participants are to forward their logs to, "VK4/ZL Contest," C/o Box 1524V, G.P.O., Brisbane. All scores will be checked, and awards made by Contest Executive, consisting of "three non-participating members," elected by the W.I. Council. Logs will include the call of the station QSO'd, time, date, band, his T/QSA/R, and your T/QSA/R, and points claimed, together with the type of antenna, receiver, and transmitter. Power input is unlimited. Points claimed should be totalled, and the bonus for multi-band working added. A cup will be awarded to the winner in VK4, and pennants for second and third.

This contest has been arranged for your benefit, and council would like to see all members participating. Besides the cup and pennants, your aggregate will go towards your score in the "Cran Cup Contest," as outlined in the quarterly circular.

VK4WI will be on the air on the 3.5 mc. band on Sunday night, 9th June, on crystal control, and each Sunday onwards, between 7 p.m. and 9 p.m. Any further information will be broadcast over 4WI on telephony.

Please give this test your earnest support, as it has been arranged solely for your benefit.

**It is the PLAIN DUTY of every member of W.I.A. to support the advertisers in these pages, and when doing so MENTION "Amateur Radio". Not much trouble to YOU—but it means a lot!**

## Western Australian Division Contest

The West Australian Division is staging a traffic contest for its members next month, over a period of two Sundays, July 21st and July 28th. Hours of operating will be from 0900 to 1500 hours, Perth time.

### Rules:

1. Messages may be sent through any number of stations, but once only through each one.

2. Each station is permitted to originate ten messages each week-end, (two sets), and all messages are to be numbered consecutively.

3. One set of serial numbers is required for both the week-ends, that is, the sequence of numbers must not be broken so as to separate the sets.

4. Messages left over from previous week-end may be relayed the following week-end.

5. Each message must consist of at least ten words in the text.

6. Only financial members of the W.I.A. (W.A. Div.) are eligible for the competition, but if an unfinancial or new member desires to compete, his subscription must reach the honorary secretary before July 20th.

7. One point will be allotted for receiving, and one point for transmitting a message, therefore a complete relay will consist of two points.

8. The station with the highest total of points will receive first prize, and the runner-up will receive the second prize. The prizes will consist of two R.C.A. 46 tubes, and one R.C.A. 82, which have been kindly donated by Atkins (W.A.) Limited.

9. All traffic returns must be in the hands of the Traffic Manager, VK6LJ, by August 10th. Returns received later than this date will not be accepted for competition, and will also lower the total of all the other relaying stations concerned, so don't forget the traffic returns by August 10th.

10. Stations competing, and wishing to contact other contesting stations, may define themselves by calling CQ WIA, and any station calling an ordinary CQ can be looked upon as not being a contestant.

11. Any or all amateur frequency bands may be used, but one message can only be sent once; meaning that one station cannot send the same message to more than one station, and it is up to the receiving stations to relay the message to someone who has not handled it.

J. MEAD, VK6LJ,  
Traffic Manager, W.A. Division.

## Divisional Notes

### N.S.W. DIVISION. By 2HZ.

During last month the A.R.A. was successful in obtaining the name W.I.A. for its use. This is the most progressive step in Amateur Radio in N.S.W. It's an old, old story why we couldn't use the name W.I.A. before, so possibly it's not worth repeating. The W.I.A. is now 100 p.c. throughout all States, in name as well as support, and now the mother State has fallen in line we can expect big things in N.S.W.

Jubilees seem almost commonplace events just at the moment, and another one to add to the list is the W.I.A.'s Silver Jubilee. Formed originally in N.S.W. by a band of radio enthusiasts in March 1910, the Institute has now grown to a body of International importance and repute. In N.S.W. the Jubilee will be celebrated by various events. An entirely Amateur Exhibition is to be run later in the year. It was hoped that the exhibition could be run in the "Sun" Buildings during November. Unforeseen circumstances cropped up, and these arrangements may have to be altered slightly. The completed dates will appear in the next issue of "Amateur Radio." Coupled with this will be a week-end Ham-fest and dinner, which will be N.S.W.'s contributions towards a Jubilee celebration.

Don Knock (VK2NO) lectured at the June W.I.A. meeting, on 5 metres, and the lecture proved to be of outstanding interest to members. (Why not send it in for publication.—Ed.)

The ballot papers circularised with reference to changing the name are being well returned, and one answer has been received in Braille.

2FQ, N.S.W. "Amateur Radio" distribution manager, during the greater portion of last month was confined to his bed, owing to a knee being displaced.

Many and varied are the preparations for the October DX contest, the efforts ranging from QRO to SS Super.

The new QSL rules have caused in some quarters no small stir. The N.S.W. Council are certain the rules will wake in N.S.W. the necessity of supporting the representative body. It has been long felt in N.S.W. that W.I.A. (nee A.R.A.) was too long regarded as a form of benevolent society for hams.

One of the worst forms of reaction was seen, or, rather, heard. One kind gentleman who parked right out one end of the band and decried the efforts of the W.I.A. in the QSL section. The general arrangement was to call CQ. A.R.A., when raising a member, to tell him his views in no uncertain manner. Abuse has been long declared no argument, and, to make matters worse, he knew nothing of the rules, and was invariably off the track. The action did not reflect on anyone except himself.

Under the circumstances, he was reported to the Radio Inspector for off frequency operation.

### LAKEMBA RADIO CLUB. (Affiliated with the W.I.A.)

The meetings of the above Club are held every second Tuesday at the club rooms, 79 Park Street, Canterbury. The meetings for July and August will be on 9th and 23rd (July); 6th and 20th (August).

A series of lectures has been arranged, the first being delivered by Mr. G. Brown on 11th June. This particular lecture was on A, B, and C Class Amplifiers, but developed into a somewhat heated discussion on "Current Flow and Electron Flow," much to the amusement of several visitors, who afterwards declared that they enjoyed the evening.

Experimental work on 5 metres is being conducted by 2QX, 2XM, and 2OD, while 2CY, 2KS, 2FG, and 2IO have also expressed their intentions of operating on this band in the near future. 2ED, 2PX, and 2QP appear to be the most consistent DX hunters. 2JT is not heard on the air very much since moving to Bland St., Ashfield. Recently Chas. was rebuilding his receiver, and got it working very well, when suddenly it went "dead," and he could not understand why it would not oscillate. After about twenty minutes' trouble shooting, he discovered that 2XW (who lives 50 yards away) had his carrier on the air. 2PX was working DX one morning, when suddenly the power mains failed. He later discovered that it was caused by a chimney of a house catching in the H.T. wires and breaking them. It appeared that one of the local neighbors was shifting his house, which he had mounted on wheels, and, with the aid of a motor lorry, was in the act of dragging it up the main street when the chimney pot struck the wires. The most consistent 40 metre fone stations are 2XZ, 2DL, and 2KS. These stations are often heard operating on dual wavelength, one acting as a relay station, with the aid of a s.w. super. Listeners are unable to distinguish the fundamental frequency from the relayed frequency.

Visitors to the club are always assured of a hearty welcome, and all who are interested are asked to get into touch with the hon. secretary, at the above address.

### NORTH SHORE ZONE NOTES. A.R.A. (N.S.W.).

Another month has slipped by, and with it conditions have gradually changed on all bands. The most improved of all has been 14 m.c., where from mid-day to 5 p.m. W and VE signals are consistently heard. Yank fone reaches its peak around 3 p.m., and one hears such well-known calls as W6CNE, W9LD, coming through at R9. The band is dead at night, however, and one must turn to 7 m.c. to work

W, K6, VE, and XU stations. 7 m.c. is inclined to be patchy, and so 3.5 m.c. is gaining in popularity. On this band the QRN has lessened, and 80 should prove a great hide-out for the boys this winter. 28 m.c. has failed to keep going, and activity has slackened off there.

Looking around the gang, we find 2DR rebuilding a hot new rig—59 co 46-pp 210's. Don still skeds 5FM—they have had almost 100 QSO's now. 2DY has a car, and the accessory that only allows him one arm to drive with Hi. Still, it's a common enough complaint, eh, Don? Dave, 2AE, is building a 20 mx outfit, and still persists in climbing his 70 ft. stick at night to adjust the sky-wire. Hi. 2LA comes in with a wallop. Also 2SV, who uses 4 stage to feed the Zepp. Jack, 2HG, can't work the Yanks fast enough—on RV218 with 30 watts does the trick. Ask him how the South Americans come in. Hi. In Lane Cove, 2VM is the only consistent ham now that 2KJ is rebuilding. Keith uses 80 mx fone to advantage, and yet finds time to shake a festive toe at the local dance. Hi. 2VG is trying his hand at sailing, but often warms his 211 up to raise DX. 2VP puts out with SE 46's. 2HA has excellent quality music, but his speech needs clearing. His CW is T9 and fb. An old-timer in 2JP makes a comeback, and can be heard agitating 20 mx with a nice sig. Another ham call has gone to the commercials, this time 2KA. Let's know your new "sine," Paul ob. The "Big, Bad Wolf" has come back to the fold, and Bill 2HZ is shoving a nice sig out from his Neutral Bay QRA. The novelty of married life has no doubt worn off a little. Hi. The Crow's Nest Evergreens, 2LZ and 2HY, are relaxing after a hectic time on 10 mx. "Believe it or not—Mr. Ripley"—Con is becoming keen on xtal control. Hi, Hi. The sniggle snuggle at 2WW has been completed, and Bill has no trouble with local QRM now. He has a flair for finding 2nd ops. who can grind crystals. Another lad with a new static-box is Robert, 2SS. He is making a T.R.F. job, and, with a 2A5 in the output, should have no trouble in hearing DX. Recently collapsed when J2HQ gave him QS T9 R9, Hi—on his 45's. Here at 2VQ radio has had to play second fiddle—usual reason, but a good reason. Hi. Have you heard 2JE on 80 mx.? His fone compares favorably with any I have heard here. Down with the elite (?) at Mosman. We find Pete, 2PV, plugging away on his new bug, and moaning about a pirate using his call on 14 m.c. The chap in question has worked a pile of DX, and old Pete is getting jealous. Hi. Still, 2PV has four continents to his credit, so why worry? The brainy lad of the village is 2XC, who, after adding two degrees to his name, still finds time for radio. Ian leads the way with any DX that is about. That poor old tired man, 2FM wondering how to square the BCL's. Don't we all? Alec is building a new receiver, and, believe me, it's an example of fine workmanship.

The speed king, 2HI, recently wrapped his mobike around a tram.

Tut, tut, Fred! He doesn't believe in brakes; so keep an eye on the silent keys, HI. In Manly, 2DA is the most consistent, and has a solid sig. on 7 m.c. that the Yanks never miss. 2HF and 2QK are lads who cause dogfights in the U.S.A. 2IX is a newcomer who enjoys a decent ragchew. Haven't heard from 2AX or 2BS. If you want to see bigger and better Manly notes in here, please shoot the dope across to me.

ATTENTION, Gang! There are 8 hams here, including 2SS, 2HG, 2PV, 2LZ, 2VQ, and 2HZ, who issue a challenge to all of you for a tennis match. Wherever you are, if you think you can towel us up (?) don't be bashful and hide your head behind a 201'A, but get into touch with me. We can arrange the time and date to suit all. The telephone number here is J 6052, so come on, gang, let's get to it. What say?

—J. W. A. PATON (VK2VQ).  
260 Pacific Highway, Artarmon.

### ZONE I. (ZO/VK2PE).

It is a long time since any notes appeared from this zone, but here we are again.

I believe that VK2HV is going to challenge all members of Zone I. to a private DX contest. Well, I hereby accept on behalf of the members of Zone I. The best of luck to you Zone II. chappies; but I think that you will be sparking over that 80 mx Xtal, hi!

Well, here is some dope on the doings on the band. Here are some calls heard and worked during the past two months: VKS, 4CB, 3ZB, 2XO, 2VY, 2KN, 3KI, 2KE, 2WG, 2BQ, 4HA, 2QS, 2PV, 2YF, 2FX, 2FN, 2DQ, 2FY, 2UV, 2JA, 2VJ, 2ML, 2KR, 2ZX, 4NP, 2QC, 2KS, 2HV, 2SQ, 3SB, 4OR, 4RV, 6RL, 5RP, 5HR, 5TX, 7CK, 2YW, 2PX, 4NG.

4CB is now putting out some very good fone with his new Xtal rig. Had a MOPA before that.

4RV is now back on fone, and is now using a MOPA with Telefunken; is putting out a VY FB sig. too.

2YW romps in here at about R8 to R9, and sounds like a BC station. Hi! 2 VJ is also putting out FB fone. 2DQ putting out good fone, and boasting about his DX. Remember your first yank, Dud?

WIGF only uses 300 watts to his final stage! 3SB uses a three stage rig, with 20 watts and telefunken modx. Heard VKZ again to-night. Haven't heard him for about twelve months previously.

2PV will soon have a ten toob SS super. You will just about need 1 k.w. input to keep pace with your RX OC. Hi!

2CR indignant about his call being taken for the new regional station. It is a bit hard!

2FX says that if you want a local ragchew all you need to do is to call CQ DX any night, and you can raise any local chappie you need. Hi, hi.

2WR putting out excellent quality fone, but seems to be troubled with harmonics on the BC band.

Heard 4LW on the BC band this morning, and he came over better than some of the broadcast stations.



2ML uses anything up to a 300 watts input. Oh, boy! for a 852! Hi!

2VY uses a Hartley with loop fone, and the quality is surprising.

2ZX is complaining because his 46 FD won't stand up to the 600 volts on it. Hi, hi! Did you expect it to OM?

4NP is using a MOPA rig, with a 47 MO ES 45 PA.

## ZONE II. (ZO/VK2HV).

### A CHALLENGE.

On behalf of the members of Zone II. I do hereby challenge Zone I. to a VK-ZL contest.

(Signed) HARRY HUTTON.  
VK2HV.

The rules to be as follows:

1. The contest to be held over two week-ends in July, from 6 p.m. Saturday, July 13, until 12 midnight, Sunday, July 14, and again from 6 p.m. Saturday, July 20, until 12 midnight, Sunday, July 21, 1935.

2. The power input to the last stage shall not exceed ten watts, either on CW or phone.

3. Licensed amateurs in Zones I. and II. only are eligible to compete, membership to A.R.A. not essential.

4. Contest to be limited to the 40 and 80 metre amateur bands.

5. Second operators will not be allowed unless the first operator is engaged in his regular employment.

6. For CW, points will be awarded as follows: For contacts with VK2 or VK4, one point; VK3 or VK5 two points, VK6 or VK7 three points, and with ZL 1, 2, 3, and 4 four points. If a competitor's phone is QSA5 at the other end, double points will be awarded.

7. Only one contact with a specific station on each of the bands during each week-end will be permitted.

8. The maximum number of points resulting from any single contact shall not exceed eight points.

9. Logs must be to hand at either VK2PE or VK2HV before August 13, 1935.

10. The prize, an 80 metre crystal (not a spec. lense) to be donated to the winner by the contestants of the losing zone.

11. The judge's decision to be binding in case of any dispute.

There's no doubt about the antenna being the secret of working DX. Both 2HV and 2ZP have proved this to their entire satisfaction. With their antennas running due north and south no DX could be raised. When they were altered to run east and west, however, Yanks could be worked with inputs as low as 4 watts, and R7-8 reports were not uncommon.

The rig at VK2ZP is still Hartley-210. It was almost an M.O.P.A. the other day, only it didn't MOPE. Arthur's second operator, Joe, has been on 40 metres quite a lot lately, and if he keeps improving at his present rate Zone II. will have a new ham ere this year passes. Checking over the log at 2ZP for the last two years revealed that 75 per cent. of the reports received had been given as T9.

VK2CR has been on 40 metres over the last few week-ends. Toddy and

Jack have very good quality phone, and receive some FB reports from the far north. The transmitter is a four-stage job, and the RX is a four-tube TRF. This station should be a decided asset to Zone II. in the VK-ZL contest. QRP up there, you chaps.

VK2DD, of Tamworth, has good CW, but the phone still needs clearing up.

VK2GU has been QRL at station 2TM, and has not had time yet to pound brass.

VKS, 2UR, 2WT, 2JF, 2JD, and 2NF are QRT.

Eddie, of 2KN, has been rebuilding, and by the time these notes appear should be on with FB phone and CW. The rig is to be Xtal.

VK2KR, the winner of the last inter-zone contest, will have to work hard for the Xtal, as it looks like every chap in Zone II. has his eyes on it.

Mac, of 2ZH, has not been heard on 40 for months.

Ron, 2RV, has been heard on phone. QRO yet, Ron?

VK2XQ, the old John, is sticking on 80, and gets his share of the QSO's.

VK2HC, 2BE has not been heard on 40, so guess he is either on 80 or QRL with B.E.R.U. notes.

VK2HV has forsaken SE for CC, and finds QSO's much easier to get. The line up is 46, 46, 45, with about 3.5 watts input on fone and 6 on CW. The Xtal in use is one that was punctured last year; the punctured end was cut off and the edges smoothed up, and the rock oscillated better than before it was blown. Take my word for this, chaps. Don't blow yours just to try it.

Well, that's about all for this month. Don't forget your subs. for "A.R." Don't forget to polish up the gear for the VK-ZL test, and don't forget those Zone notes.—73.

## ZONE VI. (VK2QA).

Conditions on 20 are falling off, with the exception of W fone stations, who are coming through in the afternoons, about R8, and appear to be fairly easy to contact. We haven't listened for DX on 40, but the number of fone stations operating during the daylight seems to be on the increase—some very good, and some not so good. A few years ago a chap could be excused for trying loop modulation on a self-excited oscillator, but in these times of advanced modulating technique and stabilised oscillators, there should be no excuse for those kind of fone signals.

Conditions on 80, as far as local night contacts are concerned, are not too good, qsb and skip being very pronounced, although the ZL and W fone stations come in quite well, which seems to suggest that more use be made of 160 metres for local QSO. There is quite a fair piece of territory available there, which, we believe, could be used to advantage during the winter months.

Read with interest 2ZH's remarks regarding 2MO being able to give the A class stations a few lessons regarding transmission and modulation. If Bill would expend a little of that super adjusting and operating ability in try-

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ing to eliminate his third harmonic (which comes in here, about 300 miles away, almost as loud as the fundamental). Then let the engineers in charge of 3LO, 2CH, and 3MA know how it is done, we would be very grateful, as harmonics from all abovementioned stations interfere with our transmissions on the 80 metre band; and, as I mentioned earlier, in these enlightened times, such irregularities in supposedly good transmitters should not be tolerated.

## WESTERN SUBURBS NOTES (Z02MY).

Apologies are hereby offered for comments in this column, last month, with reference to QSL cards being posted without stamps. The Bureau mentioned was in no way to blame, as a bundle of cards posted to the Sydney Bureau became broken in transit, with the result that those cards bearing addresses on them were sent on by the postal officials, and charged as unstamped.

VK2EW, of Gladesville, shoves out a hefty signal, and also nice fone, but hardly sounds T9 here.

2PT heard on very seldom, but occasionally after some DX on 40 MX in the evening. Still dabbling about on 10 ES 5MX.

2FD been very QRL, building a S S S, but having a bit of trouble with the HF oscillator, and also with 2ZH's Super.

2OD, after being absent for quite a time, was heard on 40 with a nice T9 QSA 5R9 sig. Tom does not seem so active since 2XU has departed. Perhaps he misses the QRM.

2FO still trying to make up his mind as to the respective merits of a Half Zepp and a Hertz. Appears to spend most of his time hauling at guy ropes.

2IO still pushing out a nice T9 signal on 40 MX, but complains of the QRM from R, the now crowded Western Suburbs gang,

2PK silent for the time being, as, working on night staff, spends most of the day getting shut-eye. Hopes to resume soon with a three-stage rig, using pair 210's in the final.

2GR, once our star BCL entertainer, has been on the sick list again with an unfortunate recurrence of his old illness. We all hope you will soon be well again, Alec, O.M.!

2PG still QRL with work, but rebuilding piecemeal. Expect any time to hear a R Max signal bust through, wigning 2PG. Ronnie's favorite color is green with a black band, but, if you value your life don't ask him why!

2NP and 2NJ both missing for many moons. Sounds very much like YL's again. Did I hear 2YP say that YL's were more interesting than hamming? Don't believe it, O.M.; you ask some of the hams who possess about 6 2nd ops.

Wonder how much power the G's allow their portable stations to use? Early morning, on 2/6/35, G-2-MN-P, calling G-5-ZX-P, was only QSA, R7-8. Probably tack their portable on to the nearest power-house.

Will someone tell EA-1-AE who won the prize for EA during the Centenary

Test? I've tried half-a-dozen times to find out, but nobody knows.

Old friends are starting to bob up. Had pleasure of QSO with 4JU and 4PK on Sunday, first time for about two years. 4JU reports sigs. from DX are improving in VK-4, and 4PK reports QRM from fone stations ditto. Same applies here.

## NEWCASTLE AMATEUR RADIO CLUB NOTES (BY/VK2RG).

At one meeting recently a new departure was made, when a mock trial was held, 2SO being charged with having no freq. meter or log book, and transmitting third-party messages. Judges were 2ZW, QS, and FN. Crown prosecutor 2CS; R.I., 2MS; assistant R.I., R. Montgomery; counsel for defence, 2KG; and witnesses, 2RG and UF. Great was the hilarity during the proceedings, the gang rising to supreme heights of wit. Eventually 2SO was found guilty, and sentenced to pound brass on the local ferry.

2ZW and 2ZC are both rebuilding rack and panel, and their completed rigs should be something out of the ordinary. Both will use Tri-tet exciter units. 2RG installed Tri-tet recently. Rebuilding is spreading like a disease, as 2UF has put his rig in a steel frame. He is still working W consistently, so getting rid of the haywire can't have done any harm.

2CS seems to have had a recurrence of his old trouble of DXitis. Lionel has been on a lot lately, and usually lands what there is about on 7 MC. Incidentally, 2CS gave an interesting talk, recently, on "Some Points in Transmitter Construction."

Most of the local gang are going in for 5 MX work, and 2ZW and ZC have been carrying out plenty of tests. Stan is about to instal a parabolic reflector to work 5 MX DX.

## KEY SECTION NOTES.

### C. WOODWARD (VK8YO).

At the May meeting of the Key Section, at which 45 were present, ex-VK5XU (now VK3XU) gave us an interesting account of conditions in VK5. He is now stationed in Victoria permanently, and hopes to get his outfit in order almost immediately.

Mr. Fynmore, one of the early pioneers of radio in this State, also spoke at some length on the days before broadcasting.

The nominations for Council are closing at once, and members are expected to show their interest in W.I.A. affairs by voting 100 per cent. for the Key Section representatives.

VK3BQ has been practically off the air, busy at work on frequency meters. His mast is now up again, and it is hoped that it stays up this time.

VK3DM has been rebuilding, and expects to be back on the air again shortly.

VK3RI is changing over to C.C., using 47, 46, and 10.

VK3JH is on the air at last. VK3UK has been very busy on R.A.A.F. skeds., and is handling VK3ML's skeds. as well.

VK3JX is working on 56 M.C.

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VK3ML is holidaying in Perth, and is having a great time.

VK3UW is getting out well on 3.5 M.C., using a quarter wave vertical zepp.

VK3LN has managed to contact VK3, from W6GUH, and was very pleased to hear our sigs. from the other side.

VK3NM is still on 28 M.C.

VK3RX, from Gunn's Gully, has a really new tube for his transmitter.

It is an Eimac 50 T, and together with a directional antenna. Cedric expects to frighten all the receiving tubes in his neighbors' sets when he gets going.

VK3QJ and VK3WP live within 250 yards of each other. How unfortunate! (for them).

However, when Cedric starts up they will both be shifting to Darwin to avoid QRM.

## SHORTWAVE NOTES.

By Assistant Secretary.

Now that this section has been asked to co-operate with the other sections on 66 M.C., things are on the move. The council has consented to send along a number of lecturers, to demonstrate some receivers and aerials suitable for 66 M.C. The first of which will have been completed by Ivan Morgan (3DH) by the time this goes to press. It is intended to hold these lectures on the fourth Wednesday in the month, so here is the chance for the hams to get some ideas for their receivers and aerials.

Our popular secretary, 3XJ, has just returned from a holiday in VIS, where he had a good time with the YL's at Bondi. Hope you have a good excuse, Georgie, old boy, when you face your own YL. Maybe next month 3XJ will QSP his doings in VIS.

At our last meeting our popular chairman, Mr. Arthur Mildern, delivered a very interesting talk on "The Workings of the Ultra-short Waves."

As these notes are written we hear that Mr. Jones is not in the best of health. Everybody joins me in wishing him a speedy recovery.

Last meeting a list of places to visit was drawn up, the first of which will be to 3UZ, who have installed new studios and transmitter. Arrangements have been completed for a visit to this station, 3UZ, which will eventuate on Wednesday night at — o'clock, July 24.

## NORTH - WESTERN NOTES.

By VK3CE.

In view of the fact that this section notes have of late been few and far between, and not hearing anything of our good friend Bill (3WE), I take it he must be QRL. So with the consent of a few of the gang I am sending the following few notes:—

VK3KR has converter es is now 100 per cent. A.C., opr. only on QRP as yet, es waiting on a trannie. It will give some 750 jolts. However, pur. is not a great asset to Ken., as on QRP he works DX as easily as buttering the morning slice of toast. Has done FB work on 20 es 40 MX over last few weeks.

VK3OR heard on 80 MX again with same FB fone; packs a hefty sig, on

AA band; also been landing DX fairly consistently.

VK3JV—Activities unknown; has not been heard for months at AS station.

VK3KI—FB T9X note on 80, heard trying loop nod one nite. Quality not bad but depth!!—Nuff sed. Uses RK-20 in PA/FD; es 3.5, es 7 MC Xtals.

VK3CD—Heard with T9 sig. on 80. John is hoping to put fone on this band soon.

VK3TL—Putting out very nice fone on 80; es working WsJs; es KAs on 40.

VK3ZK, Swan Hill's radio rascal, es telefunken expert, has good fone, with plenty punch down AS way. Building new rig, with 47 CO, 46 FD/BUFF; es 46s, PP, PA.

VK3WN—Struggling along wi a min. of gear, is pur fone at times FB, CW, T8, PPC. Bad luck to have a by-pass go west, and take a 245, es his milliam/meter for company.

VK3HN—A new ham, with PDC sig. from Hartley rig; es RX tube; trying grid mod.

VK3NN. — Again working Sunday a.m. skeds with 3KR; es 3CE, fone FB until put his 250 mod. to by-by; es not so good while QXR on new tube.

VKs 3PY, 3CH, 3LH, 3WE.—Whereabouts unknown, maybe they come on in the wee sma' hours. 3WE heard on 200 Sunday midday with good quality sigs.

VK3EP.—The lonely voice of Rochester heard in weekly hook-ups with 3ZK, es 3DW. Building new rig in readiness for AC, which is coming in the near future.

VK3DW.—Comes in very nicely; plenty punch, es good quality on his 80 MX sigs.

VK3HL.—Heard on Sunday morning skeds with 3KR, es 3BQ, CW, O.K., but fone very indifferent; believe trying out telefunken.

VK3CE.—Now has full wave 40 MX zepp; es getting good reports on 80 MX, with 201 ACO, es TC04/10 PA as the RF squirt.—73.

## WESTERN DISTRICT NOTES.

(By SHG/30W.)

With the coming of the cold weather, together with very patchy conditions, activities on all bands are much less, 14 MC possibly being the most popular band. 7MC is practically useless after dark, with 3.5 MC very little better, as signals fade nearly right out after sunset.

3NQ reports QRM on 14 MC the worst ever experienced; heard FB8C, OH3NP, and a W7 all on top of one another, calling CP! Has changed to 3.5 MC, and works ZLs.

3GQ has been testing low-power against high-power, and finds reports on QRO are very little better than with QRP; in no case was the difference more than one point. This test has been tried with stations in four continents. And still the gang yearn for 852's and amps in the aerial!

3GC's PA tube has departed this life. He has purchased one of those 8/9 plus sales tax type 210's for the job.

3NK, using a single 245, has worked five continents.

3KX has been on phone on 14 and 7 MC, having worked quite a number

of Yanks on the former band.

3CK, who has been QRP with dry batteries, is considering trying stepping up DC from accumulator by means of a Ford coil vibrator as make-and-break, and a transformer.

3OR has a gold-mounted frame for his W.A.C. certificate, which he received lately, fb.! 3HG also received the much-coveted certificate a short time ago.

3KR is now completely AC operated, having discarded all his DC gennies and batteries.

3NN heard on 3.5 MC; phone with very badly adjusted transmitter, his carrier spreading 50 KC round the band.

3GZ heard on 8.5 MC with FB T9 sigs.

3KW changed to 7 MC from the "Publicity Band," but hasn't been heard on much.

## GOULBURN VALLEY NOTES.

By 3DW.

The main event this month was a trip to Rochester by 3CN, 3SN, and 3DW.

Faring forth in DW's Morris the boys arrived at 3EP's shack at 1330 hours on Sunday, May 26, and a long and lusty CQ on the horn brought Ted out at the double. Although the gang has had many FB QSOs, this was the first personal contact, and after introducing ourselves to our host (who also acted the part of butler), were ushered into the home, and there met Mrs. Perkin and the two Young Ops. The next point of contact was the shack, and there we had the pleasure of inspecting the gear—a nice, tidy arrangement, too. Ted informed us his power was approximately 8 undernourished watts, and promised us at least 25 big fat watts when the AC is installed.

EP and DW started a chinwag that threatened to last forever, so Snowy and Dud inspected the town and the YLs for about an hour, and reported most everything QSA5, but stated that there were too many T9 Xtals about. Evidently EP is doing a good thing in the Xtals! It's not Easter, either!

As usual when you are entertaining visiting hams, the bands suddenly die. This day was no exception, and although we all called lustily into the GE home broadcaster, and pounded brass, not a soul could we raise; so, after pleasant though forcible remarks about conditions, adjourned for afternoon tea. And, say, gang! don't all rush to EP's at once, but those sausage rolls were the berries. (Congratulations, Mrs. Perkin! We thoroughly enjoyed and appreciated our visit.) Time certainly flies, and before we had become reasonably settled O.M. Time decreed we should wend our way homewards. So, after bidding our hosts good-bye, cranked up the Morris, and with bitter tears of regret streaming down our faces set out on the homeward path—and what a path! We lost our way! Seems quite a habit with hams, this getting lost! However, we eventually met the farmer's daughter (and the farmer), who showed us the way out—of our difficulties,

and so we proceeded for a distance of some miles without further mishap, until 3SN surprised us by asking did we have any lights. Further inspection showed that the ammeter was not functioning, and so with many hums and ha's (WX was cold), we bundled out, to find that one of the battery lugs had broken off. Temporary repairs were soon carried out, and we reached Shepparton, roughly three hours after leaving Rochester, a distance of fifty miles. HI!

At the present time 3EP is working on his new power supplies; has the transmitter built. This consists of either a 47 or 46 for the CO, 46 doubler, and pair of 46's in parallel for the PA.

3CN has built up the same combination, but struck trouble with the Xtal holder. Top plate became warped through overheating when soldering the connection to it, so necessitated re-grinding the plate. Xtal should be to hand shortly, and we will have Snowy going full bore by the time these notes go to press.

3SN has completed his rebuilding has 2 complete Xmtrs. in the same frame. 47/46 for 3.5 MC, 47/46/46's parallel for 7 MC. Common power supply.

Dud is also adding pair of 2tens in PP to the 7 MC rig, so should get somewhere. 3DR does very little ether busting—is rebuilding again, and sure getting that rig into a small space.

Several QSO's with Scanty Jimmy (The Voice of Dynamic Personality at 3ZK) have resulted in Jim joining the G.V. Section, and with 3EP we now have all that remains of the old original Chain Gang.

By the way, ZK rustles silks and satins (or is it shirts and trousers) in his spare time. Transmitter is 46 Hartley Osc. and 210 PA. telefunken modulation, using PM4DX modulator with 46 speech amplifier and PMG mike. Receiver is, as Jimmy so slipperily put it, over a QSO one day. "The Wild World Two." HI! Uses 58 and 2A5. Input on fone 6 to 8 watts.

Had 3XJ at Swan Hill, recently, and George, doing as Rome does, had to stand it until 3 a.m. HI!

Stations most heard up there are: 3EP 3XJ, 2EX, 5IV, 7RC, 2QA, 2HU, 5HD, 5KL, 5WJ, 3WE. Haven't heard much of Bill lately. What's the matter, O.M.? Alf's power supply still punk, I suppose. HI! 3WN, 3CE, 3TL, 3DW usually about, with numerous others.

3DW has gone across to the Tritet exponents, and so far is perfectly satisfied with results on the 3.5 and 7 MC bands, using 3.5 MC Xtal, but considers that a 59 without further doublers is useless for 14 MC. 59 now driving a 210 on both the 3.5 and 7 MC bands, with excellent results.

At present engaged building a unit with a 59 and 46 as the first two stages of a three-stage rig. This unit also fits into a portable, and when not in use this way transfers to the home station to drive a 210 final. It is proposed to use the 46 as doubler for 14 MC or as buffer for 7 MC.

Quite some correspondence has pass-

# Amateur Radio

ed between 3WG and 3DW recently in reference to the W.I.A. A number of points have thus been cleared up, with the result that every effort is now being made to have our G.V. Section 100 per cent. representative of W.I.A. So far results are very encouraging, and we expect to start the new W.I.A. year very near our goal.

I do not know the position in other Sections, but would suggest that those hams responsible for Section Notes check up and see if their Section is 100 per cent. W.I.A., and if not then **GO TO IT! YOU WRITE THE NOTES! NOW WRITE UP W.I.A. MEMBERSHIPS!**

Had the pleasure of seeing VK4YL and her father in a newsreel on Saturday, June 15. VERY FB4YL, but where did the key-clicks come from?

Two more budding hams at Girgarre, near Rochester, coming along under the careful guidance of 3EP, who sends them slow Morse practice on Sunday afternoons, and answers the numerous questions that are fired over by post. Ham spirit so much talked about is ably demonstrated by Ted's sterling efforts for these fellows. Also, we learn of Mr. Kruger, of Charlton, another AOPC aspirant. Our best wishes. O.M.'s. 73 from the G.V. boys.

## QUEENSLAND DIVISION NOTES.

The last general meeting of the Queensland Division, held at headquarters, Heintorff House, was exceptionally well attended.

It was proposed to commence a new series of student classes as from July 1.

During the coming year a number of cups will be competed for, the first contest being in the form of a VK4/ZL contest, to be held on the week-ends beginning with July 13 and 20.

The N.Z.A.R.T. has kindly consented to co-operate with the W.I.A. in this respect. Besides the cup, attractive pennants will be awarded to those members gaining second and third places. See Operating and Experimental Section for full rules.

VK4RY is away in Toowoomba at present, but we hope to hear him on the air again in VIB shortly.

VK4LB—Still using his P.P. 46's with excellent results. Joe has been rather QRL lately!

VK4UW is the latest addition to the "U" gang, which comprises VK4UU, VK4US, and VK4UR. This gang is exclusive, and all members are 100 per cent. QSL and DX.

VK4AP, after working W6VQ on 28 M.C. has gone back to 14 M.C. and is wiping up the DX up there, and getting swell reports. That 800 sure puts out the juice, Alf!

VK4EL has been heard working Yanks on a bug. The dots are rather profuse, but the keying is quite readable.

VK4RC seems to have pulled out now that he is W.A.C., but it is rumoured that his RX is punk.

VK4EN puts a solid signal into VIB some nights from Longreach. Eric can sure handle that bug. The Yanks think so, too!

VK4KA getting out swell with his

four 45's, and works plenty of DX. When are those RK-20's going on, Syd?

VK4AF, Clifton, has been QRP on 2 watts, but has done some FB work with it, working South Americans, etc. He is very interested in 56 M.C. work.

VK4EI experiencing a run of bad condre, and not working his usual parcel of DX. Hope it clears up soon, Roy!

## WEST AUSTRALIAN NOTES.

By VK6CP (received by radio).

A shack meeting was held at VK6LJ's on May 30, and it was very pleasing to note that some of the older hams have returned and promised to take a further interest. Considering the weather conditions a fair roll-up attended. Last, but not least, our honored guest, VK3ML, and his escort and bodyguard, VK6MN, arrived, and after a general introduction VK6LJ called upon the president, VK6BN, to spout a few words of welcome, to which VK3ML replied. Whilst on his feet Bob expounded some dope on this magazine, and also the working of the VK3 Division. This was followed by a general discussion amongst the lads present, and several copies of "Amateur Radio" were handled and earmarked by spite, etc.! I might mention that those said copies belonged to VK6LJ himself, and are treasured and coveted by him, and spite is usually against the rules of book handling.

During the course of events a cine show was put on by VK6JJ. The films included one of the group on a field day and social gathering at Penguin Island. Those who could not row had the laugh over some of the gang in the persons of 6LJ, 6RL, 6CX, and 6LY, when the film showed them struggling in vain to strike the water with the oars. You will notice that I said "struggling in vain"! The other item of interest was the supper, which was brought along by the gang in the form of a pound night, and duly delivered during the theatrical display.

Concluding the eats and the running of Mickey Mouse on a celluloid strip, the group gradually dispersed after wishing the visitor a pleasant trip back.

Those present included 3ML, 6BN, 6WS, 6KO, 6CB, 6BB, 6MN, 6JG, 6LY, 6JJ, 6JS, 6KM, 6FH, 6WO, 6WR, 6LJ, and Mr. Wignell.

## VK7 NOTES.

By 7PA.

(H. M. Moorhouse, hon. sec., Divisional correspondence, Box 457E, G.P.O., Hobart.)

The annual general meeting and its associate functions were successfully concluded during the long week-end, June 1 and 2.

The meeting took place in the Club Room, at 95 Collins Street, commencing at 7 p.m., Saturday, June 1. Annual report and balance-sheets were read and confirmed, and a vote of appreciation was extended to the officers for the year just ended.

The secretary's report showed a very favorable position as regards membership and general activities, but unfortunately the same cannot be said for

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that of the treasurer, as so many members failed to make themselves financial. At this juncture it might be well to state that this year the membership list will suffer in consequence if this position is not rectified within the time set out in the articles of association, as it is definitely intended to apply these articles covering this matter, as other efforts have been to no purpose.

The Council for the ensuing year has not been changed, excepting the office of country member, where Cliff Parish (7CP) has replaced Jack Wallis (7JW). Owing to the retirement of F. W. Medhurst (7AH) from the office of president, W. T. Hooker (7JH) was elected by ballot to this office.

It is assumed that the old Council was entirely satisfactory, no other nominations, except that previously stated, being received. It goes without saying that our secretary for the past year is continuing in that office, and we hope that he will keep up the good work. Jack Batchler (7JB) is retaining the offices of QSL and traffic manager, and hopes to enlist an assistant outside the city area, for traffic, as QRM is prohibitive of satisfactory operation at some scheduled periods at his QRA.

A smoke social was conducted in the room immediately after the meeting, and, although rather poorly patronised, was voted a huge success by all present. Several musical and vocal numbers were given by friends and members, and 7PA's speech amplifier was made available to fill the dull spots with recorded numbers, and was mainly used during the clearing-up, afterwards.

Two presentations were made during the evening, the first being a "surprise packet"—at least to the one concerned—in which the secretary was asked to accept, as a token of appreciation from members for his untiring work in general and the 11th Annual Convention arrangements in particular, a Weston 0—1 M.A. meter, suitably inscribed. The surprise proved to be so complete that a response was almost beyond him for the moment.

The second, a cup, also suitably inscribed, was presented to Ron. Cannon (7RC) for gaining highest points for VK7 in the Victorian Centenary DX contest; but owing to no Northern members being present, the secretary was asked to accept it on behalf of 7RC, and forward same to him at a later date.

At the conclusion of the evening a vote of thanks was accorded the visitors for their valuable assistance with the entertainment.

A field day was conducted on Sunday, the 2nd, and, although the weather was frosty and bleak, those who took part had quite an enjoyable outing.

The hon. secretary and 7JH took charge of the transmitter for the day, and were on the road soon after 8 a.m., and were hidden and on the air to schedule, but experienced some trouble with the portable power supply before going far, so were compelled to go off the air and move their position to where the A.C. supply was available,

having carried an emergency power pack just in case.

The final location was at Plenty, approx. ten miles outside New Norfolk, the starting point. The hunting party consisted of only four cars, each equipped with receivers, and the 80 meter band was chosen, as usual. Only one car—Mr. Burdon and party—was successful in locating the transmitter without opening the sealed directions given at the start. The others, Messrs. T. W. Hopkins and party, N. Gillham and party, and 7PA and party, submitted.

The transmitter closed down, perforce, shortly after 1 p.m., as the local supply cut off. This tricked some of the troops, as their directions didn't allow for the second position, and directions couldn't be given before closing.

After having lunch some of the boys amused themselves with a football, and, tiring of this strenuous pastime, finished up by mingling with some of the YL's of the district. Too bad that you had to be lugged off home, boys!

All who are acquainted at all with our Grand Old Man of Radio (7AH) will be sorry to hear of the passing of "Pop's" life partner, Mrs. Medhurst, and will join with us in extending our deepest sympathy to him in his hour of sorrow.

(Continued from page 9)

The selectivity may be determined experimentally by placing an R.F. ammeter in the parallel resonant circuit, and noting the wavelength at

3

which the current is  $\frac{1}{10}$  of the current at resonance.

Then substitution in equation (11) solves the problem. A selectivity of 1000 to 1500 is very satisfactory in practice.

**Example.**—What must be the inductance of a coil to be used in a parallel resonant circuit of selectivity 1000 and impedance 500,000 ohms at a wavelength of 40 metres?

$$\text{Here } Z = 500,000$$

$$h = 40$$

$$S = 1000$$

whence, from equation (14) the inductance required is 6.7 microhenries.

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$$L = \frac{1}{Z h} \frac{40 \cdot 9A + 10B}{w^2} \quad (8)$$

$$L = \frac{1}{2959 S} \quad (14)$$

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## R.A.A.F. Wireless Reserve Notes

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### FEDERAL NOTES BY THE C.O.

For several reasons the Reserve has lately taken a huge turn for the better in more Districts than one. In Queensland the co-operation given to the R.A.A.F. during the Survey flight had much to do towards the renewed enthusiasm of the members. Then, again, the D.C. in this District is concentrating on exercise watches and the enrolment of new members, six of which are to be forthcoming. In VMF the members went out of their way to give 1A1 a 100 per cent. time during his short stay at the home of 6Z1.

Much misunderstanding of procedure was cleared up in three lectures, and now 6Z1, 6Z2, and 6A2 rank amongst the best of the Reserve's operators. Here, again, promises are given for increase of membership, amongst whom are VK6JE and VK6AT, at Kalgoorlie. It looks as though it will not be long before a complete Section exists in that city.

6A3 at Wagin and 6A5 at Northam, appeared on the air for exercises with 1A1 from 6Z1's shack. Taking it all round, VMF will soon be challenging all other Districts for efficiency.

The recent Laverton Camp had effect on VMB, also, where activity is increasing rapidly, the main difficulty at present being the impossibility of communicating with all members at the same time on 80 metres, owing to skip troubles. VMC has not this difficulty to contend with, owing to its size. 2A5 is acting deputy for Federal watches, whilst 2Z1 is working out better schemes for District zoning.

Members will be interested to know that approval has been given for the purchasing of crystals for Reserve work. It is now only a matter of calling for tenders for same, and then they will be in members' hands.

Frequency allocations have been drawn up for each District, so that every member of a Section will be on the same frequency, thus making the work of dial twisting negligible.

The results of the examination papers will show what progress each member has made in the past year, and will allow D.C.'s to reshuffle members accordingly.

### THIRD DISTRICT.

They say that anticipation is always better than realisation, and most of us have, at some time or another, proved this to be true. However, our Reserve Camp must have been the exception that proves the rule, because, although the anticipation was great, the actual realisation far exceeded the hopes of even the most optimistic members. The sad outcome was that VMC nearly ceased to become an active District, as practically every man seemed to desire to transfer to the permanent forces. However, things have settled down again now, but with efficiency at

a level never before approached.

All the vacancies left in Sections by men temporarily inactive and men who have transferred have now been filled, and with VMC5 now fully active we will start the new year next week with high hopes that our most successful year is ahead of us.

The first of the new semi-permanent Section leaders take office on July 1, and in 3A5, 3B3, 3C3, 3D4, 3E1 we have five first-class leaders, who should keep their Sections swinging along excellently. A S/L's bulletin will be sent out each week, to keep them posted with the latest information and instructions, and when we get our new Section crystals the Reserve will then be able to advance in a manner never before possible.

3A6 has been transferred to the permanent forces. Bill is a good man gone from VMC1, but we wish him the very best of luck "down below." We have replaced him with one of our new members, 3SN, the postmaster at Shepparton—a crack operator and a worthy addition to VMC1 ranks.

3A1 has had a lot of trouble with his rig, but everything is O.K. now.

3A4 has been very busy rebuilding the B class station at Ballarat.

3B1 has the flying bug properly, and seems to spend half his time in the air. As he is off the air temporarily he has been replaced by 3AN, Redcliffs.

3B3 is rebuilding his new outfit. He's a real ham, because he has only just finished it.

3B5 very busy on his property at present. Spends his Sundays packing for Tuesday's market.

3B6 has been transferred to the country, and has been replaced in VMC2 by 3GC, Camperdown.

3D6 is now settled down in double harness! All VMC members join with me in wishing her the very best of luck and happiness. She still is one of our most regular stations, so apparently remote controls the kitchen from the shack!

3E1, the new S/C of VMC5, puts out a great signal with a great fist behind it. He will make VMC5 one of the best Sections in VMC before long.

The contest for crack Section for the year 1934-35 is nearly over, and there is a neck-and-neck fight for first place. The winner will only get home by a very small percentage by present indications.

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## Federal and Victorian Q.S.L. Bureau

R. E. JONES, VK3RJ.

By R. E. Jones, VK3RJ Manager.

Interesting details are to hand concerning hams and conditions in Madagascar. M. Bour, of FB8C, states that QRN is too heavy to permit of much work on 7MC, but good results are obtainable on 14MC, even with QRP. FB8IA and FB8C are the only active hams in Madagascar, while there are two active hams in the Reunion Island. Since April, 1934, FB8C has contacted 65 countries, and uses 350 volts on a TB 04/10 in a Mesny rig. Very shortly when additional gear arrives, he expects to get going on 28MC with an electron coupled rig. FB8C is an ardent stamp collector, and his full QRA is:—  
F. P. Bour, Tananarive, Madagascar.

We regret to record the death of Bailey Shaw, W6KBX, of Buena Park, California. In a letter to the Bureau, Mrs. Shaw, mother of W6KBX, writes: "His key is silent, but his work is going on in a better world. God called, and Bailey answered in his sleep. Please let any of Bailey's friends in your country know, especially VK3GQ, VK3DT, VK3MR, VK2GC, VK2FZ, VK2XJ, VK2YL, VK5HG, and VK5ML."

The Bureau is in receipt of several chain letters, originating both in Australia and abroad. It is needless to add that these were promptly consigned to the waste paper basket. Superstitious hams are advised not to waste their cash in sending these letters to the Bureau, as the QSL Manager is not sufficiently avaricious to fall for the "rewards" offered by compliance, nor is he intimidated by the "curses" due to non-compliance.

Cards are on hand at the Bureau, 23 Landale Street, Box Hill, for the under-mentioned Victorian stations. A stamped envelope will secure them:—3AN, AX, BK, BS, CD, CW, EG, ER, EQ, EW, FH, FW, GJ, GR, GW, HE, HR, JG, KI, KY, LY, NA, NG, NW, OD, PC, QP, TA, TY, UJ, WD, WJ, XK, YR, YW, ZC, ZJ, ZL, ZK, ZX; Messrs. NYE, VKRD, and VKYK.

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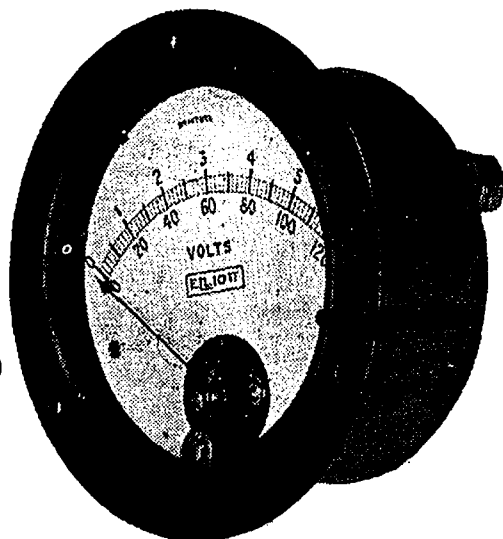
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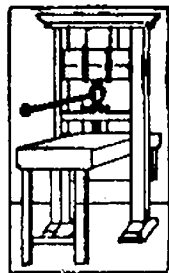
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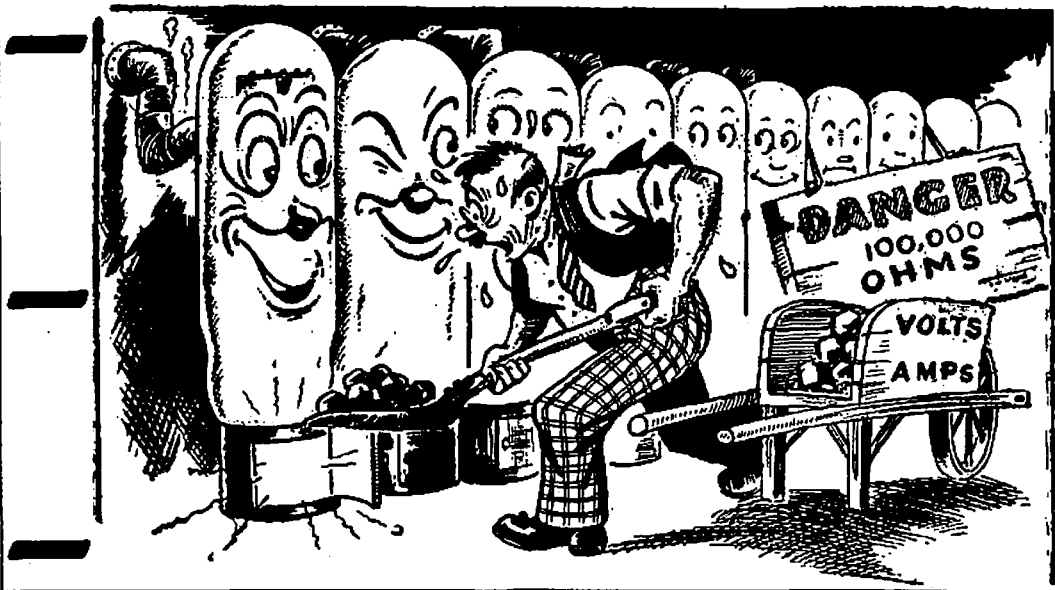
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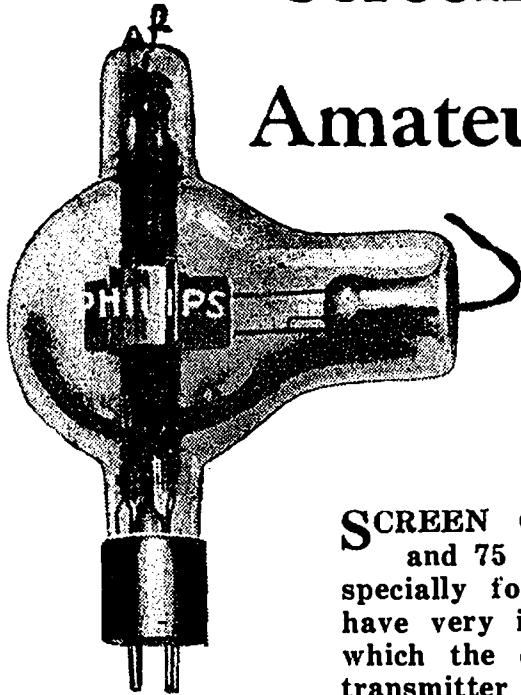
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QB2/75, QC05/15

quarter of actual size

SCREEN GRID Transmitting Valves for 15 and 75 watts have been designed by Philips specially for use by amateurs. These valves have very important properties, as a result of which the construction and adjustment of the transmitter can be greatly simplified. The control-grid and anode of these valves are screened from each other by a screen-grid, thus reducing anode-control grid capacity to a minimum. When used as H.F. amplifier or frequency multiplier in controlled transmitters there is practically no reaction of the anode circuit on the grid circuit, and self-oscillation is impossible with screening outside the valve. Neutralisation is unnecessary, so it is very easy to alter the wave-length at short notice. These screen-grid valves give greater amplification than triodes under the same conditions.

Table A shows the various electrical properties of the Philips amateur transmitting valves:—

### CHARACTERISTICS:

Table A. Type.	Screen Grid Valves	
	QC 05/15.	QB 2/75
Filament Voltage .....	4.0	10.0
Filament current* .....	1	3.25
Saturation current* .....	400	2,000
Anode voltage .....	400-500	2,000
Screen grid voltage .....	75-125	300-500
Max. anode dissipation .....	15	75
Anode dissipation on test .....	20	100
Max. screen grid dissipation .....	3	15
Amplification factor* .....	225	200
Mutual conductance (slope)* .....	1.4	1.4
Int. resistance* .....	160,000	150,000
Anode-grid capacity .....	.001	.02
Max. diam. of bulb .....	50	100
Max length .....	160	210

\* Approximate values.

# PHILIPS

## TRANSMITTING VALVES



# AMATEUR RADIO

Published by the Wireless Institute of Aust., Victorian Division.

Vol. 3. No. 8

1st August, 1935.

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## EDITORIAL . .

### Reorganisation and Reconstruction

Most of the divisions of the Wireless Institute have now passed through that period of activity known to councils, secretaries and treasurers as "the end of the financial year."

Whilst this is in itself an accomplishment—especially if those concerned have been able to show progress for the year—it also marks the beginning of a new period for reorganisation and reconstruction.

The Victorian Division, together with other sections of the Institute, is contemplating radical changes in the arrangement of the various divisional officers, in order to give the maximum number of real workers a share in the work, as well as to see that no one worker has more responsibility than he can reasonably manage.

We note that South Australia is also doing this very thing in a slightly different way. They are arranging a series of internal improvements, in social, lectures, administration, and student group formation.

It is usually found that the councils of each division seem to contain the best workers of the division, who may perhaps do at least two jobs, and in some cases as many as four. This state of affairs does not generally produce a very large measure of success. It is better, we think, to share the work amongst all those available, and so use and hold the interest of as many as possible, as well as maintain a high standard in each department.

### Technical Articles

Some time ago we were told that "Amateur Radio" "didn't contain much technical stuff of any consequence," and, as usual, we set about to reply, "We can only print what the boys send in."

Looking back over these remarks, the Magazine Committee decided to do something about this old question which is ever new, and, with the help of one of our advertisers, who appreciates our efforts and support, we were able to offer last month a very desirable prize for the best technical article published in the September, October and November issues. We are anxious to see that such articles materialise, and would suggest that, if you can't write such an article, perhaps you could approach some scientifically-minded person to help "Amateur Radio" along. We have compiled a list of likely people in Melbourne — University professors, laboratory chiefs and assistants, factory engineers and experimenters—and think that other States might do the same.

You would not be seeking an article for an unknown magazine. "Amateur Radio" is just about two years old now, and does occupy a forward position amongst "ham literature" in Australia.

Remember that oft-repeated statement that "Amateur Radio" is a true reflection of the amateur experimental mind, as all we print finds its source in the "ham" fraternity.

So, if you don't see just what you want in "Amateur Radio," it's up to you to remedy this state of affairs.

### B.E.R.U. Representative Resigns

We note that Ray Carter (VK2BE) has given up his B.E.R.U. activities. He held the position for five and a half years, and rendered service to all and sundry not likely to be forgotten.

Such workers are hard to follow, and provide an example to all. He wants to thank especially 3WL and the following sub-representatives:—VK2YC, 3OC, 4GK, 5GR, 7CH, 6FO. VK3EG is now the main Empire link station, and is keeping up the good work. All letters may be addressed to him.

# Matching Transmission Lines to Aerials

— PART I. —  
(By H. W. BERRY.)

The problem we are going to discuss is how to conduct the energy, which our oscillator is producing, to the aerial system. A method of matching transmission lines, by means of an auxiliary length of line, will be described.

First of all, let us see what happens in a transmission line. If we feed energy into an infinitely long line, it travels forward progressively towards its goal and power will be delivered into the system. If, however, the line is not infinitely long, at some time or other the energy will reach the end. It cannot go forward into space; instead it starts to travel back towards the source, i.e., reflection takes place. But energy is still moving forward in the line, and under these circumstances the two combine to form what we know as "standing waves." In other words, the forward energy will, at certain places, be in the right phase to re-inforce the reflected energy—the two will then add together. At other places the two are in opposing phase and tend to cancel. Thus nodes and antinodes of energy appear along the line.

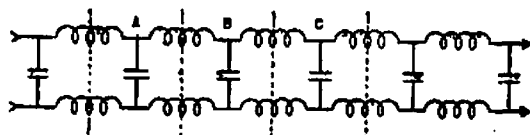
A mechanical example might help to fix this in your mind. If we take a long rope, leave one end free and shake the other, up and down waves appear which are seen to be moving forward continuously. That represents an infinitely long line with "traveling" waves on it. If we fasten the free end and continue the experiment, the waves will appear to be stationary and of much greater amplitude. (To get a good effect, keep the "frequency" of the jerks constant.) That represents a finite line with "standing" waves, due to the reflection from the fixed end.

Now these standing waves are the things we strive for in an aerial system, i.e., under standing wave conditions, energy will be radiated. In a transmission line, however, we abhor them, firstly on account of the radiation losses and resultant distortion of field pattern, if we happen to be feeding a directive aerial; and secondly, because of the serious losses which

occur on the line—dielectric losses and leakage losses at the voltage antinodes and ohmic ( $I^2 R$ ) losses at the current antinodes. If we are going to deliver to the aerial the maximum possible amount of the energy which the transmitter is delivering into the transmission line, the line must be as "loss free" as possible and standing waves cannot be tolerated.

In a Zepp, of course, we have standing waves on the feeders, but we minimise the radiation losses by arranging for the standing waves to be opposite in phase at geometrically opposite points along the feeders. It is seldom that perfect balance is achieved, and in any case, the dielectric and ohmic losses are still present. The Zepp is not a favourite, therefore, where profits have to be made. The DX amateur with low input must also study economy, and a special aerial, correctly fed, is good economy.

Returning to transmission line theory, an infinitely long line may be depicted thus:—



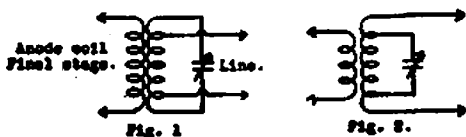
i.e., it possesses distributed capacity and inductance, and therefore presents finite impedance. This impedance is termed "surge" or "characteristic" impedance; it is resistive in character and independent of frequency. Now section C will have the same effect on section B that section B has upon section A, so if we cut the line at A and connect an impedance across it equal to section B, the line behaves exactly as it did before. In other words, we have taken an infinitely long line, cut it into a finite length, and terminated it in an impedance equal to its own characteristic impedance. The line still behaves as an infinitely long line, and energy fed into it will not be reflected.

The characteristic impedance,  $R_0$ , of a pair of parallel wires is equal to  $R_0 = 276 \text{ Log } 10 \frac{2D}{d}$ , where  $D$  is the spacing between centres of the wires

and  $d$ , the diameter (in the same units). For purposes of standardisation and convenience, 600 ohms has been adopted as a suitable value for the characteristic impedance of a transmission line, but there is no reason why you should not choose any other value.

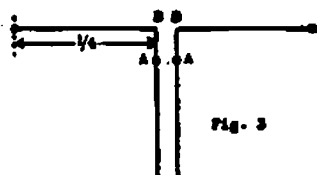
A  $\lambda/4$  aerial has a radiation resistance of about 36 ohms, and at its current antinode, reacts as a 36 ohms impedance. A  $\lambda/2$  aerial has a radiation resistance of about 98 ohms when  $\lambda/2$  above earth, and 60 ohms when  $\lambda/4$  above earth, and at its current node reacts as a 6000 ohms impedance, at its current antinode as a 98 ohms falling to 60 ohms impedance, depending on height above earth.

In order to get maximum transfer of energy between any load and any form of supply, the impedance of the load must equal the impedance of the supply. Our transmission line has an impedance of 600 ohms, our aerial, say, 60 ohms, and the tank circuit of the transmitter 10,000 ohms or more. To get decent transfer of energy between transmitter and aerial, therefore, matching must be accomplished at both ends of the transmission line.



At the transmitter end, an auto-transformer is usually used. If, as in out case, a step down ratio is required, the arrangement might be as in Fig. 1. If the reverse is the case Fig. 2 would apply.

At the aerial end, several means are available. Auto-transformers could again be used, or we could use  $\lambda/4$  matching lines. The purpose of this article, however, is to explain the "stub" or "trombone" method developed by the Bell Telephone Laboratories.



Suppose we have a quarter wave arm dipole fed by a transmission line, as in Fig. 3. Normally a current antinode would be expected to occur at the points B, and the impedance presented by the aerial would be purely

resistive at these points. Due to various causes, however, the current antinode might occur elsewhere, and then, at B, a reactive impedance would be presented by the aerial and tapping our resistive transmission line would lead to reflection and standing waves. Under these circumstances, a current node or antinode must occur along the line within a  $\lambda/4$  of the point B. As you pause to think, you will see that this must be so. Provided we can find this point, we can ignore the fact that it was supposed to occur at B, and base our matching on the fact that it actually occurs at A.

As the impedance at B is now reactive, it is possible to add a reactance in parallel, which has a cancelling effect (i.e., an inductive reactance if B is capacitive and vice versa) and restores the resistive impedance which we desire for matching to the resistive transmission line. It is then only necessary to tap the transmission line on the aerial at a point of similar resistance, and remember, our aerial now extends to the points A, and matching is complete.

An open circuited length of transmission line, of finite length, presents a capacitive impedance, and a short circuited length of line, of finite length, presents an inductive impedance. It is convenient, therefore, to use transmission line for the balancing impedance.

Now the position at which to connect this impedance, and its value, may be obtained mathematically. By means of curves, which will be published later, however, both position and length of added transmission line may be read off at a glance against a figure which represents the ratio of the minimum current to the maximum current in the unbalanced line. A practical method of determining this ratio will be described later.

In the first, third, fifth, etc.  $\lambda/4$  from the aerial (assuming a position of minimum current comes first), the aerial impedance presented is capacitive, and therefore an inductive loop would be required in the position determined from the curves. In the second, fourth, etc.  $\lambda/4$  the aerial impedance is inductive, and therefore a pair of open-circuited capacitive lines would be required. In other words, in every  $\lambda/4$  from the aerial there is a position where matching may be accomplished. If it is not convenient to insert an inductive loop

(Continued on page 11)

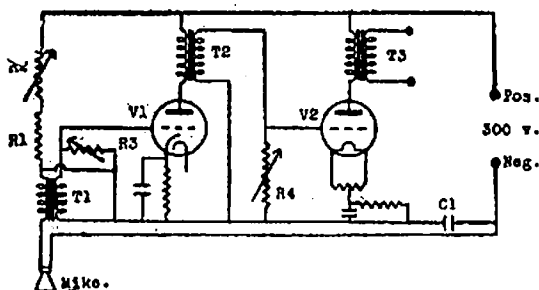
# A.N.A.C. Operated Speech and Microphone Amplifier

By **VK2ER.**

The author became very engrossed some time ago in the delightful pastime of retrenching batteries from the shack.

The receiver constituted no problem, nor did the C.W. section of the transmitter. However, when the keying relay and the microphone came due for consideration the troubles started. The keying relay trouble was dispensed with quite summarily in the manner described in another article. That left the microphone battery. How it went is shown in Figure 1.

A husky rectifier and filter system was built, a few resistors and a couple of alterations to the S.A., and away went the fore rig sans microphone battery.



- R1, R2—Ballast Resistors.
- R3 R4—50,000 ohm variable wire wound
- C1—2000 mfd. electrolytic or 8mfd. do.
- T1—Microphone transformer 70:1.
- T2—10:1 transformer.
- T3—Output transformer.
- V1—227 or similar, V2, 250 or D020.

### The Story.

The rectifier filter system consists of a 360-360-v. transformer, a 282 rectifier, a pair of 8 ufd electrolytic condensers, and a 120 M.A. choke of about 30 henries (more or less). This smoothing proved to be quite satisfactory. A torch bulb and holder was inserted in the centre tap lead from the plate transformer. This acts as a fuse, and also once the system is adjusted the glow of the lamp gives an indication that all is well (or not well).

In figure 1 is shown the circuit employed. V1 and V2 are set with correct bias resistors and R2 adjust-

ted so that the total load passing through the primary of T1 is 90 to 100 milliamperes. The microphone, of course, is a good quality solid back, in this case a Ericsson type, N7701.

The condenser C is a 2,000 ufd. electrolytic which used to be popular some years ago, before the time of A.C. valves, for use in "A" battery eliminators. Tests showed that an ordinary 8 ufd 500-v. electrolytic condenser did quite a good job here, and its capacity gradually increased with use on the low voltage.

When the assembly was first tried out all that came out of it was an R9 hum and a T9 squeal, together giving a fair idea of some S.E. transmitters on the air.

The feed back was removed by stabilising the flux in the interstage transformers with the variable secondary load resistors R3 and R4. The hum, however, beat the band. Eventually by putting the filaments of V1 and V2 on a separate transformer from that supplying the 282 and the 360-360-v. the trouble disappeared. No shielding, earthing, screening or anything logical or illogical would induce the 227, D020, 282 and 360-v. 360 to feed in harmony off the one transformer. So then the 282 and H.T. feed off one transformer and the 227 and D020 off a separate small filament transformer. And that, gentlemen, is about the whole extent of the Hooey.

### COUNTRY 'PHONE TRANSMITTERS.

All country 'phone "hams" on the 200-metre band must apply to the P.M.G.'s. Department and VK3TH for permit and allocation on or before August 14th. This is occasioned by the new wavelengths for National and "B" Class stations, to operate from September 1, 1935.

# A Complete 56 M.C. Transmitter and Receiver

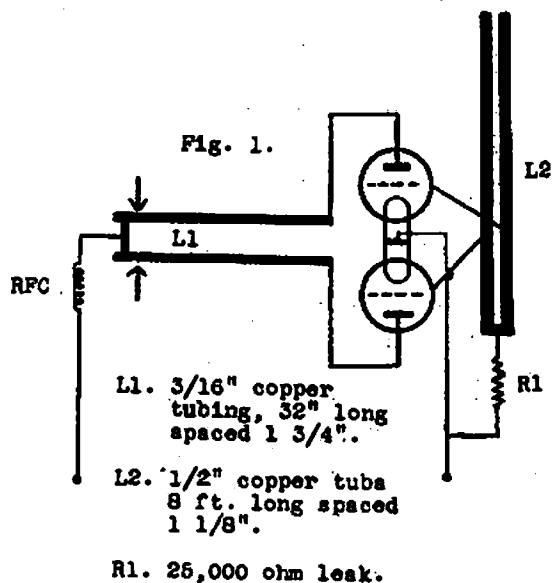
By VKSML, Technical Editor.

There is not a shadow of doubt that 56 mc working has come to stay in VK. The attraction of this band has lately drawn many local stations down there, and it is very obvious that we shall soon have the old trouble of QRM with us just as we have on 7 mc. The utter simplicity of the transmitter and receiver needed on this frequency makes it so very easy to get on the air. The thrills received in working duplex phone, without any fear of worrying the neighbouring BCL, are an incentive to any man to try this band out.

However, one must bear in mind that with the simple gear needed the question of QRM is soon to become acute, and once more our troubles commence. At the same time it is possible to build a station with a high degree of stability in both the receiver and transmitter with as much, or even less gear than that used in the layout described up to six months or so ago. The employment of resonant grid tubes and linear plate tubes has greatly simplified transmitter construction, with the added advantage of providing quite good stability. At the writer's station a transmitter using these tubes gives a signal that hardly creeps even when listening to an overtone of it in a SS receiver on 7mc. Under high percentages of modulation this is a decided advantage, both from the point of view of power output and general stability. Thus, it would be as well for anyone desiring to get the 5 metre bug to start off with a somewhat modern layout which gives both power and results. We might as well look at the QRM problem early in the picture and help to stave it away for a long time to come. Even the transmitter about to be described is by no means the last word in 56 mc oscillators, and much experimental ground can be covered with EC and CC transmitters. Now that new

tubes are being built for this kind of work the problem of doubling and amplifying is not so big. We therefore earnestly suggest that before a newcomer gets on this band that he gives plenty of thought to the design of his gear, with a view to putting out the very best signal possible. The main problem of many seems to be "where is the band?" This question was asked by the writer himself just as the transmitter was completed.

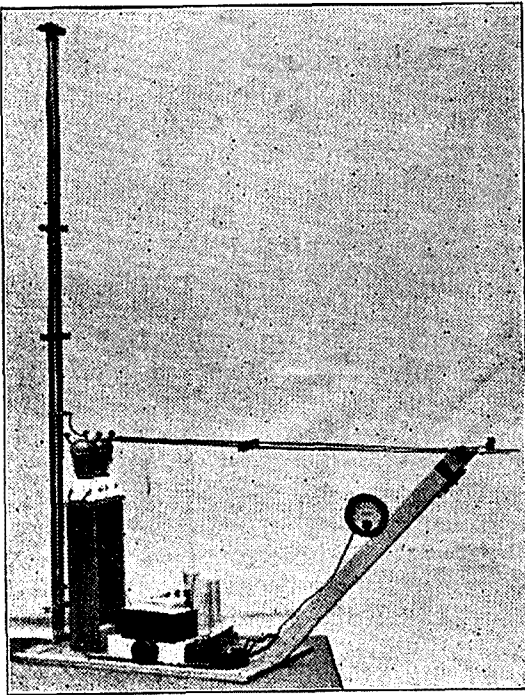
Fortunately, a few hours' experience proved that one could hardly miss the band when using the resonant grid tubes which are cut to quarter wave of the working frequency. When the plate wires are brought into resonance with the grid circuit one must hit the band. That eliminates bug-bear number one. To locate the spot on the receiver is easier still. One has only to fire up the transmitter and tune in the signal. That is, as Napoleon once thought of saying, "Too easy!"



Figures 1 and 2 show the ultra simple type of transmitter that gives decent stability. It requires two tubes, four lengths of copper tubing, one grid leak and one RFC, as well as, of course, a power supply. The transmitter shown employs two

Philips TCO3/5 tubes which are ideal for this kind of layout, and may be used for portable work because of the low filament consumption—4 volts and .25 amp. The “works” hardly need describing because there is so little to it. Constructional and tuning up details are as follows:—

The grid high “Q” tank consists of two half-inch diameter copper tubes 4ft. long, and spaced 1 1/8th inches, centre to centre. A couple



of insulated spreaders may be employed to keep the separation constant throughout the entire length of the tubes. These may be made of any high-grade insulating material. One end of the “trombone” is shorted and connected to the centre tap of the filament. The grids are hooked on about one-third of the way up from the shorted end by means of some kind of firmly gripping clip. A couple of voltage divider clips were knocked into shape for this transmitter. The plate circuit includes two 3/16in. copper tubes 32 inches long and spaced 1 1/2in., again using insulated spreaders. The open ends are screwed on to the plate terminals and the other end shorted by means of a sliding contact. The DC supply is fed in at the centre of this bridge via an R.F.C. Experimental work has not been completed on the actual gauge and spacing of these

plate tubes for maximum results, but the measurements given here produce a tank circuit that actually works. When the grid leak has been corrected and the filament anode power switched on the tuning is accomplished by sliding the plate shorting bridge back and forth until resonance is indicated by the dip in plate mills. The grid clips are then varied up and down until maximum power is obtained with greatest stability. It will be found that as the grid clips are moved down towards the shorted end that the stability falls away. The adjustment does not seem very critical; within an inch or two of the correct setting makes no appreciable difference. Variation of frequency is best accomplished by sliding the plate shorting bridge back and forth until the desired frequency is obtained. The tuning is rather broad either side of resonance. So much for the transmitter.

## Receiver.

Figs. 3 and 4 illustrate the conventional tube detector and one audio type receiver. With the exception of the R.F.C. in the cathode lead of the detector the remainder of the circuit is identical with those we have been building for years. Regeneration is obtained by means of the R.F.C. in the cathode circuit which offers an impedance to both grid and plate circuits in such a manner as to produce oscillation. This R.F.C. is not critical in the number of turns required. The greater the number used the lower the frequency the set will oscillate at of course. Such a receiver may be made to act as an ordinary regenerative receiver which goes in and out of oscillation so quietly that it is hard to tell when it is firing. When further volts are added to the screen grid of the detector we obtain the familiar rushing noise which indicates super-regeneration. Thus, by varying the potentiometer in the S.G. supply lead we may obtain a non-oscillating, oscillating and super-regeneration condition at will. All three have their particular uses and provide a great control for the operator. The audio end of the affair may be made to suit anybody's wishes. The 77 was employed in this receiver because, like the 76, it is a 6.3 volt filament tube and makes



it handy for portable use. The total anode current drain is about 5 mills when 135 volts are used. A penthode would be advantageous in the audio socket, such as a 42 tube, etc., but such gain thereby resulting is not really required.

To discuss the remainder of the circuit would be waste of space. However, in order to make certain that the receiver will function first go it would be as well to adhere closely to the values of the components here recommended. Variations can be made later. With the three plate condenser the band covers 110 degrees of the dial. Less band spread would be valueless because of the broad tuning effect of a super-regenerative receiver.

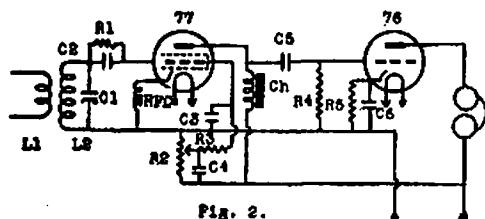
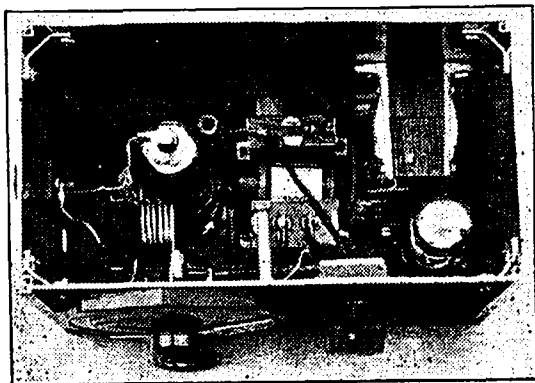


FIG. 2.

- L1—4 turns 16 gauge wire, 1/4 in. diam.
- L2—6 turns
- C1—3 plate variable condenser.
- C2—0.0001 mfd. grid condenser.
- C3—0.01 mfd. by-pass condenser.
- C4—1 mfd.
- C5—0.5 mfd. coupling condenser.
- C6—4-8 mfd. paper condenser.
- R1—1 meg leak. R2, 100,000 ohm pot.
- R3—500 ohm 1 watt. R4, 0.5 meg leak
- R5—1500 ohm cathode resistor.
- FRC—50 turns 32 D.S.C. 3/16 in. former

### Aerials.

High frequency aerials have been described at length in past issues of Amateur Radio, and any intending 56 mc ham is referred to those for October and November, 1934, for some very valuable dope on arrays, etc. In order to get things going



a simple dipole strung vertically as high in the air as possible will give a pretty fair range, even with 10-20

watts input. Copper tubing or 3/20 copper wire may be employed. The radiator length can be 8ft. with a break in the centre of 1-2 inches. Twisted 16 guage house wiring flex of any length will serve as the transmission line. The feeder end can very conveniently be hooked on to the plate tuning tubes at a distance from the bridged end that gives the greatest power output.

### Modulation.

No system of modulation will be given here as it can well be left to the ham himself to decide on what to use. The transmitter outlined here is being modulated in the grid circuit without any speech amplifier. This is certainly crude, but serviceable.

### Dope Wanted.

We would be very grateful to receive any fresh data on anything new in the 5 metre world, and at the same time be very happy to help any ham in difficulties whenever we can. Write the U.H.F. Section manager, and let him know what's doing in your district.

(Continued from page 7)

at a certain point, we can come back into the next  $\lambda/4$  (not  $\nu/4$  further back) and insert capacitive lines. Which position we chose will depend on circumstances, but preferably the position nearest the aerial, as standing waves will occur on the system, from the tips of the aerials to the matching point, and, as pointed out, these are undesirable. However, in the case of a high aerial, we may not be able to get up to the centre to affix the matching device, and so it might be better to choose the next position nearer the ground.

Ron Jardine, VK3PR, writing from his new QRA at "Dunloddon," Old Korumburra road, Leongatha, Vic., states that he expects to get on the air with QRP during the next two months, and mentions that he will be pleased to see any of the gang who pass that way.

# The VK/ZL International DX Contest

(By VK3ML, Contest Manager.)

It does not seem like nearly a year since the staging of that successful Centenary contest in October last, but in a month's time it will be so.

You were promised another contest this year, and you are surely going to have it. If the demands of the VK hams for a repeat were not sufficient, the overseas stations certainly made up for them!

In October a large combined contest will be staged. The N.R.A.R.T. has accepted wholeheartedly our invitation to join in the fun and improve the conditions in many ways. Thus the foreign stations will have 12 Districts to work now, four in N.Z. and nine in Australia. Both countries will act as though they are part of each other; that is, they are both on exactly the same footing. Neither will compete against the other, as each will have its own winner and placed stations.

A careful study of the rules should be made and thoroughly absorbed. Comparing these rules with those of October, 1934, we notice:—

#### Rule 4.

The times of operating are arranged so that no one will feel any physical strain from over-operating during the four week-ends. The periods will permit DX working with W and Europe, as well as other places, either on the second or first night as conditions permit.

#### Rule 8.

An exchange of serial numbers will be made once more this year. For the newcomer to contests the number is arrived at in this way:—Each participating station in VK/ZL and all other countries allots himself a number consisting of three figures, say 456. The complete serial must contain six figures, so he adds three noughts for his first contact, making the number now 456,000. On handing this number to the foreign station a receipt is given in the usual manner, and a similar number is handed back in return. For example, 222,879 might be received. Now, the first three figures of the received number, 222, are to take the place of the 000 in the original number, making the next serial num-

ber to be transmitted 456,222, which will be handed to the next station contacted. Thus the exchange goes on, always crossing off the last three of your number transmitted and inserting the first three figures of the number just received in their stead. For example, VK6FO gives HC1FG 119,752 and receives 242,171 in return. VK6FO now alters his next number to 119,242, which he might send to ZSiH. No contact is complete unless both stations have exchanged a serial number.

#### Rule 13.

We mean it, too! If you do not want to be disqualified you must have a note nothing less than T8.

#### Rule 14.

This should encourage 28 mc, especially since working W's is very easy just now.

#### Awards.

The awards this year will take the form of highly attractive certificates. Both ZL and VK have had an interest in the design and believe us when we say they are a work of art. The winner of each State in VK will be entitled to an award.

Full overseas publicity has been given to the contest, and the world expects to meet a host of VK stations this year. Everything is set now, and we only have to wait for 1700 hours G.M.T. on 5/10/35.

#### RULES AND CONDITIONS.

1. There shall be two contests:—
  - (a) Transmitting—(i) Open Section, where full licence power may be used; (ii) Handicap Section: The maximum power allowed for claims under this section is 50 watts.
  - (b) Receiving.
2. The Wireless Institute of Australia Contest Committee shall be the sole adjudicators, and their rulings will be binding in the case of dispute.
3. The nature of the contest requires the world to contact ZL and VK.
4. The contest is to be held from 1700 GMT, Saturday, October 5th, till 1700 GMT, Sunday, October 6th, 1935, and will be continued over the same

period on each of the following three week-ends. The dates of the other week-ends are October 12-13, October 19-20, and October 26-27, 1935.

5. The contest is open to all licensed transmitting amateurs and receiving stations in any part of the world. Unlicensed ship and expedition stations are not permitted to enter the contest. Financial members of the W.I.A. and its affiliated societies and members of the N.Z.A.R.T. only will be eligible for awards in VK and ZL.

6. Only one licensed operator is permitted to operate any one station under the owner's call sign. Should two or more operators operate any particular station, each will be considered a competitor, and must enter under his own call sign and submit, in his log, the contacts established by him. This debars persons from entering who have not a ham licence.

7. Each entry must be signed by each competitor as a declaration of the above statement.

8. Each participant will assign himself a serial number of three figures as detailed in the contest description. When two or more operators work the one station each will assign himself a separate number.

9. All amateur frequency bands may be used.

10. Only one contact with a specific station on each of the bands during each week-end will be permitted.

11. Contacts may be repeated on each of the succeeding week-ends with the same stations in accordance with rule 10.

12. Each contact must be accompanied with an exchange of serial numbers and signal strength reports, including readability, strength and tone.

13. Highly Important. — No station will be credited with a contact in a case where the tone report is given as being less than T8.

14. Scoring. — One point will be allowed for every contact completed with an exchange of serial numbers and signal reports. A special bonus of 500 points will be given for 28mc contacts; this is to be added on to the final score after multiplying as in rule 15.

15. Handicap section entrants will divide score obtained by power input to P.A. (in watts).

15. Australian and New Zealand stations will multiply their total score by the number of countries worked, and

the stations outside VK and ZL by the number of Districts worked in both countries, there being 12 in all—VK2, 3, 4, 5, 6, 7, 8, 9, ZL1, 2, 3 and 4.

16. No prior entry need be made for this contest, but each contestant is to submit a log at the conclusion of the test showing date, time (in GMT), band, station worked, in and out serial numbers, in and out signal reports and points claimed for each QSO.

17. Entries from VK stations must reach the W.I.A., 191 Queen Street, Melbourne, C1, not later than December 1st, 1935, and the foreign logs by no later than December 31st, 1935. ZL entries must reach the headquarters of the N.Z.A.R.T., Box 489, G.P.O., Wellington, before November 25th, 1935.

18. Awards.—Attractive certificates will be awarded to the station returning the highest total in each country, to the highest scorers in each of the British Isles, and to the winners of each State of U.S.A., Canada, Australia and New Zealand. There will be no world winner.

19. Foreign stations should call CQ VK/ZL, and the VK and ZL stations, CQ DX TEST.

## VK/ZL INTERNATIONAL DX CONTEST (RECEIVING).

1. The rules for the receiving contest are the same as for the transmitting contest, but is open to members of any Short-wave Listeners' Society in the world; but only to members of the N.Z.A.R.T. in New Zealand. No transmitting station is allowed to compete in the receiving contest too.

2. Only one operator is permitted to operate only one receiver.

3. The dates, scoring of points and logging of stations once on each band per week-end are subject to the same rules as for the transmitting contest.

4. To count for points, the callsign of the station being called, and the strength and tone of the calling station, together with the serial number and signal strength report sent by the calling station, must be entered on the log.

5. The above items must be filled in before points can be claimed; that is, it is not sufficient to log a station calling CQ or TEST. Verification of reception must be made in accordance with the conditions in rule 3 above.

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## 1935 W.I.A. Fisk Trophy

The six monthly contests for the Fisk trophy will be renewed when at the end of August the fourth contest will be run. The Fisk trophy originally donated by Mr. Fisk, of A.W.A., is the subject of six monthly contests between the various State Divisions of the Wireless Institute of Australia.

The forthcoming contest is of an interstate contact nature, with an interchange of cypher with each Q.S.O. A system of bonuses has been arranged which should make the contest more interesting.

The scoring may be a trifle complicated, so a formula has been arranged which should clear up any misunderstanding.

The grand total score  
= (A × B) (50c + 20d + 20e + 30f + 100g)

Where A = Number of Contacts.

B = Number of States worked.

C = Number of States Contacted on 160MX.

D = Number of States Contacted on 80MX.

E = Number of States Contacted on 40MX.

F = Number of States Contacted on 20MX.

G = Number of States Contacted on 10MX.

The above formula will give the score claimed by any station in the contest.

Rules are as follow:—

No. 1.—The contest is open to all licensed amateurs, but only members of the Wireless Institute are eligible for either prizes or point score in the Fisk trophy.

No. 2.—The times of the contest are as follow:—From 1201 Eastern standard time, Saturday, 31st August, till 235g E.S.T., Sunday, 1st September, and again from 1201 E.S.T., Saturday, 7th September, till 236g E.S.T., Sunday, 8th September.

No. 3.—The test is of a contact nature, and with each contact a 10-letter cypher must be exchanged before a point is scored.

No. 4.—Stations with which an entrant can work are stations in Australia and New Guinea outside the

competitor's own State. When such a station is contacted, and cypher exchanged, one point is scored; no exchange no points scored.

No. 5.—Any station can be contacted once on each band each week-end.

No. 6.—States are as follow:—VK2, VK3, VK4, VK5, VK6, VK7 and VK8 and 9 combined.

No. 7.—Licensed power must not be exceeded, and infringements of the P.M.G.'s regulations may mean disqualification.

No. 8.—One point is scored for each cypher exchanged. The total points are then multiplied by the number of States worked as defined in rule 6.

No. 9.—Bonuses will be added to the score after multiplying (rule 8). The bonuses are as follow:—

Contacts on 160MX—50 points for each State worked.

Contacts on 80MX—20 points for each State worked.

Contacts on 40MX—20 points for each State worked.

Contacts on 20MX—30 points for each State worked.

Contacts on 10MX—100 points for each State worked.

The sum of the bonuses, plus those points scored as in rule 8, will constitute the grand total score.

No. 10.—The cypher to be exchanged consists of 10 letters, the first five being chosen by the entrant, and are to be used as his identifying letters throughout the contest. The remaining five letters are to be the first five letters of the last station contacted. The initial cypher should consist of the five letters of the originating station, plus five "A's," i.e., XYZABAAAA.

No. 11.—All logs must reach the Federal Executive, Box 2127L G.P.O., Sydney, by 30th September. The logs must contain (a) time, date and call-sign of each station worked, (b) cypher sent and received at each contact, (c) points claimed, contact points and bonus points.

No. 12.—The Fisk trophy will be awarded to W.I.A. State Division whose points total of the leading three

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## Operating and Experimental Section

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### 28 and 56 MC. Section

(By 3JJ.)

Reports to hand from U.S.A. indicate that during June they experienced 28 mc. conditions similar to those existing in VK and ZL during December last. Contacts over relatively short distances, 700 to 1000 miles, became very easy and numerous; but transcontinental and DX work declined. Contrary to expectations, very few contacts have been made between W and Europe. Several W's have worked ON4AU, but apparently the only other QSO was between W1AVV and EI8B, who is testing regularly on 28770 kc. W5JV was QSO LU1EP, whose frequency is 28010 kc.

Conditions in VK have fallen off completely now, and VK2EP is the only one who is still able to hear and work DX. His contacts with U.S.A. have not been as numerous as they were formerly, and signal strength is much lower. One bright feature was in a report that VK3EG heard ON4AU at 1 a.m. towards the end of June, but it is not known yet whether it was a fundamental or not. Probably the most likely times for Europe during the coming months will be between 0700 and 1200 G.M.T. (1700 to 1000 V.S.T.). European societies have been requested to advise their 28 mc. stations to keep a special watch for our signals during their mornings, particularly on Sundays.

The following is contained in a letter from W9FM:—"We need a few low power transmitters on 28 mc. running continuously, if possible, and using some simple automatic keying. Then we could all log the time that we begin to hear the signal, and when it goes out. This gives the threshold times and distances for which the band is open. Using several such signals and a number of observers, we could get a much clearer idea of the usefulness of the ten metre band. W5BD last year could hear NY1AB's second harmonic nearly every day around 4 p.m. R.C.A. several years ago noticed that the band was much less erratic in the north-south direc-

tion. An automatic keying device can be made by running a metal disc on a phonograph, with triangles of paper pasted so as to lift a contact from the disc to form the characters. 'VV de \_\_\_\_\_' would be enough. A small tube self excited or otherwise would suffice. Little or no care may be necessary. A frequency as low as possible in the band would probably be best at first."

If anyone can see their way clear to co-operate on the above lines, please get in touch with a representative of this section, either 2YC, 3JJ or 6SA.

Now that 56 mc. beam antennas are in general use in U.S.A., and the signals can be concentrated in one direction, they are finding that a certain amount of bending takes place, due to the positions and heat of various layers of air over the path of the signal. Signals are usually stronger when a layer of moist warm air is adjacently above a layer of dry cold air. With the changeable weather in Victoria conditions should be ideal for experimental work in this direction. There is a slight increase in 56 mc. work locally, but no success has yet been obtained with beam antennas.

VK6SA is putting up a beam antenna for 56mc. to attempt getting signals through to VK6LR and VK6FT, 60 miles away, who are rigging up some gear. 6CA and 6KZ may also be active on this band shortly.

At times there occurs to a ham ideas on the technical side which appear insignificant to him, but would no doubt be appreciated by others. If you have anything "up your sleeve" concerning ultra high frequency work or gear, which has saved time and expense, or results in an improvement, please send it in for publication in these notes.

#### 28 MC. WARMING UP AGAIN!

A telegram from 2YC states that VK2EP scored 840 points in the International 28 mc. contest during the first half of July. Looks as though this band will be in full swing again in a week or two.

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## Federal Executive Notes

### THE 1935 W.I.A. FISK TROPHY.

It is hoped that the introduction of a bonus in the coming Fisk trophy contest will stimulate interest in interstate QSO's on all bands, and particularly on the 160 metre and 10 metre bands.

Full details are printed elsewhere in this issue, and all interested are referred to these rules for further information.

The system of scoring, while appearing at first glance a trifle complicated, is really quite simple, and will, we feel sure, give satisfaction to all.

It is suggested that entrants call CQ FISK instead of the usual CQ TEST. This should enable participating hams to be easily identified.

#### New B.E.R.U. Representative Approved by Federal Executive.

Following on the resignation of Ray Carter, VK2HC, and the nomination of VK3EG by him to fill the vacancy, the Federal Executive approved of the nomination, and the B.E.R.U. officially appointed VK3EG as the Australian representative of the B.E.R.U.

The Federal Executive wishes to convey to VK3EG their congratulations on this appointment, and they feel sure that in him the B.E.R.U. have a very industrious worker.

The Executive wishes to convey to Ray Carter its thanks for the splendid manner in which he has helped amateur radio along in Australia.

#### W.A.C. Certificates.

VK2QN and VK4JB are the only applications for this coveted certificate, and both have been approved.

Applicants are reminded again that they must be members of their local Division of the W.I.A., and that the cards must be forwarded to this local Division, who will in turn forward the cards to Federal Headquarters, together with a statement as to the financial position of the applicant with the said Division.

#### Federal Convention, 1936

The date of the next Federal Convention has been tentatively fixed as around the 26th January, 1936. Further details and confirmation of the dates will be announced in the near future.

## Federal and Victorian Q.S.L. Bureau



Between July 25th and August 24th the Auxilliary Schooner "John Williams V.," will transmit telephony tests with VP3AP. The tests will take place at 2000 GMT daily except when the schooner is in harbour. The frequency used by the schooner, whose call sign is MPSZ, is 6250 kc. Amateurs and listeners hearing these tests are requested to Qsl via this Bureau.

Cards are on hand for the following at the Bureau, 23 Landale St., Box Hill, Vic.:—VK3BK, BS, BX, CA, CW, DS, EG, EQ, ES, EW, ER, EL, ET, FB, FC, GB, GW, GV, HE, HH, HR, JK, JL, JV, JX, KI, KO, KY, LE, LY, NA, NG, NM, NW, OD, OL, PC, PW, QP, RZ, SP, TK, TY, UJ, WN, WX, WJ, WP, WC, XK, XU, YR, ZB, ZJ, ZK, ZL, ZR, ZW. Cards will be promptly despatched on receipt of a stamped envelope.

A large number of unclaimed cards took their last ride to the incinerator during July, and the rule of this Bureau to retain cards for six months only will continue to be observed.

R. E. JONES, VK3RJ,  
Federal Qsl Manager.

(Continued from page 13)

6. VK and ZL receiving stations cannot log any VK or ZL stations—only foreign stations. Foreign stations will enter up VK and ZL stations heard only.

7. The awards for the receiving contest will be similar for the winners in the transmitting test.

8. Receiving logs are to be similar to transmitting logs.

## Divisional Notes

### N.S.W. Division

NOTES FROM HEADQUARTERS.  
By VK2HZ.

The terms of affiliation with Radio Clubs have been receiving a lot of discussion. A special sub-committee has been investigating the position, and the result should be a more amiable relationship between the State body and the various clubs.

The Council of the W.I.A. (New South Wales Division) are extremely sorry to hear of J. Marsland's retirement from the secretaryship of this magazine, as they fully appreciated his sterling efforts in the running of the Institute's official organ.

A field day on 56 m.c. has been arranged for the 18th August at Wyong, and it should serve to show the U.H.F. gang the phases of field operation. The field day will comprise a combined Newcastle and Sydney effort, and, although possibly the attendance will not reach that of the more conventional D.F. hunts, it should prove of value.

The lecturer at the July monthly meeting of the W.I.A. was Mr. J. O'Dea (VK2FQ), who covered ably the various systems of modulation, and the lecture was deemed a success.

A questionnaire has been forwarded to all zone officers regarding the position in the country, and also reorganization of the running of country membership.

A complete re-shuffling of some of the activities of the W.I.A. has been contemplated, and a system of handling WX reports is sought. Standard frequency transmissions and a group system are among the things that will receive earnest consideration in the near future.

Conditions on 28 m.c. in New South Wales have again made a turn for the better, and 2LZ and, of course, 2EP have worked Americans, and JNJ and XOB's harmonics are audible up till 7.30 p.m., Sydney time.

### NORTH SHORE ZONE NOTES.

By VK2VQ.

The past month has not brought about any startling change in conditions; rather have the bands settled down to the usual work. 28 m.c. has failed to keep going, and now only harmonics from 14 m.c. are heard. On the latter bands, low-power stations are taking advantage of conditions and making many DX contacts. 7 m.c. has brightened considerably, and from 4 p.m. to midnight the band is literally packed with Yanks. Apart from K6, VE, KA, and an occasional X, the usual DX is missing. At this time last year VU, US and FB signals came through consistently, but so far they have not been heard. In another two or three months the Europeans should be coming through, and that is something to look forward to. On 80 m.x. the usual zone stations are heard, with ZL signals coming in like locals. For the Ham who

reports it as being FB.

likes rag chewing and bull throwing, 80 m.x. certainly is the band. Scouting around the lads, we heard of 2DR's visit to VK5 and the enjoyable time he spent with 5FM. Don was the only passenger who didn't feed the fish when his steamer ran into a cyclone. Oh, yeah! Hi! 2AE unusually quiet. Dave has been playing around with self-excited, so maybe I should tune to 30 m.x. to hear him. Hi! Bill 2SV is grinding out canned music from his new QRA, in Roseville. Keep the feeders off the roof, OM; they work better that way. 2HG still pounding away and working more Yanks than he knows what to do with. Is thinking of increasing the jolts on his RV-218. 2LA whacks in and has a T9 signal, but many and varied key thumps. Down in the wilds of Lane Cove 2VM is still on sked with 3HT. His YL will be in Sydney from VIM shortly, so maybe we won't hear much of Keith. Hi! 2VG and 2HA continue their rag-chews on 40 m.x., though Rex (2VG) is not on very often. 2VP has the band to himself these days, and makes the most of his opportunity with a nice T9 sig. And now, going to Crows Nest, we find Roy (2HY) too busy for Ham radio, but still a keen business man, as he bought a 210 from 2LZ for 2/-. Hi! Con. thought it was a dud, but 2HY found differently, and so the old Con. mooches round with a long face. 2WW has installed MOPA, and, believe me, you can't tell the sig. from crystal. Crows Nest should have a few more Hams shortly, when all the various second ops. sit for the exam. Good luck, OM's! 2HZ seems to have settled on a really decent location, and Bill's first four contacts were with DX. It's still hard to believe that he is an old married man; but guess that won't keep him from radio. Watch his smoke. Gang! Now that his new receiver is perking so well, 2SS is planning a new QRO xtal outfit. Bob reckons that 150 (?) watts will do him. Hoi! You should hear his celebrated loop fone; it puts 2KY to shame. Hi! Here at 2VQ the bu is biting, and a comeback is indicated with 4-stage xtal and MR T250 final, with 3,500 volts. Hi! QRP fone will be used for the benefit of the YL, and to chew with 2SS, 2HG and PV and the boys. This month we have to welcome a new Ham — VK2VN — who operates from 96 Cabramatta-road, Mosman. A self-excited outfit is being used as a start, but xtal will shortly take its place. Good hunting, Norry. 2JE continues his good work, and still the same high quality fone. You wouldn't think 2YC, after running a QSL Bureau, would have much time for family and radio, but he does, and now is busy receiving congrats. on the addition of another junior op. Hi! FB, Jim, ob, and cheerio from the gang. In McMahon's Point, 2TD is doing fine work on fone. Norm. will be remembered as 2TB and 3RB; a real old-timer, with a bug biting as hard as ever. Jim (2AG) has a new super, and

And now for Mosman! Not much doing there, 2PV being the only consistent Ham, and that's not saying much, as Pete is QRL studies. 2PV recently worked a few more Yanks, and now needs a size larger hat. Pete brought his gear along to my shack one night and worked 2SS on loop fone without an antenna. Hi! Spends a lot of time on the tennis courts, and is a hot number, believe you me! Ian (2XC) very quiet; have no news of him and can't think of any suitable lies, so will leave him in peace this month. Hi! And what's happened to 2FM? Don't tell me the BCL's have got you bluffed, Alec! Let's hear from you, old son. 2HI is still in this vale of tears; so far his mobike is holding up, and you may keep your floral tributes until a later date. Hi! Fred is rather keen on dancing, and often drags 2VQ and VL into the party. Hi! The Manly gang are well in the limelight, but still the same old signs. 2DA, 2HF and BS Harry (2DA) being rather busy with W.I.A. work to spend much time on the air.

Well, gang, that's the lowdown for this month—not much, I admit—but a fortnight of flu is my excuse.

—73.

## ZONE 8 NOTES.

By VK2OJ.

Now that the Albury gang are all active again, QRM is very severe at times.

2QE heard testing fone on 3.5 m.x., and it sounded fb, but did not CQ. 2EU is a newcomer with T9, QRI on 7 m.x. and Q.R.P. Antenna is SW fed Hertz, fed by MOPA.

2YI at new QRA, and getting fb. results, with end fed full wave antenna, which is only 15 feet high and has many bends. End feeders are popular here, being used by 2QE, 2YI, 2OJ, and results in all cases have been good. 3EG tried "V" Beam on 14 m.x., and says it is the goods. Thinks also an improvement on 7 m.x. 14 m.x. not so good just now; likewise 7 m.x. Plenty fone on 3.5 m.x., but no W's coming through, like previous winters. 2IG, on 7 m.x., quite often, and getting plenty of QSO's with "Doublet" antenna, and PP TNT. 2CP here again for a couple of weeks, relieving at "B" Class 2AY.

Well, plenty of building to do here, so must QRT.

73's.

## LAKEMBA RADIO CLUB.

(Affiliated with the W.I.A.)

Since the publication of last month's notes, the club has moved to new and larger premises, situated at 334 Canterbury-road, Hurlstone Park. The new location is very central, being well served with tram, train and bus transport services.

The total club membership is approximately 50, including the following transmitters:—VKS, 2LR, 2AS, \*2CY, 2DL, \*2EH, 2ED, 2EV, \*2FD, 2FG, 2GZ, \*2HE, \*2HV, \*2IC, 2IO, \*2JT, 2KS, \*2NJ, 2OD, 2OW, \*2PX, \*2QP, 2QX, \*2SX, 2TG, 2VK, 2VY, \*2WF, 2XD, 2XM, 2XW, 2XZ (\*denotes members married).

From the above it can be seen that club interest is by no means confined to the younger and single members. Speak-

ing of enthusiasm probably our most enthusiastic non-transmitting member is Frank ("Bluey") Balnave, who, in order to attend meetings, drives 12 miles in an international truck, through mud and over paddocks, from way out beyond East Hills. The good old truck, with "Bluey" at the wheel, performed excellent work in moving the club gear to its new premises.

The 5 m.x. group are still conducting very interesting experiments, and some are thinking of trying 2½ m.x. The writer recently QSoed 2XM through 2OD's portable gear, and was astounded at the excellent quality of 2XM's 5 m.x. telephony. Mr. George Brown is displaying a great interest in Morse practice lately. A recent visit to the club rooms revealed Mr. Brown giving code practice to T9. YL! While on the subject of YLs, 2XZ, for the past six months, has been preparing a YL for the AOPC Exam. We trust that his efforts will have been successful, and await with interest the results of the last examination. We do not hear very much from 2NJ since taking up married life. However, let us hope that the novelty will soon wear off. 2EH recently ruined a perfectly good crystal by grinding it out of the band. He expressed his opinion on crystal grinding in no uncertain terms. 2HE takes up radio by summer and football by winter. The football club meeting night coincides with the radio club night; consequently we only see Bert every six months. Our latest new members are 2VK and 2OW. DX station will probably mix up 2VK's call sign, while others may mistake 2OW for a stern old matron. However, both are very nice chaps, so never judge a Ham by his call.

All enquiries on club matters will receive the attention of the hon. secretary, if forwarded to the above address.

## WESTERN SUBURBS NOTES.

By ZO2MY.

Old Hams who saw active service during the war will learn with regret of the death of Colonel McColl, better known as "The Old Man," who was in command of the Anzac Signal Corps in Palestine. During his excursions on active operations he always made it a point to visit the wireless outfits, and would enter wholeheartedly into technical arguments, which as often as not would leave the station operators stranded technically. Vale! A gallant old gentleman!

2BB, of Eastwood, putting out some nice phone on 40 m.x. Uses 3-stage crystal rig.

2FO and 2nd Op going strong on 40 m.x. Using 3-stage crystal rig, with pair of 2A5's in PP in final.

2FD, using SSS, sez fine for Qrm, but takes a devil of a time to get through the band, and loses lot DX thereby.

2PT again active on 5 m.x., and intends to try a directive beam down there.

2PH gets out well on 40, but Ray's Qri is a mystery; alternates between T1 Xtl and T9 Xtl. Which gets out best, Ray?

2AP, of Oatley, works more than his share of DX with pair of tens in PP in final. Heard him working a CM7 like a local the other night.



2PS, Perce, working DX on 40 with very nice T9 sig.; also tries his hand at fone with FB results. How come you missed X1BT the other night? OM, or isn't that DX?

2HR, newcomer to the district, but very energetic. Fairly hefty key clicks here and Qri would be better with better filter, but has a nice fist and improving rapidly.

2MQ.—Rumour hath it that "Bill" is about to take unto himself a YF and settle down in the western suburbs. Let us hope that SSS will help solve your Qrm problem, Bill.

2GB.—Bitten with the bug after several months' Qrt. Been trying out several directional 20 m.x. antennas, and, after a dull start, encouraged by a R6 report from Germany.

2PY.—Better known to all Hams as VK5PK, one of our star DX Hams, now living in Sydney—Qra Mosman—and hopes to be on the air at new location very soon.

2PK.—Still on night work, but finds time to sandwich some short Qso's in on 40 now and again.

2MY.—Been Qrl rebuilding receiver. On first try-out only station on 20, 40 and 80 last Sunday was 2ME. Don't talk about reversed tickler coils.

2IO reports getting out a bit better, but DX still on the slow side.

2RY dabbling in High Fidelity amplifiers, and reports FB results with a pair of 45's in PP in final.

2DW interested in 5 m.x. work, and occasionally works duplex fone on 40 and 5 m.x.

2MW.—Another m.x. fiend, but, owing to too much work, does not find much time for Hamdom.

2ZH reported to be back in Sydney from "B" Class Station 2MO. Expect his sig. will help swell the Qrm out here very soon.

2JT.—Pounding out a hefty sig. on 20 and getting plenty of DX. Let us hope this Qra will be permanent OM.

2BX.—Another DX hound on 20 m.x., and also one of our best 5-metre Hams. How did that hike go, Bert?

## Phone Section Notes

By I. MORGAN (3DH).

The usual meeting of the above section took place on Tuesday, 25th June, and was well attended.

The business of the evening included the election of office-bearers for the ensuing 12 months, which are as follow:—Chairman, Mr. G. F. Thompson (3TH). (When he has to leave us to follow his business to the country, Mr. H. L. Doyle (3CR) will take the chair.) Secretary, Mr. I. Morgan (3DH); Assistant Secretary, Mr. W. F. Sievers (3CB). The Allocations Committee: Mr. J. C. Kerley (Chairman), Mr. B. Joubert, Mr. G. Lahlff and Mr. Gotts.

As the meeting progressed, and very early in the evening before anyone expected it, the Allocations Committee surprised us by producing their results—credit for this "snperservice" going to, firstly, Mr. Kerley for his idea of getting the other members to post to him their work for the month prior to the meeting night, and also, secondly, to the members of the committee for their co-operation.

In the general business of the meeting a discussion took place on the subject of "How we could best operate allocations in accordance with the order of merit." Finally a motion was put and passed that all stations shall be allocated the frequency and session they preferred according to their position on the list.

On 18th August, the New Zealand D.X. club are staging a special competition, in which we are asked to co-operate; on this occasion from 10.30 p.m., August 18, to 12.30 a.m., Monday, August 19-28. Town and country stations will be transmitting. Mr. G. F. Thompson (3TH) has been appointed sole judge, and the New Zealand D.X. club members will all send their reports on our transmissions to 3TH.

Now, our job in this competition, in addition to furnishing the necessary transmissions, of course, is to write up an accurate log of the complete transmission during the period of the competition. On the top of the log sheets, operators must state the actual power input to the stage feeding the antenna. These log sheets to be sent to 3TH, together with a sufficient number of QSL cards to cover the reports which the operator believes will be received on that particular station's transmission. As 3TH suggested, this will give some of our members an opportunity to use their imaginations.

Further details as they transpire will be broadcast either through "Amateur Radio" or over the air.

## Key Section Notes

By C. WOODWARD (VK3YO).

At the July meeting of the Section Mr. Campbell (VK3MR) was elected chairman, and VK3YO Hon. Secretary for the coming year.

Cedric (VK3RX) was heard to mutter something about a Coburg conspiracy, but 3OC managed to keep him in hand.

The retiring chairman, Mr. Cook (VK3OX), was warmly thanked for his services during the past year.

VK3DF, late of Powelltown, was welcomed at the meeting, and it is understood that he is now stationed in the city and will be operating as soon as he can get his gear together.

Mr. Manning gave an interesting account of his trip to Sydney and the "bush." VK2 seems to get some strong signals on 14 m.c., as, according to VK3XJ, a certain W. station was given an R6 report on one tube, whilst in VK3 he was recorded as R4 on a S.S. super.

Conditions on 7 m.c. are rather slow in the evenings at present, and the frantic activity of March and April is conspicuous by its absence.

However, VK3RX managed to work his first VE after seven years. Perhaps there is something in these 50T tubes after all. VK3OX is at it again! He is now building another Tritet exciter unit.

VK3LQ has been married, and such is the attraction of Cedric's 50T that he is shifting over near the "ex-Mayor," as also are VK3WP, VK3QJ, VK3LG and VK3RZ.

One of the country brethren, VK3TL, is reported as having 56 switches in his shack. The burning question is, "Which is Switch."

VK3LX now has a 3-stage rig, with a TBO 4-10 as a PA, and has been getting

out very well. Another of the 7 m.c. operators has departed to 56 m.c., being none other than VK3DD.

A newcomer at the last meeting was VK3CT, who has been licensed for about two years, but has been unable to get going until lately, and now hopes to be a "regular" of the Key Section.

Anyone who can obtain the services of a "Checker-upper" for the membership drive is invited to get in touch with the new chairman (WK3MR).

VK3YP was mistaken for an 80-metre fone man the other night! He is gradually recovering from the shock.

"Patto" advised having built a new 4-stage rig, using the 800 series of tubes, and is certainly making good use of them.

## AN INTERVIEW WITH A MASTER OF THE ART.

By "YO-YO."

After an extensive search through the highways and byways of a certain suburb, we at last ran him to earth. "Who?" you say. Why, the famous Monarch of Frequency Control, VK3WG.

We found him in another "Ham's" shack testing one of his "phase inverter chokes" on a 56 m.c. transmitter.

"Oh, yes," he said, "I'll be through here in about an hour, so you can come and look inside my castle for a few minutes then."

We cheerfully agreed and sat by the fire until he was ready. At last he signed to us to follow him, and we were quickly on our way.

At the first sight of the operating room we were struck by the neat and orderly appearance of everything on view, even some photographs on the desk being fitted on glass plates.

"Well," said W.G., "I suppose you would like to see the transmitter in action," whereupon he switched on a few rectifiers, filaments, etc., and then, reaching under the desk by the receiver, he pulled a cord which was dangling near by. Immediately there was a terrible staticky sound from the broadcast receiver, a big bluish flash in the corner, and the Mercury Arc Rectifier was in action.

Being assured that everything was all right, we crawled out from under a nearby bench, where we had dived at the first sound, and the Crystal King went on with his demonstrations.

"I should have warned you about that," he laughed; "it does give you a scare the first time you see it."

"Looks like the bagpipes," commented one of the crowd. "Is it a Scottish heirloom?"

Plainly visible through the glass frame, we could see the transmitter, consisting of an E443N C.O., a 210 buffer and a 203A in the frame looked as if it had been measured in thousandths of inches before it was deemed to be correct.

Turning our attention to the receiver, we found a T.R.F. battery receiver, which had been built when the station was sub-P.A. Characteristic of the man, every lead tect to tremendous QRM from electric trams, etc., and, as it still worked efficiently, had not been changed.

The P.M.G. licence number is worthy of note, being 178, giving an idea as to the time that the station has been in opera-

tion.

"Do you use fone at all?" we asked. "Very seldom," replied W.G., "but I have telefunken installed just in case I need it; but I am not often on the air now, owing to my Institute work."

After inspecting a wonderful array of frequency measuring apparatus and seeing the work he was doing, we wondered how he had found the time to be one of the chief builders of 3WI. We could see that W.G. had justly earned the title of "The man who was too busy putting others on the air," and anyone who QSO's him may have to consider it a rare contact.

All the power supply transformers are home made, and the cores are of ample proportions, making the power rack look like a miniature sub-station.

At this stage Mrs. W.G. came on the scene and rang the curfew, so after another lingering look at certain meters we were escorted to supper, and then dashed to the corner in time to catch the last tram to town.

VK3WG is owned and operated by Mr. W. Gronow, and the address is 2 Anthony-street, Malvern.

## NORTH-WESTERN NOTES.

By UK3CE.

Conditions on all bands have not been all they might have been over the past month.

The W's, K's, etc., who were coming in well on 20 during the afternoons, have become only just audible, as with the exception of a few W's, DX has been absent from 40. While on 80, only about two nights per week have been good, and the usual gang certainly make use of those times for their rag chews.

VK3KR now has his new trannie, but suffers from hum from his unshielded spch. amp.; also keeps weekly skeds with W4UP on 20 m.x. Ken. has been promising himself a trip to Shepparton for about two years. It was the irony of fate that on making the trip he should find 3DW QSO the 'flu.

3OR is installing a new super spch. amp., being built by Bruce Mann, of spch. amp. fame, so we can look for some super fone from Murray very soon.

3IV is inactive for the time, his H.T. "B" batteries having ceased to bat.

3KI had a hurried trip to VIM.

3CD at last has his fone on his 80 m.c. rig.

3TL working ZL's with 80 m.c. fone, still putting out good fone with his QRP f.h. treble.

3WN had his meter reconditioned. Is rig.

3HN has MOPA with telefunken modulator. His sigs. are greatly improved.

3NN has his new 250 modulator. His rig is now working nicely. Herb. is installing a new-type heating device in his shack.

3WE has built himself a super RX heard with very nice fone, on 80 m.c.

3DW having a few overs with O.M. 'flu. Hone 100 per cent. again now, Doug.

3HL keeping very quiet. Guess Alan is nutting out some new bait for DX.

3ZK still working normal skeds and ZL's between times.

3EP heard sending slow Morse practice. Still waiting on AC.

3CE rebuilt C.O.; has killed a bad bug in doing so. Had QSO with 2UJ, who

# Amateur Radio

uses a Ford T. mag-dyno. for his primary power supply. Drives it with 2½ h.p. engine.

## WESTERN DISTRICT NOTES.

By VK3OW/3HG.

With the falling off of conditions on the 40 m.x. band, the 80 m.x. band has been very active of late, especially as conditions there have been good.

Probably the loudest signal on that band at present is 3EG, who comes in at R max., both fone and C.W.

Conditions on 20 m.x. seem to have fallen off, and 3PG reports it hard to QSO the Yanks, and when Norm. can't raise them things are sure bad!

Both 3HG and 3OW active, mainly on 80 m.x. fone; and both contemplating new receivers.

O, the Camperdown gang, 3GC, is installing a crystal filter and extra I.F. in his super receiver.

3CQ makes up for lost time on the air during the week by pounding brass from 10 a.m. until midnight on Sundays.

3NG has purchased an Austin 10 saloon car, so we can expect to hear even less from him in the future.

3WW heard on 7 m.c. with f.b. T9 sig. Glad to note the improvement, O.M.

3DX still sticks to 250 metres. His transmission now is very good indeed.

3HL seems to be the only one of the Hutchings family active, and even he is only heard on Sunday morning. Guess Alan is saving up for October!

All the Ballarat gang are QRT, but believe 3AL intends coming on again soon, after being busy rebuilding "B" Class (3BA).

3OS using his two winding generator as a dynamotor for power supply, putting 18 volts on low-tension end.

3JE reports getting a number of reports on his fone lately, and as Bill has been off the air for some months there is evidently a pirate operating somewhere round the city.

3GZ, Geelong, again active with crystal on 80 m.x., and is very keen on R.A.A.F. W.R. work.

## Queensland Division

The monthly meeting of the Wireless Institute (Queensland Division) was held at headquarters, Heindorff House, Queen-street, Brisbane, on Friday, 5th July, before one of the largest attendances seen for many months.

After the general business was dealt with, a talk was delivered by Mr. T. Armstrong, Radio Inspector, the subject being "Present-day Experimental Activities." This was enjoyed immensely, and all those present look forward to Mr. Armstrong's next visit.

The student classes, under Mr. P. Kelly, are being well attended, and those desirous of joining up are advised to get in touch with the Secretary, Box 1524V., G.P.O., Brisbane.

Country members are reminded that VK4WI, the official station of W.I.A. (Queensland Division), is on the air on the 3.5 m.c. every Sunday night between 7 and 0 p.m.

4CR reports that conditions at his QRA are nothing startling, although Yanks seem to be easily landed on 40 m.x. with his low-power Hartley.

4JB has again become a member of the W.I.A., and is looking forward to meeting the gang at headquarters. Bet some good yards will be exchanged.

4UU has been preparing his rig in readiness for the VK4-ZL test. Says he expects a big score, and hopes to be at the top when the count is completed.

4US has just about completed his new rig, which comprises 2A5 Tritet, 46 doubler, parallel 46's buffer, and push pull 800's final. Will be using grid modulation on 20 m.x.

4JF states that he has just received a report of R5 from Russia. Although not yet able to contact with them, the Hartley is evidently putting out a fairly solid signal.

4XW, George Harmer, hopes to be on shortly, using a 59 Tritet. Is also building a single-signal super. Expects to be mostly on 10 and 20 m.x.

4GK has been having a good deal of trouble lately. Had the misfortune to lose rectifier, filter condensers, and I believe the DET. 1 has shown signs of giving up also. Says it is going to cost a few bob to replace them.

4UW heard with a nice signal and plenty of punch.

4WT reports that he has nearly completed his new rig. Been having trouble with link coupling and 46's.

4GG is putting out some good fone on 80 m.x., and was heard in VIB recently at R7.

4AW just completed a fine portable 50 m.c. receiver. Says it is the goods. Walt until the boys get their next report, says Arthur.

4MC now on the air with a f.b. signal; this time from his new rig. 59 Tritet, 40 buffer and pair 46's in parallel. It is some outfit.

Conditions in North-West Queensland are improving, though on 40 m.x. daylight reception is stronger than night reception. VJI, the station of the A.I.M. at Cloncurry, is to go on 600 metres for work with the Q.A.N.T.A.S. planes. A power of 500 watts ICW will be used.

4LK is now using a 2-stage C.C. outfit, but complains that his note is too pure. He is still using the alternator, wound from a Dodge car generator, the motive power being from the 32v. lighting system. 4ET, at Townsville, is heard consistently, as usual, though radio had a spell when the old man 'flu gripped him. 4KA still very QSA at Cloncurry with a good, though rough note. 4RP, of Cairns, is heard at maximum. In fact, the Cairns gang are making their presence felt on 40 m.x. 4FN puts out very good quality phone. A rough note, signing 4JW, told us that old JW was on the air again. He is still using Ford coil supply, the success of which, so we are told, is due to a special condenser. 4ML, of Richmond, is building a new MOPA, but is heard with a self-excited rig at present. 4WH is heard seldom, and rumour has it that 4FN amuses the BCL's at "The Reach." 4RS, at Proserpine, has not been heard lately. 4GA, at Quamby, still minus power supply—the engine won't gee.

## South Australian Division

By ERIC HALLIDAY (VK5FW).

Since the new Council came into office

at the beginning of last April, the Institute has been reorganised and several very effective alterations have been made. It is hoped that the changes made will make a lot of the Hams who have previously had no interest in the Institute become active members.

## STUDENTS' LECTURES.

A new series of lectures for student members have been arranged. They will extend over a period of six months, and will be delivered by Mr. A. Taylor (VK5AT).

Mr. Harry Wheeler (VK5HW), who has given several series of elementary lectures, has been reluctantly compelled to resign from the position.

At the last general meeting Mr. Lucas, on behalf of the students, suggested that a message of thanks be forwarded to Mr. Wheeler, in recognition of his efforts in so ably coaching the younger members for their tickets. Nearly a dozen sat for their tickets at the last examination in Adelaide, and it is expected that quite a few of these will be successful.

Mr. Taylor, the new lecturer, has an extensive knowledge of radio, and there is no doubt that he will maintain the high standard set by Mr. Wheeler.

Several practical demonstrations will be given during the course of the lectures. A committee, which consists of 5MD, 5WW, 5KL and 5WD, has been formed to take charge of these demonstrations. A complete transmitter and receiver have already been built, and will be available for the students to use.

The lectures will begin on Thursday, 15th August, and will be held every Thursday night. On the week of the general meeting, however, the lecture will be omitted, and a code class will be given before the general meeting.

A new Students' Section of the Institute will be formed. This will be run on the same lines as the Transmitters' Section.

**New Meeting Night.**—Commencing in September, a new meeting night will be inaugurated. This will take the form of a general business night, and will be devoted to general discussions on all matters relating to Ham radio. Up to the present these discussions have taken place on lecture nights. Lately, however, the discussions have been taking far too much time, with the result that many interesting lectures have had to be seriously curtailed.

As soon as the new night is introduced, discussions on lecture nights will not be permitted.

**Traffic Contest.**—A traffic and message handling contest has been arranged by the Council to promote the art of traffic handling among all licensed VK5 Hams.

The contest hours are between 1,000 and 1,200 (Adelaide time) on Sunday, August 4, 11, 18 and 25, on the 7,000 to 7,300 Kc band. One of the rules of the contest is that at all times the speed of operation must not exceed 15 words per minute. The rule was introduced as a form of handicapping, so that the many new Hams on the air in VK5 will be on an equal footing with the older and more experienced operators.

Several trophies have been donated as prizes, and indications are that there will be a very large percentage of the stations in VK5 in the contest.

A contest for the students has also been

arranged in connection with the traffic contest. A trophy has also been presented as the prize in this Section.

**200-Metre Band.**—A new committee has been formed to take charge of the 200-metre band. Those on the committee are:—Marshall Hider, Gordon Ragless (5GR), and Al. Reimann (5JO). Several frequencies on this band have been surrendered by stations who have not been on, and these will be allotted to other stations in due course.

**QSL Bureau.**—The Institute's QSL Bureau will shortly be reorganised. A filing cabinet is to be put in the club rooms, and members will be able to collect cards from the State QSL officer, 5RX, at all meeting nights. The change has been made so that the Institute will be able to keep a check on the Hams who are not at present members.

In future, all QSL cards should be addressed to the Institute's box number (284D), G.P.O., Adelaide.

**Social Nights.**—Many of the older Hams will welcome the announcement that the club rooms will once again be open on Friday nights. They will remember the happy informal card parties and table tennis matches that used to be held. I, for one, will be glad to see all the old gang along on Friday nights. So roll up, chaps!

This Division extends its deepest sympathy to the Grand Old Man of Radio in VK7 ("Pop" Medhurst, VK7AH) in his recent bereavement. Ford Wells, 5WP and 5GR, VK5's representatives at the last Institute Convention, send special messages of sympathy.

## West Australian Division

By VK6LJ.

(Per Radio 3ML.)

Activity in this district has increased, and a good turn up was experienced at our Annual General Meeting, held in June. The new officers for 1935-6 are as follows:—Patron, Mr. Hayman; President, Mr. Brown (VK6CB); Vice-Presidents, VK6BB and VK6FG; Secretary, Mr. Quinn (VK6CX); Assistant Secretary, Mr. Rann (VK6KO); Treasurer, Mr. Park (VK6BR). Members of the Council are: 6BB, 6BN, 6RL, 6PK, 6FY, 6GM, 6MW, 6CX. Traffic Manager, Mr. Mead (VK6LJ); QSL Bureau and Bulletin Editor, Mr. Mead (6LJ); Technical Director, Mr. Moss (VK6GM).

There was so much business that the meeting had to be adjourned for another week.

A field day was held in King's Park on 14th July, and, considering the cruel weather, quite a good herd gathered in our city. Owing to the Secretary taking the required maps, in case he got lost in the park, the start was somewhat delayed. The July country participant, 6FT, was successful in winning, and has the first prize, a grand silver cup donated by the President and presented by our Patron, Mr. Hayman. VK6GM won 5/- worth of gear. As if he has not enough as it is! He came second. VK6MW won a 50-tn of fags, so Bill has started to smoke now. VK6LJ tried to knock a tree down whilst backing out of the rain. 6MW was jealous of 6GM and attempted to tear George's wlg off—I mean his car's wig! 6BB and 6BN arrived with a car (?) full

of gear and a frame aerial which was built for Noah. 6BB got on all right, but 6BN's batteries ran down. 6KO came along, but couldn't participate, so he had to dig up 6CX for the maps. 6CX was the fixed station in the park, and the mobile station was 6CB. The idea was to plot the position of the fixed and mobile stations at various times of transmissions. The social outing was to be held at Glen Forrest, but was postponed on account of the wonderful weather of the VK6 winter. Another field day has been arranged by the Social Committee on the suggestion of VK6SA, to take place on 18th August, on the 3.5 band. The stations participating are to be entirely mobile, and are to be equipped with a receiver and transmitter. They are to be independent of power supply mains, and must be operated at least one mile away from the fixed QRA. The aerial and transmitter must be installed on the day of the test and not before. This obviates anyone getting any advantage over another by not having to get gear going on the day of the test. Each party is free to go where it pleases as regards to locality.

Points to be allotted to portable stations are as follow:—Working another portable, 2 points; contacting a metropolitan station, 1 point; contacting a country station, 2 points; contacting a station outside the State, 5 points.

Metropolitan stations are to be considered as those under 20 miles from Perth, and country stations those over 20 miles. Stations are to submit logs showing times of QSO, and a report on signals both ways to prove contact. The time limit will be between 10 a.m. and 5 p.m. for score counting.

It is intended to conduct a fone test from a moving car on 3.5 m.c. in the near future for the purpose of publicity. The idea is to cruise around the metropolitan area, describing the route taken and places visited, etc., and a prize is to be given for the best reception report. If this proves successful, another test will be run off on 7 m.c. for comparison.

VK6MN is our receiver expert, and has got a nice receiver perking on 5 and 10 without any 'um. VK6MW is the VK6 speed king; 6BN and 6JS are keeping up the AOPC classes; 6RL, a man of leisure, and may come on the air again. 6SA installing 56 m.c. gear again.

## Tasmanian Division

The usual monthly meeting was conducted at the club room on Tuesday evening, 2nd July.

General business occupied an hour and a half, and was followed by a talk on "Measuring Instruments" by our newly-elected President, W. T. Hooker (7JH). D.C. types only were considered, and their variety and application explained. It is hoped to hear from him again at a later date, when he has promised to go into the types used in A.C. measurements. This was 7JH's first attempt at a lecture in public, and he was somewhat affected by the usual nervousness, but finished strongly and was voted a lively round of applause for the effort. Other members are asked to brush up their best subject and let us hear about it.

The offices of the Council have been finalised now, and the complete list is as follows:—Messrs. W. T. Hooker (7JH), President; H. M. Moorhouse, Hon. Secretary; A. E. Allen (7PA), Treasurer; J. Batchler (7JB), Traffic and QSL Manager; F. W. Medhurst (7AH), C. F. Johnson (7AR) and C. Parish (7CP).

It was in the hands of the Council to consider the prospects of an alteration to membership fees, but it has been decided to continue as at present for this year, and consider the matter, if necessary, nearer the end of the year.

Another move is inevitable, too. The landlord is demanding more rental for the present quarters, so we are getting out. It is very disheartening to members who go to a lot of trouble to make the room convenient only to find that more rent is asked for.

The new room, though somewhat smaller than the present one, will suffice for some time to come, and the erection of an aerial should be easier than before. The room is located on the second floor over Connor's boot shop in Elizabeth-street, opposite Goodwill Stores.

A transmitter has been built up in the form of a P.P.—T.P. T.G. rig for the present—using 405, and will be put on the air as soon as is convenient after moving. The receiver has been reconditioned, and, between the two, 7WI should be heard and worked soon. Forty metres will be the band used for a start, it being the most used.

An elementary class for members is to start immediately, with J. Brown (7BJ) as technical instructor, N. Gillham taking the code section. This is not intended as opposed to the Technical School class, at present in operation, but many of the student members find that the technical class does not work in with their trade course at the same school, and they therefore cannot do both. This Institute class will give them an opportunity; also it is run gratis.

The membership list still increases. Several new ones were enrolled at the July meeting, including VK7's first VL member, Miss Joy Crowder, who is at present busy with the Technical School AOPC class, and hopes to take the October AOPC examination. We wish her good luck and extend a hearty welcome to her. Look out, you enthusiastic youths, or the YL's will be showing you the way.

On the Bands.—The 20-metre band seems to be fair here at present up till about 3.30 to 4 p.m., and 7KV, 7BJ, and recently 7JH, are to be heard working fairly regularly.

The 40-metre band is fair some evenings, with a few W's and K's to be heard, though QRN is generally rather high level. There promises to be some UHF work here soon, too. 7BJ is likely to start the ball rolling any time, so 7NC will possibly have cause to resurrect his outfit. Others then will possibly follow.

The 200-metre gang were delighted to be allowed to operate at their old times, after being advised that 7ZL would be extending its operating hours and they would have to remain silent for the time in question; so the late evening is the only time affected. This band is operated pretty regularly.

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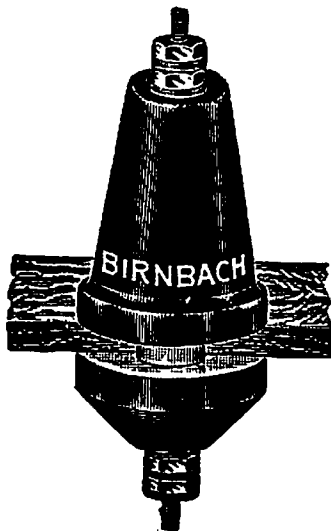
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## R.A.A.F. Wireless Reserve Notes

### SECOND DISTRICT NOTES. R.A.A.F.W.R. MEMBERS VISIT RICHMOND.

By 2A1.

For two members of the New South Wales end of the R.A.A.F.W.R., Sunday, 30th June, was an eventful day, giving promise of a new era in that body's existence in this State.

It happened this way: About 2 p.m. I was sitting by a nice cosy fire when a rattle on the front door brought me up to see who the dickens was game to come out on such an unpleasant day.

No other than the D.C. stood dripping at the door, while clouds of smoke and steam in the offing indicated the presence of the old motor bike on which he had arrived.

Would I come to Richmond? Would I? Like fun! So in the good R.A.A.F. way I cursed him and agreed.

And so we piled up in the machine, and with two snorts and a grunt the old mechanised lawn mower oscillated away.

The rain drizzled all the time in its cheerful way, and we made great headway when the wind wasn't blowing too hard.

Through the misty rain we had occasional glimpses of scared fowls running away and an occasional town traffic cop too scared to pull us up for traffic obstruction. So at last the observer spotted the 'drome on the starboard bow, and the pilot brought her down a few thousand while we sideslipped into the main drive and stopped. (That last is no trouble to the Harley.)

Amid signs of great building activity we found the orderly room and, together with it, Squadron-Leader Swinburne, the object of our visit.

You see, it's like this. Squadron-Leader Swinburne is vitally interested in our efforts, and on his arrival at Richmond 'phoned the D.C., asking him to come to Richmond to discuss reserve matters with a view to getting more and better co-operation between Permanent and Reserve men, which, I think you will admit, is a big step forward.

Squadron-Leader Swinburne turned out to be Class A in all respects, and lent a very attentive ear to our end of the business. He went one better, however, by plainly showing how anxious he is to have us doing useful work, and brought in Sergeant Endean to contribute to the discussion. The result was briefly as follows:—

1. The Air Board is keenly interested in us.
2. Reserve members are always welcome at Richmond to look the place over and meet Sergeant Endean and his signalmen.
3. Richmond would like to communicate directly with us at times when on watch for instructional purposes.
4. Further, they are willing to have us all up there from time to time for the day to attend lectures, etc., and

get a bit of traffic work on the official station.

5. Last, but not the least, they want to know us all personally, for they feel that we can and will do useful work for the service when called upon.

As I said before, it was a red letter day for us, and is the forerunner of many more trips for reservists in this State.

We saw the various fighting machines and radio equipment, mobile and fixed, and we can promise a real good and useful day for those of us who are fortunate enough to be living close enough to the 'drome to pay a visit.

I am sure most of us will get a kick out of pounding the brass when 500 watts are behind it, and, believe me, that's what we'll all have a go at in the near future.

Forty miles in the rain somewhat spoilt our pristine beauty by the time we got there, but it didn't spoil our welcome one bit.

We left the 'drome at 5.15 p.m. in more rain; we sampled some "Thames" brand fog; then more rain for 40 miles. I have since discovered that the fog we encountered was steam from the bike, as we ran through the rain on the way up.

Anyway, the D.C. and my humble self are firmly convinced that, should we survive the inevitable pneumonia, you will see the dawn of a new era in the life of the R.A.A.F. Wireless Reserve here, and we will do our darndest to make it so, now we have the backing of the men who count.

Lastly, we would like to express our appreciation to Squadron-Leader Swinburne and Sergeant Endean for a very pleasant afternoon.

### THIRD DISTRICT NOTES. 3ZI—VK3UK.

This month has seen the beginning of the new financial year, and we have started July with a new enthusiasm and a desire to outdo, during 1935-6, even the best of our work during 1934-5. We have taken stock of ourselves, of our Sections and our District, have forwarded a bunch of suggestions to headquarters, and are now looking forward to the best year that the Wireless Reserve has ever known. There have been a few changes in the personnel of the Sections, but the new men are settling down quickly with the help of the old hands. Our new semi-permanent Section leaders took over on 1st July, and we wish 3A5, 3B3, 3C3 and 3D4 the very best of luck. They are working hard to get their Sections an early lead in the Crack Section Trophy Contest. After a very close fight, VMC3 won the Crack Section Contest for 1934-5 by the narrow margin of .32 per cent. The issue was in doubt up to the last two schedules. Our congratulations to VMC3 for their win, and to VMC4 for pushing them so hard. We have to welcome VK3BS, VK3VW, VK3XQ and VK3WM as new members, and hope that

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they have as many happy times and associations whilst in VMC as we have all had.

3AI had bad luck at first, both with his transmitter and receiver, but now he has every difficulty straightened out and is putting a pure T9 R8 signal into Melbourne consistently.

3A4 has not been able to resume active work yet owing to the QRM from his job with 3BA.

3AG, VMC's newest member, is finding difficulty in handling Reserve traffic while 3CI is on the job. They are both in the same town, and matters are sure to be further complicated when 3DR, who also is in Shepparton, starts up next week. It seems a case for S.S. receivers, but a little experiment should straighten matters out satisfactorily. Shepparton holds the unique distinction of being the only country town in the Commonwealth with three active Reserve members. There will be some keen rivalry in Victoria, I surmise, as Ballarat, Bendigo, Geelong and Warrnambool each have more than three Hams in them. Are you going to let Shepparton have it all their own way?

3BI had his mast blown down, and, with his QRP rig, has found it impossible to contact his Section for the time being.

3B4 has just put in new receiver batteries. These misfortunes always go in threes, so they say. Arthur's "three" became evidenced, as he had no sooner replaced these batteries than he found it necessary to put in a new accumulator as well as new transmitter batteries.

3CI is having a bad bout of 'flu. Last Sunday he got out of bed in order to put through a message excusing himself from schedule. His action typifies the spirit which won the Track Section Trophy for VMC3.

3C2 has found it necessary to resign from VMC3 for the time being through pressure of work. Ken, is one of the old original members, so we are hoping that it won't be long before he is back in an active Section again.

3C3 is very busy servicing and building—P.A. work, etc. Coupled with the fact that he is a very energetic Section leader, we wonder when he has time to do any work on his property.

3EI has been forced into inactivity through a job which has called him away from Melbourne for some weeks.

3E3 is taking a keen interest in 56 m.c. work. Efforts are being made by IAI and 3ZI to contact him on this band.

3A5 has been down with a bout of 'flu, but is on the mend now.

The day is not very far distant, we feel sure, when all Reserve work in VMC will be done on U.H.F. bands. 3ZI has plans under weigh to form a Metropolitan U.H.F. Section, in which all traffic will be handled by 'phone. With beam arrays and some very enthralling research, there is no reason in the world why we cannot visualize the day when VMC. will keep all schedules "below 5." There is everything in favour of such a move. Gear is cheap, extremely portable; the experiment necessary to achieve success will be intensely interesting, to say the least, and finally we will be away from the bedlam of the QRM on 3.5 m.c.

## SIXTH DISTRICT NOTES.

By 6Z1-VK6MN.

6A3 and 6A5 are shifting to other quarters, and consequently temporarily inactive. 6A3 has shown considerable improvement lately, owing to winter conditions making constant watch operating possible. 6Z2 has been away in the bush again. 6A2 is as regular as clock work as Section leader. Call signs will be along any day for new members at Geraldton, Kalgoorlie and Harvey.

(Continued from page 15)

## TEN METRE NOTES.

(For inclusion in 3JJ's Section.)

June on 28 megacycles in N.S.W. was very quiet, even 2EP only working one American station, W4MR, and also having a QSO with J21S. In Sydney 2LZ worked 6SA one Sunday for a few moments, and also had a very short contact with 2EP. This contact was a rather unusual one. Points in N.S.W. for June: 2EP, 151; 2LZ, 21.

July has shown much more improvement, however. 4EI appeared on 10 metres, and had a QSO with both 2HY and 2LZ on July 14th. 2LZ had previously worked W6VQ on July 7th.

2EP continues to amass points at an amazing rate for the R.S.G.B. contest and has secured 840 points between July 7th and 15th. The stations worked include X1AY and W's 6VQ, 9GBJ, 6AA, 6BNF, 5QL, 6RH, 9FM, 9NY, 4AJY, 9KEP. He finds a tuned beam antenna far superior for both reception and transmission.

(Continued from page 14)

stations is the greatest. If less than three stations enter in any State the sum of the scores will represent their State's total.

No. 13.—The decision of the Federal Headquarters Executive of the W.I.A. will be final and binding in all matters.

## Department of Defence

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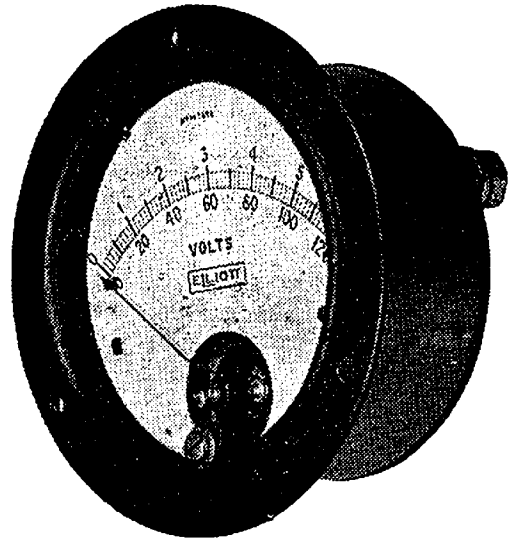
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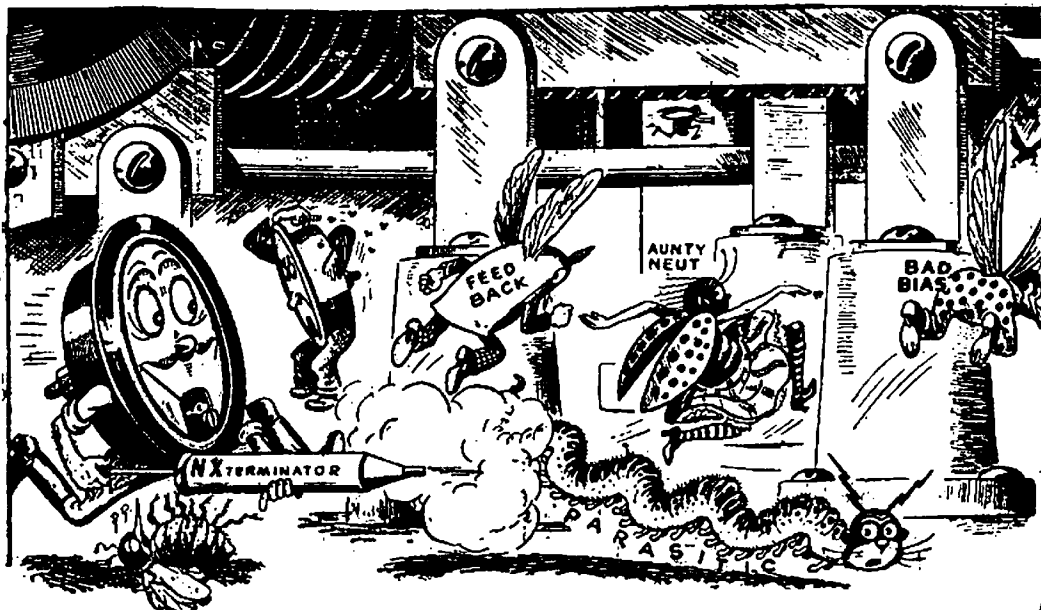
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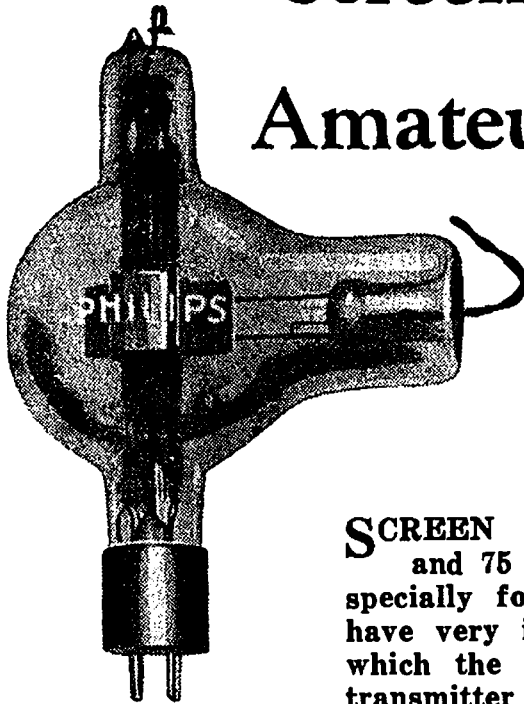
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Table A shows the various electrical properties of the Philips amateur transmitting valves:—

### CHARACTERISTICS:

Table A. Type.	Screen Grid Valves	
	QC 05/15.	QB 2/75
Filament Voltage .....	4.0	10.0
Filament current* .....	1	3.25
Saturation current* .....	400	2,000
Anode voltage .....	460-500	2,000
Screen grid voltage .....	75-125	300-500
Max. anode dissipation .....	15	75
Anode dissipation on test .....	20	100
Max. screen grid dissipation .....	3	15
Amplification factor* .....	225	200
Mutual conductance (slope)* .....	1.4	1.4
Int. resistance* .....	160,000	150,000
Anode-grid capacity .....	.001	.02
Max. diam. of bulb .....	60	100
Max length .....	160	210

\*Approximate values.

# PHILIPS

## TRANSMITTING VALVES



# AMATEUR RADIO

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1st September, 1935.

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## EDITORIAL . .

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The amateur's enthusiasm for radio experimentation is well known to his admirers and critics; probably this is the secret of his whole-hearted application to our interesting hobby.

This interest is laudable. To accomplish anything of real value we must have knowledge and commonsense, coupled with enthusiasm, before anything of real value can possibly be obtained in any sphere of activities.

However, when we hear that certain students, who, whilst seeking knowledge at our Institute class, have let their enthusiasm run away with their better judgment, to the extent that they were caught operating on amateur bands before they had passed their Amateur Operator's Proficiency examination, we wonder if they had considered the consequences sufficiently before lapsing. The Institute has always made it quite clear that unlicensed operation does not do anything to improve the lot of the genuine experimenter. In fact, the Institute has always found that these unlicensed transmissions, quite apart from breaking the regulations, also cause considerable interference to broadcast listeners, for which licensed amateurs may be blamed as well as radiating unsatisfactory signals on our bands.

This latter trouble is due mainly to lack of suitable apparatus and experience in correct operation. In the case outlined above, we regret to say that the Radio Inspectors' Department intends to take legal action to prohibit further breaches of the law.

We wonder sometimes, in cases such as these, whether those concerned realise the harm they are doing to the amateur fraternity by their conduct.

The Institute has made it a policy, based on a strong sense of personal honour, to assist the Radio Inspectors' Department in any matters governing the experimental licensee, and we flat-

ter ourselves that we have achieved a degree of goodwill, which has been built up on confidence, integrity and co-operation. It is, therefore, to be deplored that individual members of the Institute should do unlawful actions, which might help to break up this co-operative spirit now happily established.

We have always regarded the amateur as representing the best type of individual, possessing such qualities of intellect and character as would raise his outlook above taking the "short cut" in any matter connected with the "good old game."

"Let's keep our reputation clean."

---

---

Government House,  
Canberra,  
16th July, 1935.

The Military and Official Secretary to the Governor-General is commanded to acknowledge receipt of the loyal and dutiful message which the members of the Wireless Institute of Australia forwarded, through the medium of amateur radio stations, to His Majesty the King on the occasion of His Majesty's birthday.

The Military and Official Secretary is further commanded to state that His Majesty deeply appreciates the sentiments of loyalty and affection to which the message gives expression.

The President, the Wireless Institute of Australia, 191 Queen Street, Melbourne.

---

# The Stability and Otherwise of Crystal Oscillators

(By R. M. HUEY, B.Sc., B.E.,  
VK2HU, Laboratory Staff, Amalgamated  
Wireless, A/sia, Ltd.)

Quite a large number of amateurs seem to imagine that a quartz crystal provides a constant frequency in their transmitter. This is not the case, and variations of several kc/s on the 7mc band may quite possibly occur due to circuit and temperature variations. In this article an attempt will be made to show how to minimize these variations. First let us consider briefly the crystallography of quartz and just how it oscillates.

## Axes in a Crystal.

Referring to Fig. 1, the three main axes in a hexagonal quartz crystal are shown as the X, Y and Z axes. These are otherwise known as the electrical, mechanical and optical axes. As shown an X cut plate contains the Y and Z axes and is at right angles to the X axis, while a Y cut plate contains X and Z axes and is at right angles to the Y axis.

If we apply a potential across a crystal a stress and consequently some change in the dimensions of the crystal will occur. If we apply an A.C. e.m.f. across the crystal a mechanical oscillation will occur. Conversely a mechanical oscillation within the crystal will generate an A.C. e.m.f. across the electrodes. So, by feeding back a small amount of power to supply losses the crystal will keep on oscillating.

## Frequency of Oscillation.

The frequency is determined by the physical dimensions of the plate and the way it is cut from mother crystal. Thus, an X cut plate is thicker for some frequencies than Y cut plate. Other cuts at certain angles to the Z axis are possible and in some cases have advantages over the ordinary X or Y cut plates.

Several modes of vibration are possible. The vibration normally made use of is a shear between the planes ABCD and EFGH shown in Fig. 2. That is, one face of the crystal will move relative to the other, as shown

in Fig. 3. The frequency of vibration in this mode is inversely proportional to the dimensions AE, i.e., the thickness of the crystal. However, it is possible for vibration to occur by the planes ABFE and DCGH shearing relative to each other. This vibration will be at a much lower frequency, since the dimension AD is much larger than AE. In some cases it will happen that a harmonic of this low frequency oscillation will interfere with the desired high frequency fundamental of the crystal and stop oscillation. This is the reason why in some cases a non-active crystal may be made to oscillate by grinding as little as half a mil (1 mil = 1 thousandth of an inch) off one edge or the other. This edge grinding has also a small effect on the natural frequency of the plate.

The elastic properties determining the frequency are dependent on the temperature and pressures under which the crystal is operating. Of these effects temperature is the most important. A Y-cut plate has a temperature coefficient of about +80 parts in a million per degree centigrade, i.e., a 3.5 mc/s Y cut crystal will increase in frequency by 280 cycles for every °C. rise in temperature. X cut plates have a temperature coefficient of about -20 parts in a million per °C. Under operating conditions a range in temperature of 15°C. is easily possible. This means a frequency change of 4.2 kc/s or 1.05 kc/s for 3.5 mc/s Y and X cut crystals respectively. The frequency change due to a variation in pressure on the crystal is dependent on many factors including the flatness of the particular plate. However, a maximum figure of 100 parts in a million for a good plate is a reasonable figure, i.e., 0.35 kc/s at 3.5 mc/s.

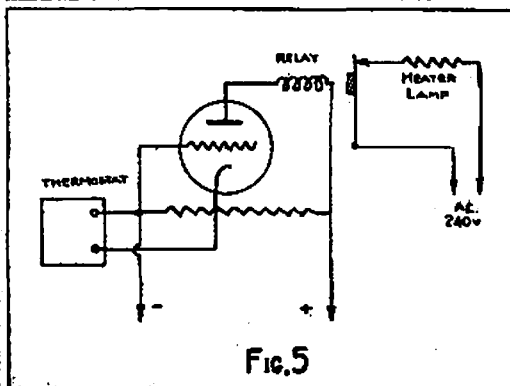
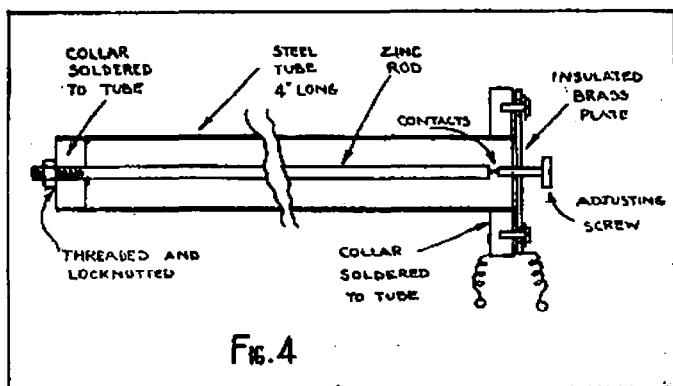
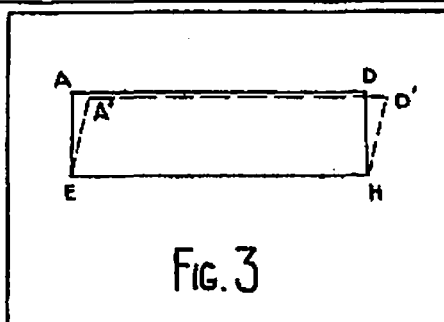
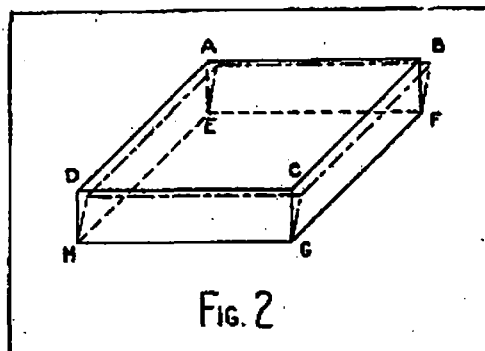
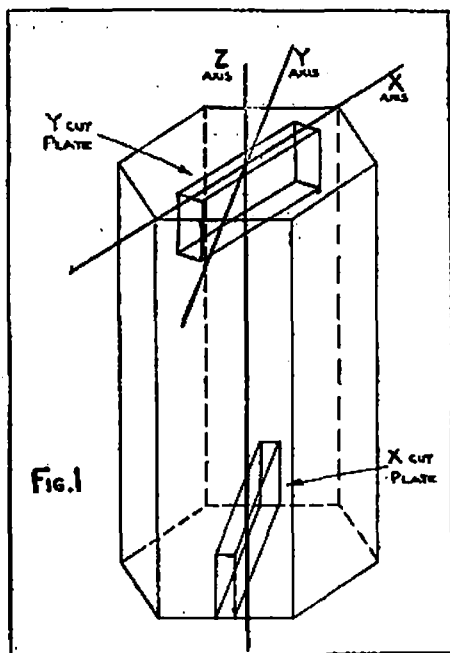
## Crystal Holders.

One very convenient method of frequency change is by varying the air gap between the top electrode and the

crystal. This may be done by mounting the top electrode on a screen adjustment or by inserting spacers between the crystal and the top electrode. Thin pieces of paper are quite suitable. The variation obtainable is from 300 to (in some cases) 1500 parts in a million, usually limited by the crystal ceasing to oscillate as the gap is made too large. Increasing the gap increases the frequency. In a gap of

frequency. Exactly as for a tuned circuit more capacity will adjust the crystal to a lower frequency.

Plate circuit tuning has an appreciable effect on the frequency only when tuned very near the resonance point where the crystal is about to break out of oscillation. A change of several hundred cycles in a 3.5 mc/s crystal oscillator can be caused by plate tuning when near this point,



length about 11-12 mils the air resonates at 3.5 mc/s and stops the crystal oscillating.

### Circuit Conditions.

Of these, two adjustments are mainly important: (a) Capacity across the crystal; (b) Plate tank tuning of the oscillator.

The first is really similar to the alteration of gap in its reaction on the crystal. Up to 100 mμfd across a crystal will cause a change of a few hundred parts in a million in fre-

quency, which is also the point of maximum output.

In circuits such as the tritet this effect is more marked because of the additional inductive coupling between output and crystal circuits. The variation of frequency with applied plate and filament voltage is small except when the tank circuit is very near resonance, when variations of several hundred parts in a million can be caused by variations in plate voltage or in the load taken by the following stage.

## Precautions to Ensure Stability.

(1) Run the C.O. tank back from resonance or use an untuned choke as the tank circuit, making sure that its natural period is not too close to that of the crystal.

(2) In tritet oscillators use as small a cathode coil as is consistent with strong oscillations.

(3) Do not overload the C.O.—use no more than 180 volts on plate.

(4) Clamp crystal firmly in a permanent holder.

(5) Do not vary load drawn from C.O., i.e., use permanent unkeyed buffer stage, preferably a pentode or S.G. tube, since these need less excitation than triodes.

If these recommendations are followed the C.O. frequency should be stable to half kc/s at 3.5 mc/s, except for the effects of temperature variation. If they are not followed, frequency variations of as much as 5 kc/s are quite easily possible. Further, when doubling to 7 mc/s these variations are themselves doubled in magnitude.

## Temperature Control.

Although this is somewhat beyond the capabilities and desires of most amateurs, a few figures may be interesting to those intending to work out a rough scheme. In an airtight wooden box of half-inch well-seasoned maple containing only the crystal and thermostat, a 15 or 25-watt 240v. lamp is ample to maintain an operating temperature of 40-50°C. Bimetallic thermostats can be home constructed at a reasonable cost on the scheme shown in Figs. 4 and 5. Those intending to go to such refinements should be well able to work out mechanical details for themselves. The movement of the thermostat contacts for a 5°C. change in temperature is about 0.3 mils for the metals shown. If steel and copper are used, then 0.12 mils, and for copper and zinc about 0.18 mils for the same temperature change. This

is sufficient to break only a minute current and should be used in some manner as shown in Fig. 5 to vary the grid bias of a valve in whose plate circuit the control relay is placed. Alternatively, the plate current of a larger valve operated from the thermostat may be passed through the heater if the box is small and well lagged so that no relay is necessary. A suitable relay should not be difficult to arrange.

## Zero Temperature Coefficient Crystals.

However, a much simpler, and in all respects, preferable method of stabilizing frequency with respect to temperature is to make use of crystals having a zero temperature coefficient. Two methods of cutting these have been described lately, both having as their essentials the initial cutting of the plate at special angles to optical and electrical axes. These two cuts are known as the AT and V cuts, and have been described recently in QST. The AT cut gives a very thin crystal (even thinner than Y cuts), whereas the V cut is about the same thickness as X cuts. Both are quite active, but the V cut crystals need to be flat and parallel to a fairly high accuracy, whereas the AT cuts will oscillate well even when quite high in the centre.

It should be noticed that the temperature coefficient depends not only on the angles of cut but also to quite a large extent upon the finish, flatness and chamfering of the edges of the plate. In any case, the temperature coefficient very rarely exceeds 30 parts in a million and is usually less than 10 parts in a million. The latter figure would mean a shift of only half kc/s at 3.5 mc/s over a temperature range of 15°C.

Blanks of AT or V cuts should be available to the amateur in more reasonable numbers before long. The only objection to the AT cut (in comparison with the V) is its extreme thinness and consequent fragility.

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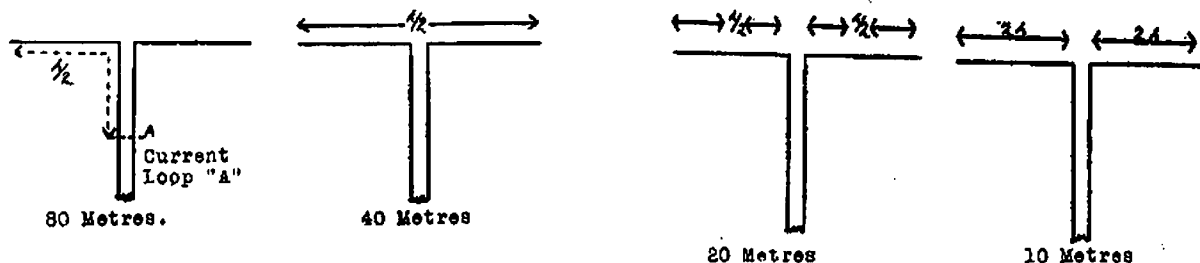
13 Balwyn Road, Canterbury, E.7.

## The Aerial System at VK6MN

Some amateurs may have their shacks so situated that long feeders are a necessity. Such is the case at VK6MN, and after several aerial feeder systems had been tried out, the one in operation now proved to be quite a success. So a description of it will be given.

No attempt will be made to delve into the theoretical whys and wherefores, but just how it works will be explained. Some time ago the doublet type of aerial was given some prominence and it was decided to give this a try-out. But before actually putting it in operation, the disadvantage of being tied to one frequency was rea-

physical centre of the radiator. Thus the trimming up commenced to get the lamps nearest the loop lighting with equal brilliance. After two hours of lowering and hauling up the aerial this was done, and when completed the higher half had 30 feet and the lower 28 feet of wire. It is necessary now to mention that 7/22 stranded enamel wire is used. If number 14, 12 or any other single wire is used, it will be found that longer lengths than used with stranded enamelled wires will be necessary. This is a point worth mentioning (as it is seldom, if ever, taken into consideration when making an aerial), simply because it is a fact



lised, and so, in an endeavour to overcome this, instead of using twisted feeders, the wires were separated by spreaders  $1\frac{1}{2}$  in. apart, and hooked on to a half wave forty metre Hertz radiator. Feeders were 90 ft. long.

The first thing done was to get this radiator the correct length, and this was accomplished by the aid of pea-lamps shunted across the current loop. Half a dozen were used at first, spaced about a foot apart, and when the key was pressed and the aerial feeding, it was found that the current loop was not in the centre of the 65 ft. of wire, as the lamp in this position did not light up brightest, but one nearer the mast did. Now, one mast is 50 ft. high, and the other allows the aerial to be 33 ft. off the ground. Seeing that one end had a greater capacity effect to earth than the other, it was noticed that the lamps equi-distant from each free end of the radiator did not light up with corresponding brilliancy, which indicated that the feeders could not be attached to the

which has been severely neglected by amateurs generally and the amateur's beloved "bible" doesn't breathe a word about it.

The figures given above, 30 feet and 28 feet, give a total of 58 feet for the 40-metre half wave Hertz radiator used at VK6MN. If your aerial is nearer the ground, less wire than that will be necessary and vice versa. The 58 feet here described is clear of trees, iron roofs, or any such like objects.

But to get on with the working of the aerial. For the 40-metre band, a coil shunted with a condenser as described for twisted feeders is used, and it works according to the "book of words."

The next band tried out was 20 metres, and using the aerial as a twin voltage fed half wave one, it works excellently. Going down to ten, this system operates as voltage-fed twin full-wave. Now we come to 80 metres. It works up there O.K. (ask the nearby B.C.L.'s. hi). Just how it does this

is as follows:—Current feed is again used, and the loop is 30 feet down the feeders, from where they join the radiator. From this point to the transmitter is 60 feet, which is a good length for 80-metre feeders. Even although half of the 80-metre radiator is as close together as 1½ inches, no great loss is apparent, judging from results obtained. Last year VK2NO reported VK6MN 80-metre signals the loudest heard on a portable receiver in some hill hotel in VK2, and QSO's with ZL are all equally as good.

Pea-lamps are fitted permanently at 20, 40 and 80-metre current loops, and each one lights up only when the radiation is in its particular frequency.

For those amateurs who may like to turn their aerial into a Christmas tree, the following information may come in useful. If low power is used, then suitable lamps are necessary. In VK6 we use "Competa" fuse-globes, 4v .06 amp. type. Cost, 1/- each here. If high power is used, a good quality 6v pea-lamp does. In conclusion, the readers are made out of mica strips. — VK6MN, 2/6/35.

We received a letter from Len. Moncur, who is touring the U.S.A. We understand he contacted Harry Kinnear in New York, and spent some time (and money, if we know Courtland-street) with him. He is having a most wonderful time among the W's and should be able to tell more about America than anyone we know.

### Erratum

The following correction, due to difficulty of printing square root signs, should be noted in the article published last month: "Investigation of Solenoid Design," by W. H. Black, VK3WB:—

$$S = \frac{2}{\text{PIR}} \text{ sq. root of } \frac{\text{Lh}}{\text{Cf}} \dots (10)$$

$$\text{and } Z' = 1.57 \text{ sq. root of } \frac{\text{Lh}}{\text{Cf}} \dots (12)$$

These omissions do not invalidate the conclusions regarding impedance and selectivity.—Editor.

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# A Universal Measuring Instrument

(By J. N. O'DEA, VK2FQ.)

There are numerous uses to which an 0.1 milliammeter may be put. This article will describe the use of the meter as a voltage current and resistance measuring instrument. The value of this type of measuring instrument to the amateur is apparent when it is considered that power inputs to the various stages of the transmitter may be calculated, grid currents measured, resistors of unknown values calculated, and, last but not least, tubes checked in receivers.

The circuit is shown in Fig. 1, and actually represents a tube analyser. This, however, was not the original intention when designing the circuit for the meter. It was only after the circuit for the voltage and current measuring portion was decided on that the tube checking portion was incorporated, in order to utilise the one meter as much as possible.

The range of the meter is increased to read voltages of 0.1, 0.5, 0.10, 0.50, 0.250, 0.500, 0.1000 and 0.1500 volts. The current measuring portion accommodates currents of 0.10, 0.50, and 0.100 milliamperes. Resistances between 100 and 60,000 ohms may be measured, as well as the plate current, plate voltage, grid voltage and screen voltage of certain types of tubes in a receiver.

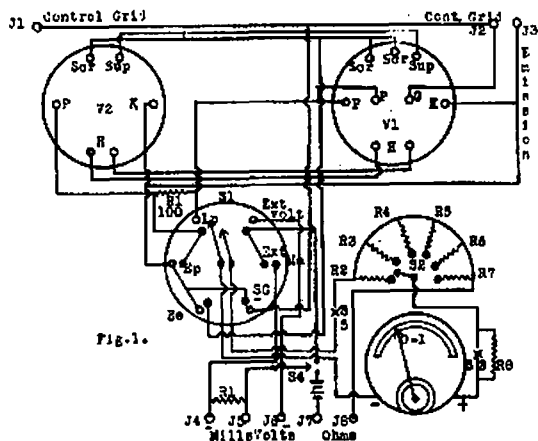
To increase the range of an 0.1 milliammeter, used as a volt meter, resistance must be placed in series with the meter. Let us see the effect of a resistance of 1000 ohms in series with the meter. Neglecting the resistance of the meter and applying Ohm's Law, we find the voltage range as follows.  $I_{ma} = .001$  amperes.

$$E = I \times R \\ = .001 \times 1000 \\ = 1 \text{ volt.}$$

This means that the meter, with 1000 ohms in series, can read voltages up to 1 volt. If the series resistor was 10,000 ohms, the meter would read 0.10 volts. It is now simple to see that for every volt that the meter is required to read a resistor of 1000 ohms must be placed in series. (1000 ohms per volt.) The reason for neglecting the meter resistance is seen when, by including the meter resistance, the scale is only increased to 1.03 volt. in the case of a series resistor of 100 ohms. Values of meter resistance are quoted here in case they prove helpful to you.

Weston . . . .	0.1 MA.	27 ohms.
Jewell . . . .	0.1 MA.	30 ohms.
Triplett . . . .	0.1 MA.	30 ohms.

Therefore, the meter resistance can be neglected in our voltage calculations. The voltmeter circuit is shown in Fig. 2.



UNIVERSAL MEASURING INSTRUMENT

Unfortunately, for the present anyhow, resistances of an accuracy of 1 per cent. are expensive, and to use them would make the cost of the instrument more or less prohibitive for the average experimenter. The only thing left to do was to use resistors of a lower value of accuracy. It was decided to obtain some resistors that were guaranteed to be within 10 per cent. of their rated value. On checking these resistors in a laboratory against reliable standards, the result was rather surprising. The average accuracy of the resistors was found to be 2.4 per cent. This looked much better and it was decided that an average of 2.4 per cent. was near enough for the uses to which the meter would be put. Another consideration is that a lot of the measurements made by the amateur are comparative, and the case is rare where the measurements have to be accurate to within 5 per cent.

To increase the current range of the meter it is necessary to shunt the meter with a resistor. Theoretically the correct way to do this is to shunt the meter with resistors equal to 1/9th, 1/49th and 1/99th of the meter resistance in order to obtain a range of 10, 50 and 100 milliamperes respectively. This means that these shunts have to have a very small resistance

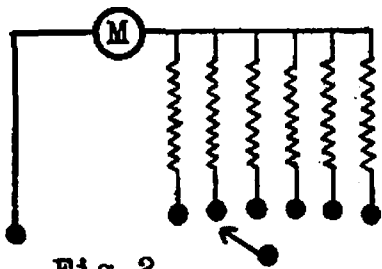


Fig 2

and actually, in the latter two cases, would be less than 1 ohm. Now, if we add a resistance in series with the meter, say 1000 ohms, then the value of the shunt resistor will be higher, because the meter circuit now has a resistance of 1030 ohms (including the meter resistance). Actually for 10 MA, the shunt would be 114.4 ohms. Here again the values are odd, but, by increasing the series resistor for each increase in the range of the meter, we find that the shunt value approaches 100 ohms. Let us use a shunt resistor of 100 ohms, for the three scales, and approach it from a different angle.

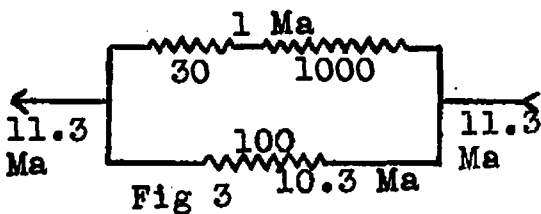


Fig 3

The meter resistance, plus the series resistance, totals 1030 ohms (10 MA scale). According to Ohm's Law for parallel resistors, the current flowing through the SHUNT circuit (100 ohms) is 10.3 times that flowing through the METER circuit. Therefore, the total current flowing through

the circuit is 10.3 plus 1 (1 MA in the meter circuit) = 11.3 MA. See Fig. 3.

This results in our 10 MA scale being increased to 11.3 MA. If we use the same resistors for our series circuit as we are using for our voltage scale, we save on resistors. Our 50 MA scale would utilise the 5000 ohm series resistor and the actual range would be 51.3 MA. By using the 10,000 ohm resistor for the 100 MA scale the range becomes 101.3 MA. Here again these odd values have been disregarded and the ranges read as—10, 50 and 100 MA.

It is only when using the 10 MA scale that the error is inclined to be of any importance; this can be accommodated by adding 13 per cent. to all readings on this scale, should you so desire. The combined voltage and current circuit for the meter is shown in Fig. 4.

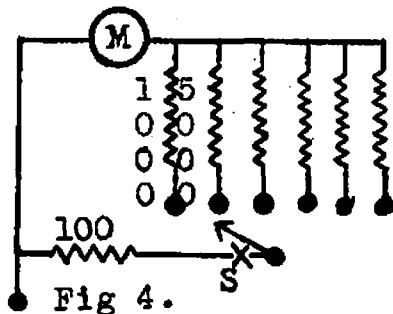


Fig 4.

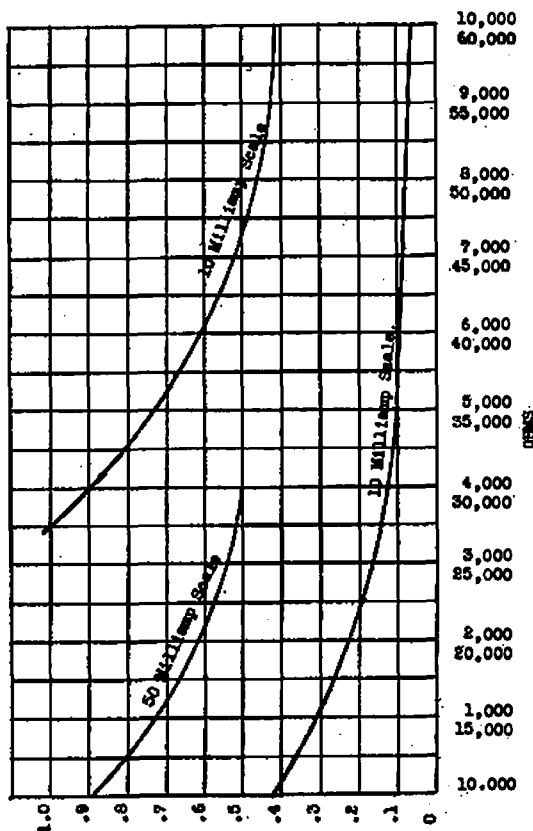
When switch S is open the meter is used as a voltmeter, and when closed as a milliammeter. A combination of the shunt and series resistors is used for the ohmmeter. This will be discussed later.

Reverting to Fig. 1. V1 is a universal socket. This socket takes tubes having 4, 5, or 6-pin bases. However, it is not suitable for all types of tubes, unless the circuit is rearranged for the various elements contained in these tubes. E.G. type 47 tubes cannot be placed in the 5-pin socket. The 47 is a directly-heated tube and consequently the screen would be connected to the cathode circuit, as can be easily noticed on tracing the circuit. A separate adaptor can easily be made to provide for the 47. This is not recommended though, because, as you are aware of the numerous types now in existence, it would certainly complicate matters by trying to provide for all types of tubes. The best thing to

do is to decide on the types that are used in your own case and re-arrange the connections for the socket. V2 is used to plug one end of the lead that goes to the set, in. The other end of this lead has a 6-pin tube-base connected, and by means of adaptors the lead can be used as required. Switch S1 is the two-gang, six-way switch used to switch the meter into the required circuit to be measured. A Marquis switch filled the bill nicely. S2 is another switch of the same type, only in this case it is a single gang. S4 is for the ohmmeter circuit. When in one position it brings the battery into circuit, and with the switch S1 set at Ext. MA., allows the measurement of resistors. By tracing the circuit, it will be seen that the 100-ohm shunt is included in the ohmmeter circuit continued through S1 to the meter. The other end of the meter goes through the required resistor and back to the battery through J8, the resistor under test and on to J7. S3 either includes the 1 Meg. resistor in the voltmeter circuit. By opening S3 and setting the switch S2 for 500 volts, the scale increases to 1500 volts. By shorting the 1 Meg. resistor out with S3, the range is 500 volts. S5 is used to disconnect the meter on switching S1 when measuring tubes. When S1 is set as required, S5 is closed and the reading obtained. Note the 100-ohm shunt included in the plate circuits. This is necessary in order to measure the plate current of the tube under test. The lead from the grid clip in the receiver goes to a battery clip on the adaptor lead; this terminates at socket J1. The grid of the tube under test goes to J2. For an emission test the plug is removed from J2 and inserted in J3, actually connecting the grid to cathode. The rest of the circuit should be easy to follow by now.

Fig. 5 shows the curves that are used for the ohmmeter. Owing to the divisions on the meter, it is impossible to measure resistors below 100 ohms. Each division equals approximately 100 ohms or so. We will now see how to plot these curves. Obtain a piece of graph paper. Marks the points of the meter scale vertically, then along the bottom mark the resistance values in steps of 1000 ohms up to 10,000 ohms. This scale is used in conjunction with the two top curves. Underneath these, and starting from the extreme left-hand side, from 10,000 to 60,000 in steps of 5000 ohms. This is done in

order to keep the graph down to a reasonable size, instead of extending it right across. The lower curve is used with the 10,000 - 60,000 scale. For measuring resistors up to 4000 ohms the 50 MA scale on the meter is used. (Incidentally, the 10 MA scale corresponds to the 1-volt scale and the 50 MA scale corresponds to the 5-volt scale.) For values of over 4000 to 10,000 the TOP 10 MA scale is used, and the BOTTOM 10 MA scale is used for values of over 10,000 to 60,000 ohms. Good old Ohm's Law solves the problem of the actual curves for us.



On tracing the circuit, we find (for the 50 MA scale) that the following resistors are in the circuit. The 100 ohm shunt, 30 ohm resistance and 5000 ohm series resistor. These total 5130 ohms. By shorting J7 and J8, thus bringing the 4.5 volt battery into the circuit, a reading will be obtained on the meter. Ohm's Law will tell us what this reading should be.

$$E=4.5 \text{ volts.} \quad I=E \div R.$$

$$R=5130 \text{ ohms.}$$

$$= \frac{4.5}{5130}$$

$$= .00087 \text{ amps.}$$

$$= .87 \text{ MA.}$$

This is our first point for the curve. Because there was no external resistor in the circuit, the first point is made on the vertical line corresponding to

zero resistance. Assume that an external resistor of 1000 ohms has now been placed across J7 and J8. This means that the total is now 5130, plus 1000, 6130 ohms. What will the current be?

$$E=4.5 \text{ volts.}$$

$$R=6130 \text{ ohms, } I=E \div R,$$

$$= \frac{4.5}{6130}$$

$$= .00073 \text{ amps.}$$

$$= .73 \text{ MA.}$$

This becomes the second point on the graph proper. Continue on until you have plotted the points up to 4000 ohms. This will complete the first curve (50 MA). The next one can now be tackled. This is the curve using the 10 MA scale of the meter. Our series resistor now becomes 1000 ohms, plus the meter and shunt, totalling 1130 ohms. Be careful to see that J7 and J8 are not shorted, because if they are a current of approximately four mills will flow. Now, our first point required is 4000 ohms; this is where we left off on the other curve. Right, add 4000 ohms to the circuit resistance and we get 5,130 ohms. The current will again be .87 MA. Continue on with this curve, adding an extra 1000 ohms up to 10,000 ohms. At 10,000 ohms. i.e., 10,000 plus the 1130 in the circuit, we get a reading of .4 mills. This completes curve two. Instead of continuing right on and making the curve a yard or so long, start again at the left-hand corner. By now it should be clearly understood how to plot these curves. When you have plotted the points for the curves, and you are ready to draw the curves, obtain a piece of 18-gauge wire. Bend this on the curve so that it runs over the points. Then holding the wire in position, draw your curve. This is much easier than trying to do it free-hand.

To measure an unknown resistor, it is always advisable to start with the scale 1000 to 4000 ohms. Should the resistor be higher, it is just a matter of changing S2 to the next scale. The reason for this is evident when it is possible for the resistor to be below 1000 ohms, and the meter set for the higher scale, the needle would swing right over, with possible damage to the meter.

The panel measures 9in. x 7½in. x 2in. This just accommodates the components, as can be seen from the photo. of the underneath portion of the panel. There is no need to state the

actual measurements for drilling the panel, because the individual will have his own ideas on just how to build his own.

### Parts Required.

- 1 0-1 Milliammeter.
- 1 Panel.
- 1 Universal socket, V1. (Na-ald), V1.
- 1 6-pin socket, sub-panel, V2.
- 1 6-way, single gang switch, (Marquis), S2.
- 1 6-way, two gang switch, (Marquis), S1.
- 8 Jacks, J1-8.
- 1 5000 ohm IRC resistor, R3.
- 1 10,000 ohm IRC resistor, R4.
- 1 50,000 ohm IRC resistor, R5.
- 1 250,000 ohm IRC resistor, R6.
- 1 500,000 ohm IRC resistor, R7.
- 1 1 Megohm IRC resistor, R8.
- 2 100 ohm wire wound resistors, 100 MA, R1.
- 2 Panel mounting Toggle switches, S3; S5.
- 1 Panel mounting Toggle switches, 2-way, S4.
- 1 1000 ohm resistor IRC, R2.
- 1 4.5 volt torch battery.
- 2 Test prods and leads.
- Grid clips, screws, etc.

.....

Attention of readers is drawn to Veall's advertisement in this issue, which refers to their mammoth new catalogue, which, they say, is packed with good tidings for hams. The catalogue may be obtained free at any of Veall's stores, or, if written for, a twopenny stamp enclosed will bring it to any address.

.....

Mr. W. Foster, of Messrs. Noyes Bros. (Melbourne) Pty. Ltd., of 597-603 Lonsdale street, has been appointed by the Government to the Electrical Approvals Regulations Committee. Mr. Foster will represent the Wholesale Electrical Traders of Victoria, the Electrical Federation of Victoria, and the Victorian Radio Association. These bodies jointly recommended a panel of three names, and ultimately Mr. Foster was selected.

## Correspondence

Newstead Street,  
Maribyrnong, W3  
17th April, 1935.

The Editor,  
Amateur Radio,  
Box 2,  
South Melbourne, SC5.

Sir,

Having read with interest the Editorial in April issue, we desire to express our views thereon:—

There will always be a controversy between fone and CW Hams until some more advantageous arrangement of the amateur frequencies is arrived at. Might we suggest that the present frequencies on 3.5, 14, and 28 mc bands be divided, the low frequency end for CW, and the high frequency end for fone, thereby eliminating any possible chances of QRM between CW and fone stations, and also that the 7 mc band be made strictly for CW. In America these bands are divided. Alternatively, we would suggest that, as there is at present a more or less tacit agreement not to use fone on 7 mc at night, to extend the same, and prohibit CW from 3.5 mc at night.

We agree that the quality of the average Ham fone is something appalling on the high frequencies, but this is simply because a large percentage of Hams who endeavour to use fone on these bands have not the means to install a high quality modulation system, so resort to more economical but less easily adjusted methods.

There are the 200 and 160 metre bands which could be availed of for the Ham who wishes to amuse the BCL's with hour after hour of canned music, instead of cluttering up the too few frequencies which are made available on the higher frequency bands. There are a couple of stations on 3.5 mc who are particular offenders in this respect—one even quoting the "Stoodio" clock.

On the 80 metre band, where most of the ragchewing takes place, a power up to 10 watts is quite sufficient to work consistently over a large area when conditions are ideal, but with QRN to be overcome, a few additional watts are necessary to ensure perfect readability, but there is no necessity for the 60 watts mentioned. If a Ham wishes to QSO with his next door Ham, which in the metropolis is only a few miles, let him take off his aerial, and reduce the QRM, or use the 56 mc band, and try to discover some of the possibilities which this band holds, but the country Ham is in a different category when he wants a local fone QSO with his nearest Ham, who most likely is situated between 20 and 50 miles distant, so he has to use a band which will give a QSA5 signal consistently over this distance.

The DX key-puncher, who is participating in contests, certainly likes to have his QSO's as free from QRM as possible; to achieve this object, the only logical thing remains for fone to be prohibited on frequencies, and divide the remaining bands as suggested, in fairness to both fone and CW men alike. On the other hand, the fone man does not like his QSO spoilt by the QRM caused by a T3 CW signal, which is often heard on all bands.

We would conclude by reminding you that the reprisals suggested in your Editorial can be made to work BOTH WAYS.

G. W. Manning, VK3XJ.  
A. R. Williams, VK3WE.  
J. Stevens, VK3ZK.  
J. Colthrup, VK3PL.  
E. Perkins, VK3EP.  
H. R. James, VK3LH.

Per G. W. Manning.

Editor, Amateur Radio,

Dear OM,

Have just seen the results of the Centenary contest.

I notice under the heading "Receiving Station Logs," Australia, there is listed the scores of three "loyal" Australians! Why only three? As I look through the list of entries, and see where Germany had twenty, England six, and Holland two, I almost weep! To think, that a contest committee arranged a contest, and then received only three entries from hundreds of persons qualified enough to lend practical support!

What must our fellow "Receivers" in Germany, England, Holland, France, Austria, and U.S.A. think? In my opinion, they think that here in Australia we have a minute number of "Receiving Stations." This is of course not the case.

Do you want a "Receiving" contest to be included in the next test? Of course you do! It will be a disaster if the sponsors see fit to eliminate the "Receiving" contest in October, but if you do not promise your support in the event, then the blue pencil will sail through "Receiving Contest." Now, come on chaps, make up your minds to pull your weight, and lend support.

Eric Trebilcock,  
BERS—195,  
Postal Staff,  
St. Peters, S.A.

## 28 and 56 MC. Section

(Conducted by VK3JJ.)

There was a marked improvement in 56 m.c. activity around Melbourne during the past month, and several new stations to this band put in an appearance. As a further stimulus to experimental work on 56 m.c., a pair of 2A3 tubes have been donated by Mr. Falkenberg, of Byabuk, and will be awarded to the station producing the best results during August, September and October. Judges were appointed at the August Key Section meeting, and logs will be judged on the five best contacts and amount of experimental work done. Logs must reach the W.I.A. not later than November 30th.

Contacts over more than a few miles on 6 m.c. are still lacking, but it is hoped that, with concerted efforts during the next few weeks, it will be possible to bridge the gaps to the nearer country towns. 3KW at Geelong is running a schedule each Monday evening at 8 p.m., and is using a beam antenna, but no sign of his signals have yet been heard. More country stations are needed on 56 m.c., as no doubt some locations may be found that are ideal, while others may be very poor, but until stations are active they will remain undiscovered. 3KQ has now changed to a new QRA, and has had several good phone QSO's with 3DH about 10 miles away. Other Melbourne stations active are 3LG, 3JG, 3ML, 3UK, 3OF, 3MR, 3RS and 3DQ.

### TEN METRES IN N.S.W.

In Sydney and suburbs July was just a slight bit better than June. Early in the month both 2HY and 2LZ worked 4EI, signals being a good R6 at each end. The only other QSO's were between 2LZ and W6VQ, and one during a week-day lunch hour by 2HY with ZL2BN. 2LZ rushed home to do likewise, but alas, the 2L was gone!

Of course, 2EP wasn't worried by lack of QSO's, like he will be, say all of us, in VIS, now that he's in VIM! During the month he worked W6VQ (4), X1AY, W9BGJ, W6BNF, W6AAA, VK2LZ, W9KEP, W4AJY (2), W9IFZ, W9NY, W6BNU (2) and W9BVL.

Later information states that VK4EI has worked nothing since 2HY and 2LZ, and that the last QSO 4BB had was in May.

We regret very much in N.S.W. losing 2EP, but he has left us a rather high pinnacle of achievement at which to aim. As a reporter of news to VK2 28 m.c. H.Q., he was unique, never missing a week without a report even if no results were obtained. If only all other ten mx. enthusiasts would do likewise it would make this section much more interesting.  
VK2YC.

### LAST MONTH OF CONTEST.

The International 28 m.c. contest, organised by the R.S.G.B., concludes on September 30th, and entry logs must reach the R.S.G.B. by the end of November. It is imperative that as many logs as possible be sent, as it is an excellent

## Federal and Victorian Q.S.L. Bureau

By VK3RJ.



Log forms and printed rules for the Combined International DX Contest, to be staged by the W.I.A. (Victorian Division) in conjunction with the N.Z.A.R.T. during October, may be had on application to this Bureau.

The second International CW Relay Competition, held by the Rede Dos Emissores Portugueses (R.E.P. Portugal), was held from July 6th to 21st. Advice of this contest invariably arrives after the contest is over.

The QSL Bureau for Egypt (SU), Palestine (ZC) and the Sudan (ST), is now being managed by Frank H. Pettitt (SU1SG), whose address is:—Catholic Club, Mustapha Barracks, Alexandria, Egypt. Interstate QSL Managers please note.

Mr. Clay Burnard, of San Francisco, advises that he has reserved 2000 photographs of the new Oakland bridge over San Francisco Bay for VK amateurs. These pictures measure 24 inches by 18 inches, and should make an attractive ornament on any shack wall. Requests for these photographs should be addressed to Mr. Clay Burnard, care Golden Gate and Highway District, 111 Sutter Street, San Francisco, Cal., U.S.A. No postage is required for the photograph.

Cards are on hand at the Victorian Bureau, 23 Landale Street, Box Hill, for the following VK3's. Postage will ensure their prompt despatch:—AS, BK, BL, BS, BX, CA, CW, DD, DS, DY, EG, ET, EW, FC, FG, FM, FN, GB, GM, GV, GW, HE, HH, JL, JR, JT, JV, JW, KA, KI, KO, KY, LG, LE, LF, LM, LP, LT, LY, NM, NA, OF, OJ, OU, PS, PW, PZ, QX, QZ, SP, TY, UJ, UY, WN, WM, WX, XB, XR, XU, XK, YR, ZF, ZJ, ZK, ZL, ZR, ZX, EVANS, ADAMS, DINAN, JONES, BURSTON, WILLIAMS.

R. E. JONES.  
Federal QSL Manager.

.....

chance to let overseas enthusiasts know that we VK's are doing our share in U.H.F. development. If desired, logs may be sent to 2YC or 3JJ immediately at the close, and will be forwarded on. The rules appeared in October, 1934, "A.R."

Points scored during July were as follows:—VK2EP 851, VK2LZ 80, VK2HY 22, VK4EI 12.

## Divisional Notes

### NOTES FROM HEADQUARTERS. W.I.A. (N.S.W. DIVISION).

The August monthly meeting of the N.S.W. Division was held as usual at the Y.M.C.A. Visitors included 2VN and 2AL. The meeting was well attended.

Amateurs were asked to keep an accurate check as regards frequency and time of all commercial stations operating in amateur bands, with a view to having such stations removed.

The international aspects of amateur radio were discussed, and consideration given to I.A.R.U. proposals.

Two new services were announced, firstly, a standard frequency check and transmission standards, and, secondly, the inauguration of a new monthly meeting on the first Monday in each month. The meeting is entirely of a technical nature, with no business transactions.

A short lecture on Amateur Super-hets was delivered by W. E. C. Blschoff (VK2LZ). Following on this VK2JX spoke on laboratory practice. Both discussions were much appreciated.

In September the lecturer will be the chief engineer of Stromberg Carlson. Mr. Scott will speak on the Cathode Ray Oscillograph.

Folders for publicity purposes, and also for the use of members, are being printed containing the dates of all meetings till the end of the financial year, and information concerning the Institute.

The Council notes with pleasure the support the W.I.A. is getting from various Radio Clubs and individual experimenters in general. The membership is increasing satisfactorily, and it augurs well for the success of the Institute.

2WS also very good strength and quality, but either has a punk Receiver or has forgotten how to read C.W., as have called umpteen times but always N.D. 2XO always has plenty of punch, but must be always altering things, as the quality of the fone varies every few nights.

2JC R6, and nice to listen to.

Using a 3 stage xtal rig with 80 watts input to an O3A in the final ZL2GN gets R7 from U.S.A.

VK4GG is easily the best VK4 with 4CB next. 4CB is the most consistent VK4. He is on nearly every night. VK's 4LW, 4PK and 4QL are received well here on Sunday mornings.

2OU is on at odd times. Still busy knocking the bugs out of a new six tube super.

QRU for now. 73.

### PARRAMATTA AND DISTRICT RADIO CLUB.

(Affiliated with W.I.A.).

This new Club came into being about the middle of last May and has at present a membership of 22, including 5 hams in the persons of VK2BK, VK2QZ, VK2ZT, VK2QC and VK2DK.

At present the meetings are held at the QRA of 2QC and would welcome any visitors from other Radio Clubs. Lectures for members preparing for their A.O.P.C. are in the capable hands of 2QZ, and the morse in-

structors are 2ZT and 2QC. The office-bearers of the Club are:—President, Mr. Best, snr.; Vice-President, VK2BK; Secretary, VK2ZT; Treasurer and Publicity Officer, Les. Grainge; Social Secretary, VK2QC.

The Secretary would welcome any ideas or suggestions from other Clubs that would be beneficial to the Parramatta Club.

VK2DK is very busy at present building new "rigs" and, from all we hear, they seem to be very fb and 2ZT will have to watch his step and the DX.

VK2ZT has been QRL erecting a new aerial, adding about 10ft. to his "stick" and is out hot and strong after DX, and from all reports he seems to be getting it.

VK2BJ, known to the Club as "haywire," has not been so active lately, but in spite of the "haywire" he gets out just the same, judging by the QSL wall-paper and a WAC.

The Club is not financial as yet to own its own transmitter, but if the keenness of the members is any criterion, it won't be long now.

### LAKEMBA RADIO CLUB (VK2LR).

(Affiliated with W.I.A., N.S.W. Division.)

The meetings of the Club are held every second Tuesday at the new Club rooms, 334 Canterbury Road, Hurlstone Park.

The recent 5 and 40 metre relay test proved quite successful, many Interstate reports being received. The 5 metre station, operated by 2OD, on board a car, hooked up with 2QX, who fed the output of his Receiver to the amplifiers of 2LR (40 m.x.), operated by 2DL, these signals in turn being received by 2XZ on 40 metres. 2XZ, replying to 2OD, was picked up on a super at 2LR, the output being fed to the 5 m.x. transmitter, operated by 2QX and finally received by 2OD in the car.

At a recent meeting a two way 5 m.x. demonstration was given between the Club-rooms and 2OD's residence. Mr. Taylor, a prospective new member, who had been nominated the previous meeting, remained with 2OD, and was duly accepted as a new member of the Club, the necessary speeches being made over the 5 m.x. radiophone.

Since moving to the new Clubrooms the attendance at general meetings has improved, there being 35 present on the last occasion.

A morse class has been started for those who wish to improve their code. These classes are held on each alternate Tuesday, between Club meetings. All further enquiries will be answered by the Hon. Secretary at the above address.

### NEWCASTLE CLUB NOTES. (By VK2RG.)

Great interest is being taken by Club members in the weekly DX contest, which will be a point-score over 12 weeks.

Results of the recent Club half-yearly DX contest, on a handicap basis, again proved the superiority of 2ZC in this field. Competing from the scratch mark he netted 2,592 points in the allotted twelve hours, making 21 contacts with 8 countries. 2DG put up a creditable performance by coming second with 2,116 points, 4 countries and 8 QSO's.

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"HT was a close third with 2,105 points, and 2FN was fourth.

2FN is changing his rig from 47-45 to 59-210, and the finished job will present a neat and professional appearance. Tritet control is almost universal in this district now, 2UF being the only ham still using the old 47. But it won't be long, Frank says. His long awaited superhet is under way, we believe. 2MT is also QRL, building a super.

## STANDARD FREQUENCY TRANSMISSIONS.

VK2OC, of Wyong, will be commencing W.I.A. Frequency Services on Sunday, the 15th September.

10 a.m. till 10.30 will consist of transmission on 7,000 kc, and from 10.30 till 11 a.m. checks on frequency will be given to any Stations calling VK2OC. This service will be continued on all following Sundays.

Further particulars of this service will be available in later issues.

Amateurs using S.E. transmitters should especially make use of these standards as Stations have been reported well outside the bottom of the 7 m.c. band and interfering with commercial services.

## 5MX FIELD DAY.

The first 5 m.x. Field, held in N.S.W., and possibly in Australia, was run by the W.I.A. at Wyong, on Sunday, the 18th of August.

Wyong is ideally situated for field day operations; some 68 miles north of Sydney it is in a central position as Amateurs can travel down from Newcastle and surrounding districts.

The field day, as it will be described, proved exceptionally successful, and the fact that it was conducted on 5 m.x. seemed to create a new spirit in field days.

Seven cars started from Sydney and three came down from Newcastle, the final attendance being just around 50. VK2NO had his car installed with a complete 5 m.x. Station, and during the run from his QRA to the meeting he successfully contacted many Sydney stations. The transmitter consisted of a pair of 89's modulated by a 42.

The Secretary, Bob Powers', car, had a very QBP rig aboard with a B406, modulated by a B406 and about point 7 of a watt input. Successful duplex telephony between 2NO and 2W1 in the two cars was carried out at all speeds up to 50 m.p.h. Some peculiar effects were noted on the trip up, Sydney station being QSO'd by 2NO's portable till Hornsby, after that 2JU reports 2NO audible till his car was on the final run down to Kangaroo Point Ferry.

Contacts between the cars were successful and the only variation in signals over a 200 yard range was one when passing over Turramurra Railway bridge when, with a range of only 100 feet, the signals faded completely out. Where rounding curves the signals often dropped when the back car was obscured from view.

The majority of the Amateurs reached Wyong by 12.30, although it took quite a little effort to break away from the Gosford Hostel in cases. Seven cars arrived from Sydney. One contained 2IC, 2OD, 2OW and others, another 2YP, 2AG, 9BA and others.

Lunch was partaken of just about 1.15 p.m. and the transmitter that was to be hidden was taken out about 1.45, and was timed to commence operations at 2.15 p.m. within a radius of four miles from the Wyong showground, which was the starting place. The 5 m.x. transmitter of VK2NO started

right on time and an R8 signal was audible at the showground, then the fun commenced.

Those that hadn't tried out their gear were very dubious whether a half wave antenna had any directional properties when coupled to an ordinary super-regenerative. However, the results proved that greater accuracy as far as D.F. work 5 m.x. proved far better than the more conventional 80 m.x. band.

2ZC, 2SO, 2FN and party found the transmitter in 30 minutes, 2OD, 2IC, 2OW and party were second, in 43 minutes; and 2ZH, 2JX, Bob Power and 2HZ party were third in 45 minutes. These times broke all previous records on the 80 m.x. band and one thinks that most of those in attendance were dubious that they would even locate the transmitter. The transmitter was about a mile and a half air line away and extremely well hidden and by road was a detour. The transmitter closed down about 8 p.m. and the cars trooped back to the showground for a ragchew and tea.

The gear used by the winner, 2ZC, was extremely well built, everything completely shielded except the 'phone leads and the directional properties of a half wave antenna rotated were accurate to 10 degrees.

Tea was announced at 4.30 p.m. when the usual speeches were made and the prize-winners were announced. 2ZC and party a 955 acorn tube, and second, 2OD and party, 10/6, a prize kindly donated by Mr. Sutton.

Of the highlights possibly 2OC's beautiful super het was the best—2QF's argument with a post—2ZH's behaviour on the trip back and not forgetting the Duke of Kent or York(?) in 2AG's car. The Wyong hostel ran out of beer at about 3 p.m. Of course, the Amateurs weren't responsible.

Thanks is extended to the Wyong gang 2OC, 2TX, 2XP, and now 2BP, for making arrangements to ensure the success of the field day.

## NORTH SHORE NOTES. W.I.A. (N.S.W. DIVISION).

By VK2VQ.

The past month has brought many changes in the three prominent Bands: namely 20, 40 and 80 metres. Especially on the higher frequencies have conditions been observed to be changing on 14 mc for example, signals from the U.S.A. are fading out in the afternoons and their place is being filled by Europeans. Signals from such countries as HB, OH, SP, G and F, are heard at good strength from 5 p.m. onwards. 7 mc is also a much improved Band and provides quite a few European contacts for the early mornings, besides the usual quota of Yanks. To those seekers after W.A.C. it would be a solid scheme to look for HK1AA on 7,150 k.c. each night with a Xdc note. His sigs are usually R7 and make good copy, 80 m.c. is falling off and the boys are migrating to the higher frequencies. As for 5 and 10 m.c. enough has already been said elsewhere in this issue. Sufficient to say, that 5 m.x. will, in time, prove one of the greatest amateur DX bands—signals from W having been heard in G!!!

And now for the scandal and blackmail. Don. 2DR has returned from VK5 and left behind him a broken heart or, at least, that's the general impression. Hi! He is now definitely rebuilding. (What, the heart?—Ed.) Young Dave has gone to the pack. Literally I mean. Has taken to dancing classes and wanders round murmuring "Hot-cha-cha." Hi! It's a bad sign; but still 2AE is planning a new 90ft. stick and so the YL's will have a battle to keep him



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off the air. Hi! 2SV, of Roseville, has not been on so frequently, but his Heising fone gets him many good reports. Pop down and see me some time, Bill. "The Tavern Knight"—2HG is holding the fort in Chatswood on 7 m.c. with 2BJ doing good work on 80 m.x. Jack is rather QRL studies, but still manages to chew the fat with the boys. 2BJ certainly never suffers from a sore throat and can talk for hours on end. Hi! The Naremburn horror—2SS—continues his good work on 7 m.c. Bob has the best S.E. sig. that I've heard and combines that with good operating—so does not lack for QSO's. Con 2LZ, has staged a comeback to 40 m.c. and causes a mild stampede in the U.S.A. His partner in crime, 2HY, is also back on 7 m.c., and believe me, Roy, it's a fb T9 sig. that you shove out. 2WW swotting hard for accountancy and does not have much time for radio. Watch Bill's smoke when the exams. are over. 2KA silent. Snap out of it. Paul o.b.—your new call of 2NV would sound the berries on the air again. What about it? 2VG and 2HA hold chess meetings and seem to knock no end of fun out of it. 2VG is thinking of a big stick to hold his Zepp and, no doubt, prays that it will not go the way of the last 60 footer. George 2VP has broken in to the DX racket by working all States of W—fb for 46's. 2VM accuses 2VQ of being a bad moral influence, and so has decided to move out of the danger zone H. Keith has built new speech equipment on a steel chassis, and it certainly looks the goods. Let's know your new QRA o.b. Hi! 2KJ on again and agitates 7 m.c. with a 203A in the end of a 3 stage perk. Sounds quite a reasonable sig., too. This humble scribe—2VQ—QRL accepting tennis challenges as far afield as 5LD. Hi! Garn! Launse, you're not nearly good enough. Also, QRL training the YL in the use of the P.M.G. mike, with fair to gloomy results. Hi! The old Bill 2HZ romps in and makes my detector tube look silly. Bill has tried the Jones 53 osc tube with great success and swears by it as a co. He says that it puts the 59 and 47 types in the proverbial shade—only Bill didn't say proverbial. Hi! Hi! Catch on? 2VN is a newcomer, but still that did not prevent him working a few Yanks on his two stage xtal, 47co, 46 doubling to the s.w.f. antenna. 2JE has a nice QSL card, and also plenty of hot records! Whew! Ask him to play "I want to be a nudist"! ! ! Hi! I can't see you getting past Peter at the Pearly Gate, Bill OM.

In North Sydney 2TD has a really fine fone outfit going on 7 m.c., and is also hard at work on 5 m.c. FB Norm, you old sinner. Jim 2YC, too QRL, with the latest addition to his family to worry about. Ham radio is in a new QRA now and hears the DX like nobody's business. Taking a running jump and a dive we land in Mosman in time to hear 2PV working three more Yanks on his SE tens. fb Pete—you're getting 2SS worried now. Hi! Gang! If you want any help in putting up aerials don't ask 2PV, 2SS or 2VQ. Ask Harry Whyte-Meach the why and wherefore. Hi!

2XC dead to the world. Ian is QRL at the Varsity though, so that may be the reason. Alec, 2FM, still fighting the BCL's and is training his Alsatian now to fix 'em. Hi! 2HI wanders round like a lost soul as he will be if he hits another tram! Fred is very QRL at work though, and he has clicked a good job so that does not worry him. F.B.O.B. I am indebted to 2IX for dope on the Manly urgers. It would appear that the gang generally are rebuilding, the more consistent being 2HF, 2BS, 2AX, 2FF and 2IX, 2MR

The Manly Radio Club is scouting round for a new QRA, and so is temporarily off the air. 2BS and YL have a tight squeeze to fit in Bill's car, but still they don't appear to mind that. Hi! 2IX playing cowboys and Injuns with the BCL's. You will get out of that state in time, OM. Hi! 2QK making a decent job of his new rig and should be on by the time these notes are published. Old Tom 2KM still fools around with MOPA and believe you me, the resultant sig. cannot be faulted. 2FF, at Deewhy, is a fone station and puts out quite fair stuff. Gets good reports from Interstate.

Well, that I think is that, and so here are some good signals heard on 7 m.c. during the last month. 2EW P.M.G. op., at Gladesville, who often works 2NP, also of the Looney village. 2XJ and 2EO are another pair who make the DX go all gooey like! Dave 2EO has worked 57 countries this year. 3DQ, whose fone reaches R9 in VIS is a great ragchewer and a nice chap at the same time. 5LD and 5LP shove R9 sigs over here. Gang, I'm sure all of you will wish 5LP the best of luck in the next month. Laurie has been in bed for 11 years with spine trouble and now there is a chance of recovery. Good luck, OM. 3EG, Old Ivan, is never missed on 7 m.c.—a 203A doing the trick.

Well, gang, cheerio until next month, and plenty of DX.

## ZONE 3 NOTES. W.I.A. (N.S.W. DIVISION).

By VK2OU.

Conditions on 80 metres during the past month have been pretty fair, although QRN has been unusually heavy at times. Some nights WCW and fone stations come through FB, but other times are inaudible. W6JGA was the best C.W. station and W6EQI the best fone.

ZL fones are generally good, and plentiful. 2KH is now in Zone 3, although I have not met him yet. He is QRL on the National Relay Station, at Lawrence, about 2 miles from my QRA.

2CJ is also a newcomer, QRA. W. Johnstone, Oliver Street, Grafton. He uses 3 stage MOPA 46 T.P.T.G. osx. 46 buffer and a pair of 46's in P.A. and certainly makes a noise here. 2ZM, also of Grafton, is back again using MOPA 46 T.P.T.G. osc. 46 first and second buffer, and a 210 PA. For fone a pair of 50's in PP modulate the 210. Speech amp. consists of 27 driving a pair of 27's in PP. 2NY was heard once at R9 and sounded very much like xtal.

2GI has also returned to the fold and is putting 1 watt into a B406 on 40 and 80. Gets out well on 40 but not so well on 80. Bemoans the fact that the 240 A.C. only stretched as far as his neighbours. 2B1, of Lismore, R9 on fone. Fairly good quality. He is the Zone 3 relay expert. For fuller details consult 2KR. What about that W. Cec? Hi!

## Victorian Division

### KEY SECTION NOTES.

(By C. WOODWARD.)

VK8YO.

At the August meeting of the Key Section, the new Chairman, Mr. Campbell, VK8MR, opened proceedings amidst great applause.

A pleasant surprise was introduced in the shape of a pair of 2A3's, donated by Mr. Falkenburg, of Byaduk, for competition amongst the members. It was decided to

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award the trophy to the member who has the best five contacts on 56 m.c. before October 31, 1935. It is understood that quite a number of new stations will be on the air on 56 m.c. immediately with the intention of claiming the 2A3's.

Mr. Cunningham, VK3ML, who recently returned from a trip to Western Australia, gave a most interesting account of his adventures among the VK6's. It seems that W.A.C. is easy EXCEPT South America. Nothing unusual about that.

Mr. De Cure, VK3WL, who is transferring to South Australia, was given a cordial farewell by the section.

After the meeting 3WL was taken off to supper, and to celebrate, but the only result was that 3OC backed his car into a telegraph pole!

Conditions on the 40 and 20 metre bands have not altered much in the last month, although 3MR reported hearing the G's at R8 and on 20 metres about 1 a.m., and considered that they were the loudest that he has ever heard them.

VK3RJ is now back in harness again.

The interest in beam antennae is spreading. 3CP has now installed on for 14 m.c. and is delighted with the results.

The new transmitter at 3LX is finished and working well.

Illness has kept 3DP off the air for a few weeks, but he is now quite well and very active again.

A new mast is up at 3RX, whilst 3MR has turned his attention to 56 m.c.

3OC has not been heard for some weeks owing to a very busy period. There is also a rumour of another "mystery tube" in the offing.

3YO is practising on a "bug." You heard!

It was strange to hear 3HC on 7 m.c. the first time in years.

Quite a number of stations are off the air preparing their gear for the coming International DX contest, and interest is rising as the weeks go by.

It is estimated that there will be many more stations in the test this year, and S.S. supers, Beam Antennae, and "Bugs" are becoming the vogue.

## 'PHONE SECTION NOTES.

(By IVOR MORGAN, VK3DH.)

The meeting of the above section, the first for the new financial year, was well attended. Falling on July 30, the last gathering of members before the special transmission of August 18, the competition arranged by the New Zealand DX Club was discussed and all necessary arrangements for times of transmissions, stations who would participate, etc., were made.

The competition of last year was, we must admit, from the point of view of the New Zealanders, not a success. This was due to the complicated technical details which we drew up, considering only the system our judges had used in our last competition. We were not thinking of the difficulties the DX'ers in New Zealand might experience in following the complicated technical rules for judging, or being able to hear the average station sufficiently well to allocate points for all the several details asked for the competition committee, for instance, depth of modulation, quality of sound or steadiness of carrier.

The average DX'er there was in the game only because he was interested in getting verifications from as many broadcasting stations in any part of the world as possible

and did not study the technicalities of transmission.

Well, now this year's competition is being run by the New Zealand DX Club, on their own lines. Other than 3TH being the judge, we have nothing to arrange or do except supply the necessary "bait" for the DX'ers, who are "fishing."

By the time this appears in "Amateur Radio" the aforementioned competition will have been staged, as a matter of fact, since I am late in sending in the notes, I am able to report that from the Victorian viewpoint, all went off satisfactorily—we can only hope that the conditions for reception in New Zealand were good.

This meeting was the first under the new scheme of allocations of frequencies, whereby all stations receive preference according to their position on the order of merit. A few members appeared to think that this scheme in practice was not all that they thought it would be—notably, 3RI gave notice that they would move that the motion, "all stations be given preference of frequencies and sessions according to their position on the order of merit," which was adopted in July, be rescinded.

The smoke night was reported on as being a great success—64 being present, all of whom, without a doubt, thoroughly enjoyed themselves. I understand that a nett loss of 115 was recorded. A vote of thanks was passed on to 3RO and committee, also Healings, who so generously supplied the very effective tickets.

Regarding the separate and individual doings of the 'phone gang:—

3FW has installed a new speech amplifier system, which certainly is doing a good job: '24 as triode, -27, and -50's.

DH happened to walk into a well-known radio store in Camberwell last week (free ad.) and had the pleasure of finding 3XL there making some purchases. In the course of conversation XL related how he had overcome a very severe case of QRM to a next door BCL (your pardon, XL-). The interference caused to this crystal receiver was complete and hopeless whenever XL went on the air 20 m.x., 40 m.x., or 200 m.x.—so this is what was done. (See 3RX, he is in trouble).

One only loud speaker was transferred to the crystal set QRA by XL, complete with a five-way cable. XL returned to shack having first secured one end of five-way cable with crystal owner. The cable having been laid over fences, house-tops, etc., was then linked up. One pair of lines connected remote speaker with XL—BCL receiver and other three lines wired up with two buzzers and two press buttons, one of each at either end.

Procedure:—XL wishes to transmit, presses buzzer. BCL at other end replies with "dit dit." meaning O.K. Then he sends a signal made up of a number of dots, from one to six, representing six local stations, commencing at the high frequency end of the band. Whichever number is received by YL, that station is duly tuned in, and of course, is heard by the BCL in his remote speaker.

I understand from Harold now that the "crystal listener" has taken such a liking to the speaker that he has asked for a couple of a 5 "Toobe" super. Good luck, Harold.

## SHORT WAVE GROUP NOTES.

(By G. W. MANNING, VK3XJ.)

Progress with 5 metre receivers is being maintained amongst members and ere long.

# Amateur Radio

when definite schedules have been arranged by the transmitting members of the Division, something in the way of useful data will be obtained.

3XJ has built himself a transceiver, using a Cossor 220B modulated by a 33, and is able to get tons of rf both from it in the receiver and transmitter positions. Schedules are being arranged with 3HF and 3BH, who are at present active on this band, so any other members who reside in the Moonee Ponds, Ascot Vale and Essendon districts are requested to keep a watch for signals from these stations. (Please let the keypunchers know when you are ready and schedules will be arranged.—Ed.).

Mr. Burdekin, one of our most energetic members, is at the present time playing around with "anti-noise" antennas. Let's have some dope on it at our next meeting, Burdie!

The group extend to their ever popular chairman, Mr. Arthur Mildern, congratulations on his election to Council. VK8XJ has been appointed Section delegate to Council for the ensuing year.

3WQ has been heard working fone on 80 metre channels during the last few weeks. It is also rumoured that the world-famed, VK3JH, has actually worked a couple of locals on 40 metres, using CW, of course. When are you thinking of using a certain system of modulation, Bob?

Our Investigation Officer, Mr. Sones, is seriously considering his present ORA to somewhere nearer the city. If Bill happens to take an abode in a QRM area, it will give him ample scope to co-operate with Burdie in his "anti-noise" antenna experiments. (Bill, we understand, is transferring to the country very soon.—Ed.).

Maurie Quick sat at the last P.M.G.'s examination for an A.O.P.C., but up to the time of going to print, the much looked for long envelope, or its small brother, has not been delivered to Maurie's address. Best of luck, and the gang hope it is the long one that eventually finds its way to you, Maurie. It is rumoured that Ben. Potter and Ronnie Higginbotham has gone QYL, so am unable to publish progress reports.

No more news for the present, gang, so cheerio and 73's until next month.

## NORTH-WESTERN NOTES.

(By VK3CE.)

The north-western gang seem to be relaxing after recent activities, or is it in readiness for the fast approaching contest? However, the fact remains that all stations have been practically inactive over the past month, even 3KR has nothing to report by way of DX, but tells us that there is a big chance of Kerang changing over its power supply to A.C., and both Ken. and "Treb" 3TL are elated at the prospective change.

Murray, 3OR, is on the air again with full power, having replaced his 32 volt bank of house lighting batts, and also has his new speech amp. in action. It is powered from a small genemotor.

Herb, 3NN, way over at Yanac, has his heater installed and finds it fb for early Sunday morning QSOs.

From Callawadda comes the news that 3HQ is visiting VK2, so look up the Wagga gang when passing through to VIS. 3HM, like the rest of us, has only had a few local QSO's of late.

Allan, 3HL, has now got his 80 m.x. fone rig perking very nicely. Understand, he is now using Heising mod, congrats anyway OM, your fone comes through here in fine style.

He states he has found conditions on the higher frequencies rather dead, but has managed to work a few W's just to keep his hand in.

3ZK has been working ZL when conditions permitted, and heard also in local rag chews.

3WE has his SW super working O.K., but has been having trouble with it at times owing to fluctuations in power. Nothing has been heard of Alf., 3CH, or Herb., 3LH. Guess the former is kept busy keeping power and light, up to the locals, and the latter removing ailments from their BC RX's.

Please, gang, give me a call, or drop a few lines, and let me have the dope on your activities, as I am to QRL to visit you all personally each month to obtain the fuel for these notes. Anxious in anticipation, CUL is 73's.

## GOULBURN VALLEY NOTES.

(By 3DW.)

The writer regrets the loss of G.V. notes last month, due solely to the QSO with OM 'flu and herewith thanks the gang for their good wishes for the speedy recovery, same eventuated.

Five meters is receiving some attention in Shepparton, 3SN and Roy Milledge have constructed one outfit which is at present undergoing tests, and not having the mate to this ready as yet, there is, of course, no data available as to its lone performance. 3SN has been badly bitten by the experimental bug, and all the nice rigs he recently owned have been reduced to haywire. Roy Milledge expects to sit for next A.O.P.C. exam., and as he is an old ham should not find any difficulty in supplying the RI with the necessary answers. The two fellows, aforementioned, recently received a "Receiver" (?) from a "Ham" (?) (Yep, a licensed one at that) with a letter asking why it wouldn't gee? Stage RF, DET, 2 audio (the idea was to operate a loud speaker, I believe). Maybe the principle involved is new? . . . however, the boys found the pentode output wired back to the grid of the first audio stage, and after correcting this they removed enough resistors and condensers from the RF stage to start on another receiver. Hi! The old saying is adaptable, "Him as has gets!" Yep, our ham friend got, but, oh, boy, who wanted what he got, anyway? Hi! Better luck next effort, OM.

3DR is at last active and has been on the air pretty consistently of late, also started up on his RAAFWR allocation. Has nothing new to report, but Bill's a dark horse, so look out.

3DW spent fortnight away recently; few days in VIM and regrets time so limited he was unable visit any of the fraternity. Rest of the time spent at Ravenswood, 15 miles south of Bendigo, on the main VIM highway. Erected portable TNT on 7 m.c., using PM4 osc with one watt input from "B" batts, and succeeded in Qso-ing VK6LK, 5LY and 5MK. Q5 R6 reports when Adelaide QRM subsided. Also had call from VK2SO but missed the contact on account of forgetting to throw the antenna switch. Thanks, indeed, chaps, for the fb yarns. RX was 2 tube using A630's. Antenna was 62 feet long (up a pine tree) and voltage fed via a GR359 wavemeter, which happened to be the most convenient thing to take along, and also served as an excellent frequency check. 3EP, at Rochester, has the AC in the house, but at the present time is too busy making money with new AC BCL sets to get the rig in action. 3ZK sent along his notes last month as usual? . . . my fault this time,

Jimmy; but you have forgotten me this time! However, the pick from last month is to the effect that Roy, of 3CE, has started poultry farming, but gassed about 30 of 100 chickens he purchased. (Make a crystal oven out of it, our crystals stand anything in the way of gas.—Ed.).

What's wrong with the incubator, Roy? Junior Op. now going under his own power and getting out fairly well. Hi! Hi! Roy will need a sound proof shack to cut out the local QRM, when the modulation percentage

Say, Gang, did you notice 3UK has allotted him self HLZUK? . . . same to you, Vaughan, old scout. 73 boys . . . be-er up, and doing!

## WESTERN DISTRICT NOTES.

### 3HG—3OW.

Activities in this district seem to be at a very low ebb, due, no doubt, to the cold weather and very patchy conditions. The good DX conditions on 14 m.c. have fallen away, 7 m.c. is very poor and 8.5 m.c. the worst it has been for years. As the eleven year cycle progresses 14 m.c. is improving, but 8.5 m.c. is getting steadily worse each winter, in this district anyway.

3GC and 3NK still active, the former getting good reports from W on 7 m.c. 3GQ says he is going to QRP for the contest in October, using less than ten watts. He will have a keen rival in 3PG, who is conducting numerous experiments with different antennas and intends going into this contest all out to win the handicap section.

3NQ, self-excited addict, is at last converted to c.c., all those who grind crystals please note!

3KJ is rebuilding to three stage crystal and will definitely be on the air soon. He has never been heard here, although he has had his licence for several years.

3NN has greatly improved his 'phone with the aid of a Harlie microphone, and a new three-stage speech amplifier.

3HL heard on 8.5 m.c. the other night, the first time he has been heard on this band for a long time, except for reserve work and Sunday schedules.

3OS is having his genny rewound, so as it can be used as a dynamotor running from the 32-volt "mains." Rob is still getting out very well with a couple of sick B batteries as power supply.

3TA continues his fb 200 metre transmissions. 3DX has installed some very good gear for his publicity work, including a crystal mike, double turntable, faders, etc.

## Queensland Division

(By Radio from VK4AW, via VK3ZC, VK3UK.)

At the August meeting of the Queensland Division, before a large attendance of members and students, Mr. A. E. Walz delivered a talk on reminiscences, starting with early activities and leading up to present day radio work. At the September meeting a talk on X-Ray is to be delivered by Mr. Furer, a well-known local X-Ray authority. Since our policy of providing regular monthly lectures a marked increase in attendances has been noticed, and with the proposed lectures for future meetings, large attendances will continue. Two student classes are at present being conducted under the instruction of Mr. P. Kelly, and H. Scholz, while C. Miller and W. Hepton take charge of the morse practice. The official station, 4WI, continues to con-

duct Sunday evening broadcasts on 8.5 m.c. to country members, and also a slow morse session between 7 p.m. and 9 p.m.

4MC has acquired a new two tube electron coupled AC receiver, and has worked two Yanks and OM2RX, all reporting R7 to 9. He has quite a good brand of local QRM from Neon signs.

4WT is now a 59 Tritet convert, using 2 buffer 46 stages and finishing with a pair of 210's recently acquired, as the 45's kept giving up the ghost owing to lead flashover and consequent glass puncture. Is using capacitative link coupling to advantage between the last buffer and final stage.

4RY has been holidaying in Toowoomba again, where it is so cold that crystals have to be tickled to get them to oscillate at 6 a.m. at the local B class station.

4CG, of the previously mentioned town, has recently joined the ranks of responsible citizens, having acquired a YF. Congrats. Cliff, OM.

4JB has packed up and gone west again for a few months to Roma classing the woolly coats from the sheep.

4RQ, from Longreach, is at present in VIB for the Exhibition, likewise 4GA from Quamby, who reports several VIB hams good strength up there in the back of beyond.

4EI and 4JF seem to have been the star performers during the recent VK4ZL contest, being, so far as can be ascertained at present, well ahead of the remainder of the contestants. However, final results will appear in the next issue of "Amateur Radio."

4KH has been badly bitten by the single signal super bug, and is seriously considering building one of these animals to sort out the hash on 40 metres.

4LM just returned home on hols from study in Sydney, where he dissects frogs' legs, etc., and visits a few ham sharks during his spare time.

Both 4CB and 4GC are using good quality fone on 80 metres and romp in well in VIB. Both stations, we understand, are using crystal mikes.

56 m.c. activity has taken a new lease of life during the past six months in VK4. Several country hams are interested and have complete stations working; namely 4BB, 4CU, 4XN, 4AF, 4TY. Recently the boys in VIB put up a new VK DX record, that being a duplex 'phone contact with an aeroplane over a distance of 103 miles. We understand the VK2 gang are now going to it and we wish them luck, although just as a little hint, VK4 has a bit more up their sleeves. Address all correspondence for VK4 Division to Box 1524V, G.P.O., Brisbane.

## South Australian Division

(By ERIC HALLIDAY, VK5FW.)

Doings at the Institute during the last month have been rather quiet, three weeks passing without a single meeting night.

The students' lectures are now in full swing. They are being given by Mr. A. Taylor, VK5AT, and so far there has been an average attendance of about 40. Mr. Taylor intends to make this series of lectures as complete as possible, and for this reason council has decided to let him spread the lectures over a period of six months.

The students' transmitter—VK5WI Junior—is now on the air and is available whenever the rooms are open. The perk, which was built by 5MD, is a TNT using a 45 with about 600 volts on its plate.

# Amateur Radio

During the recent VK5 traffic contest 5WI Junior was on the air every Sunday with one of the students on the key. They managed to collect quite a few points, too.

The institute's big transmitter should have also been on to help swell the numbers, but was conspicuous by its absence. It is about time the powers that are in charge of the institute made this transmitter available to the members. Half of them have never even been able to see it, let alone have a pound on the key. At the present time 5WI is more a fable than a reality to most members.

It is intended to arrange a field day for Eight Hours Day, October 9. At a recent meeting VK5WP gave the chaps a description of the field day that was held by the VK7's during the last convention. Those southerners certainly know how to make a success of their outings. It is doubtful whether we, with our large membership, will be able to do as good. The last couple of outings have been miserable failures.

Let's get together and make up for it by making this field day a brilliant success. What about it, chaps?

It's going to be held in cars and will probably be on the 80 m. band. Get busy right away with those receivers.

A lecture will be given a couple of weeks before the field day on how to make a small portable receiver, suitable for the day. This should be of interest to those who have not been in previous field tests.

## MORE VK5 NOTES.

(By 5LG.)

Who said 5JH was dead? He turned up at WIA the other night, so business must be booming fb, Vic.

5WP also returned to the fold after a visit to Tatts-mania.

5MZ—Jack still hooks 'em on 40 and 20, but forgets the rules in the tests. Hi!

5AT certainly has the low down on type 46. Hi!

5LB says he'd be happy if his feet were as hot as his final tank. Hi!

5WW and 5RT are in charge of the WIA students' perk, in VK5 test.

5ZX sick of 20, eh? Too much or too little, DX?

5JC has tritet doublers. What next?

5WP, 5SU and 5JO are going to hid a perker for the boys in the coming VK5 field day. If that's all they hide, I'm a bad guesser.

5BM very prehistoric signal, worse than worse. Worse than AC in fact.

5ZY three-stage xtal, sounds like AC on everything to me, for 'evens sake, Keith, don't try to modulate that noise.

5WD allowed a ham to bluff him from NDC report to DC. Oh, boys, do be truthful.

5FW will soon be baldheaded. Eric has started to build a PA for his rig.

5LN fone on 40, and it's not bad, either.

5RY sounds fb here. Extal, of course.

5LG, the lure of 80 m.x. fone has called, weird noises are now heard at the cop shop, and they don't come from the cells either. Hi!

A "pirate" "I.W.W." unlicensed transmitting fiend, called CQ once too often and the RI answered. If he escapes the usual fine, etc., he will be lucky. It will go hard with him for his ticket now. "Illicit Wireless Wizards" take care, the RI is not the fool you think him, so if you want your ticket take my advice and get a call sign in the legitimate way, it's the easiest in the long run.

(By 5LP.)

VK5AF is the call of Cecil Ives, of 73

Yacca Road, Sealcliff; he is using 247 in Hartley, with 10 watts. Hertz antenna, using 2 tube DC RX. His first DX WK6.

BERS195, Eric Trebilcock, the "Overtone King," has been transferred by the P.M.G. department to Tennants Creek, as op. there, so some more boomerangs.

VK5BD is a new call for Don. Briggs, of Iona Street, Broadview, using 'TNT' with 46 with 15 watts. RX usual 2 tube electron coupled.

Say, old VK5's old stages, "Just turn back your log books for the last twelve months and see how many of the new chaps you have worked. Give them a call, they would like a QSO."

VK5HR, Bill Heinrick, of Bute, who has a very fb T9 signal, gets out well for his QRP, using 3 watts. But like a lot of country hams has the power supply problem to contend with.

VK5RY, R. C. Yates, of Henley Beach, who is using a C644 in TNT, seems to be having a fair amount of success.

From time to time one hears much about the contests, not being open to non-members of the W.I.A., but our local contest open to non-members, showed the true position—not many starters.

VK5PL, who is now at Iron Knob, hopes to be on the air from there very shortly.

The phone gang, and the CW gang dispute, as to 'phone at night being very quiet of late, but by the sound of things the old wound will soon be opened again.

VK5WK makes a reappearance on the 7 m.c. band again after a long period on 14 m.c.

The students' class was on the breeze, under the call of 5WI, trying to make the contest a success.

Now, gang, it won't be long before our Field Day (Eight Hours Day) is here, so get your receivers ready. Do not leave it until the last minute.

Condx have been very patchy on 7 m.e. They can be heard as early as 2 p.m., VE, W, K6, K4. 14 m.c. has been fairly good, the usual Yank 'phone.

## HAMS AND HAMMING.

Poison Gas Scares in VK! Nunno 'twas only VKSSU and 5CR QSO cegaspers \$t W.I.A. the other night, MIM. Congrats are in order, our scribe Eric Halliday now 5FW, congratulations to him and any other not mentioned.

5TR, sez he'd like to brain Doc Heavaside with a 50 condx. Must be crook. Hi!

5RT—Disappointed, Bob? He can only get a dull red blush in his RK20. Hi!

5GR on 14 m.c., trying out new antenna system. Some good dope for Gordon soon, fb. 5KL, rebuilt 4-stages 45 co, 46 fb, 46 buff, 46 pa. Hope it gees.

5RH—New QRA. New perk, new everything. News next month.

5RX—Our QSL'ser. QRL talkies and 'flu.

5ZX—802 tritet PP 46 final; fb rig note and ragchew.

5WR—Rich and 20 m.x. DX are inseparable, wish I could snag 'em, O.M. Hi!

5JC—Pumps good fone out, uses 59's. Hope he keeps to the rated voltage. Oh, yeah!

5LB—4-stage on 40, 2-stage, on 80, uses fone and CW. Trying hard to get fone going on 10. He'll do it yet.

5TX—VK5's one and only QRP king. Makes his own batteries. Dope next month.

5YR—Started to explain how heavy rain washed his Aunt Enna out, when he saw the scribe.

5RF is the pet engineer of 5DN. Just ask him about frequency control. Hi!

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5PH—Perc. Hutchings, of Gawler, is hoping to be on next month.

5LG—3-stage XTAL AC RX, nice cosy shack but no DX.

5LP will help to write these notes in future, so give Laurie a shout, chaps.

Here's the rest, this month it has been decided 5FW is to be Editor; 5LG to be Ham Reporter; 5LP to be Ham Reporter. 5FW, Eric Halliday, to handle the W.I.A. notes

## West Australian Division

(By VK6LJ, Per Radio VK8ML.)

The only activity this month has been the traffic contest, and this has not caused much interest. It was delayed one week because the results were not to hand in time to get going right away. The official results are not yet to hand, but it looks as though it will be a close go between 6LJ and 6SA. 6MN and 6KO were the only other participants, and 6CP, 6RW, 6MU, 6JE, and 6JJG came on in the end to cause a sensation. The approximate details are as follows:—6LJ 201, 6SA 200, 6KO 180, and 6MN 180 points, and six others well under 50 points.

Another general meeting was held on the eighth of August, and a good lecture was given by 6MN on portable gear and aerials. Prior to this the jolly old shack meeting was held at 6WS QRA, in Peppermint Grove. The meeting was the longest held in VK6 and ended about 12.48 a.m. A good turn up was had and two by two we went to inspect the gear de luxe—only two by two, and it is a puzzle how 6WS gets into that shack, Hi! 6BB turned knobs and we saw more of Mickey Mouse and field days. It was an excellent show and even 6RK, at Northam, came down to see us.

6BN still keeps his fowl pen and remains chicken-hearted. 6BB has a habit of putting his hand out. He is the treasurer. 6CB is rumoured to be going on the air. 6CX just about has a glass arm through pushing a pen. 6DH and 6DA not heard of now. 6GM is very qrl with service work, but finds time to churn out some good fone at times. 6JE, our country cousin, is still very active, and is expecting to land an FBXA from U.S.A. any day now. 6KZ, at R.A.A. barracks, at the Port, is thinking of taking a trip to Abyssinia. Hi! 6LJ is qrl with the qsl bureau and magazine. 6MN was in the tlc contest, and is still trying to dig up 56 m.c. 6MW has been qso many VK's on 3.5 m.c. band with fone. 6PK is not heard of very much these days, he gets enough at the P.M.G. all day. 6RD uses a clothes line for an antenna, but when a pair of — were hung out they caused a large short to earth. Hi! 6SA has been reported qsa5 r8 in KA. 6WS on 3.5 m.c. fone complains of VK3's whistling, playing records and calling CQ at the same time. These VIM birds must be very clever. 6WI was on the air during the tlc contest and is sure a credit to 6GM for the work he put into it.

## Tasmanian Division

(By 7PA).

The August general meeting was the first to be conducted in the new room in Elizabeth Street, and took place on August 6. The attendance was poor and it is hard to understand why, with so many members on the list, and every month more being added.

Some suggest it is lack of attraction, but this is, to a great extent, up to the members themselves to entice enough to stop in and help make the interest, the present odds are such as to make it almost impossible for the three or four active members to keep the show going, let alone speed it up, so get your neags together, lads, and put your shoulder to it when you have had your tank, surely there are some who can conceive some good ideas.

The elementary class, under 7BJ, is progressing very satisfactory, as is the code class.

The receiver has been reconditioned, and a transmitter completed, and with some minor attention to the aerial we should be able to do some QSO-ing soon now.

A big feature of this month was the official meeting of Colonel Gatty, on the afternoon of Monday, August 12, by a small gathering of members. The arrangements were so much rushed that little time was available to notify members, but those who were fortunate enough to be present spent a very interesting time listening to our genial aviator giving details of some of his experiences, and were sorry when the time came for good-bye.

The most interesting item was a description of radio beacon systems used in U.S.A.

At the conclusion of this gathering it was proposed to elect Colonel Gatty an honorary life member of this division, and when acquainted with the proposition he expressed his pleasure in accepting.

At a council meeting the next evening this matter was passed to go before the next general meeting, and I have no hesitation in saying that it will be accepted unanimously by all.

On Saturday, August 17, our President, 7JH and Hon. Secretary, H. M. Moorhouse, in company with three or four other members, are starting for a week-end in the north and hope to interview northern members and exchange views on subjects of common concern, with hopes of strengthening the bond between members in this State.

A number of high power permits have been granted in VK7 recently, so some of our lads should get out with added vigor in the days to come, might even get interstate contracts on ultra HF. Hi!

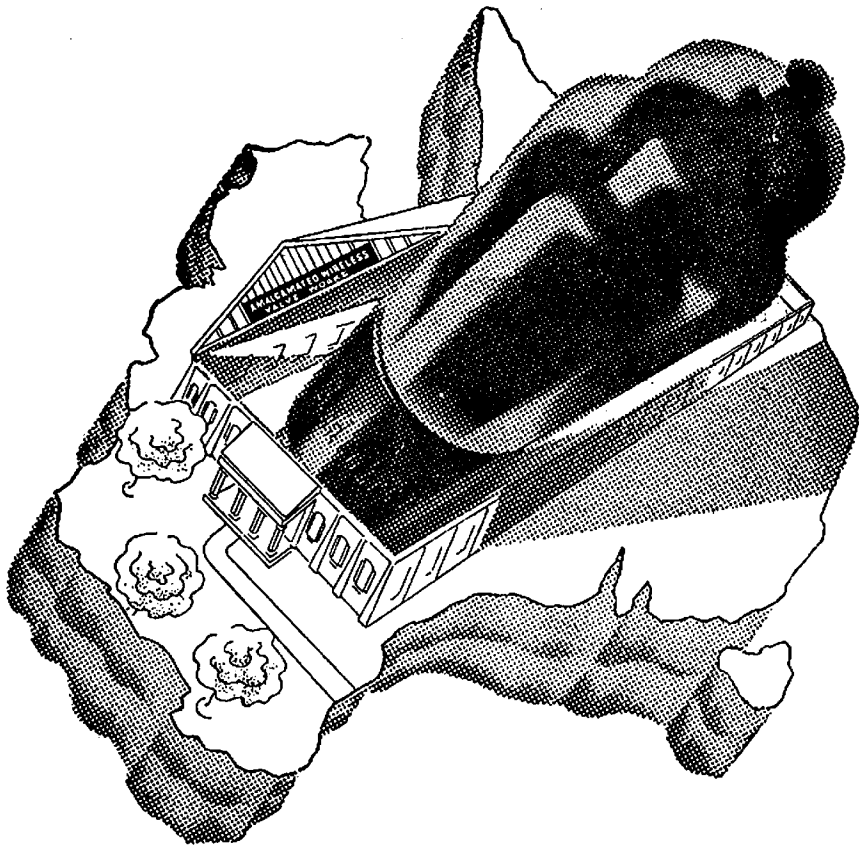
7JB is concentrating on the Fisk trophy contest at present, and by the way, reminds QSL managers to use G.P.O. Box for cards—saves the postman!

7PA is very QRL at the moment putting all his spare moments into an extensive rebuild. His second operator is awaiting, with anxiety, the results of a second attempt at A.O.P.C., which should come along any time now, so there are hopes of having a qualified assistant there shortly.

Chummy has been too QRL with institute business to do anything more since missing in the April sitting, but is planning to have another shot in January at the latest.

The council has had a busy time up to the present, which leaves the secretary with plenty to do.

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Stns. Rptng.	20
Ave. Per Stn.	14.7



VMC 3

Total Msgs.	92
Stns. Rptng.	4
Ave. Per Stn.	23



3C3

Total Msgs.	33
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### FEDERAL NOTES.

During the month several collective call signs were issued for aiding in expeditious traffic handling. It is hoped that full use will be made of these calls.

September 1 will be a great day for the VMB lads. A visit to Richmond has been planned and a full day's programme will be of wonderful assistance towards brightening up that District. The day will be spent in inspecting the station, attending lectures and perhaps some practical air training.

The long-sort-after supply of crystals to members will shortly be released. Tenders were called for during the month and about one month from the time of the issue of this magazine will see all Districts completely fitted out with crystals.

A Reserve Bulletin, published quarterly, and sent to all members free, will be released on September 1. The "Bull" will contain not only items of general interest in the way of articles on the various phases of the Air Force, but many educational articles on procedure, etc. This paper will be for the Reserve member and, undoubtedly, will prove of interest all round. Just wait and see.

An annual training flight will be made to Perth in October again, and plenty of co-operation is looked forward to, although the present Demons are not fully fitted out with W/t suitable for Reserve co-operation. However, the VMF members know how warmly the P.A.F. feels towards the Reservist and will surely get all the co-operation they want when the time comes.

### R.A.A.F. 3rd DISTRICT NOTES.

(3ZI—VK3UK.)

The coming Fisk trophy contest will be the first occasion on which the Reserve, as a whole, has participated in any ham contest. Although this one is not as suitable as it might be from a Reserve point of view, as traffic handling ability will be only of minor assistance, the test will be very interesting. The year is getting so full of contests of one kind and another that it would be practically impossible for us to run one of our own without it clashing with one of them. Additional interest will be had in VMC in this test, because the winning 3rd District Reserve member will receive our trophy, which is competed for annually.

3B4 and 3B5 have just moved up to the active ranks and have settled down very quickly. 3JV and 3KL, who have been forced into inactivity by pressure of work, will be back on regular schedules again soon.

3B6 has been inactive for the last few Sundays. I hope it is pressure of business with you, too, Dick!

VMC3 have put up the leading traffic totals for this month. Their boast is that they never handle a dummy or superfluous message, everyone being solid traffic. I can substantiate their claim, too, because I have never heard them handle dummy messages on any of their many schedules.

3CI is rebuilding his whole station at present.

3C8 is very busy servicing radios, Reserve work, and manages to do a lot of experimenting into the bargain.

3C6 spends a lot of time on 40 as well as 80. John, who is the present Ramsay trophy holder, is going to take some beating at the next contest, because he certainly doesn't need to get "his hand in."

3DI paid a flying visit to VIM early this month and had a few minutes yarn with 3ZI. Frank will be due for another attack of the DX bug shortly, as he has been lying low for a while. Perhaps it will coincide with the coming VK—ZL contest.

3D4 is expecting his new house lighting batteries any time now, and will be able to spend more time on the air as a result.

3EI will make a welcome reappearance to Reserve schedules on 25th, after his trip

### SIXTH DISTRICT.

(By 6ZI—6MN.)

Watchkeeping has been fairly regular lately. After shifting his location to another part of the town 3A8 came on again without loss of time. He has a two acre block in which to play with aerials. A big welcome is extended to Jim Elsbury, who signs 6BI at Kalgoorlie. Jim is hot on the trail and is showing a mountain of interest in procedure, and although only a new comer to even the amateur game, he has made great strides towards mastering R.A.A.F. procedure. 6A2 is handling interstate watches with success with 5A2 and 1A1. The certain starters for the Fisk contest here are, 6ZI, 6A2 and 6B1. Maybe also, 6A8 and 6Z2 will join in.

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Victorian members are reminded that subscriptions for this financial year must be paid before 30th September, otherwise they are not entitled to any more issues of Amateur Radio.

Letters containing subscriptions only should be addressed to the Treasurer, W.I.A., Box 2611W, G.P.O., Melbourne, C.1.

## Putting Fire into "Five"

Sunday, September 15th, will see about a dozen parties of VK3s setting out for the first organised five metre field day in Victoria. Following on the tests carried out by VK2 and VK4 with aeroplane 56mc radio gear it was decided at a shack meeting at VK3BQ's to see what could be done from the hills surrounding Melbourne. Most of the active and consistent 56mc men were present and full plans were drawn up for the day's operations. About twelve sites were selected, such as, Mount Dandenong, Mount Macedon, Arthur's Seat, etc., and each group was allotted a location.

The programme commences at 1000 hours EST when all stations should have their portable gear in operation and rotary beams well oiled up. Up till lunch time there will be an "open-go" for all, but after that each group will only transmit at its given time and the rest will listen until it is the next group's turn. It is expected that the Geelong gang will have their home stations in operation in case the signals find their way across the Bay! The day will conclude at 1700 hours. Some of the stations participating will be: 3BQ, 3UK, 3RS, 3KQ, 3DH, 3ML, 3WG, 3YZ, 3BW, 3KW, 3KE and 3YP. All country hams are asked to keep an eye open on 56mc between 10 a.m. and 5 p.m. on 15/9/35 for a red hot ray of "beamed" signals hi.

We are delighted to welcome the past president of the Victorian Division, Harry Kinnear, VK3KN, back home in VIM. He has had a business trip to England and America. The gang will be able to get all the latest overseas news, if he can be persuaded to take the floor.

## Book Reviewed

All amateurs throughout this country have received by now a circular announcing the arrival of the A.R.R.L. Lightning Calculator at McGill's Agency, Elizabeth Street, Melbourne.

The arrival of your 7/6, plus 6d. postage, at the same address, would be giving you one of the most valuable assets an experimenter could possibly have. This calculator works out in a matter of seconds what a normal calculation of L/C ratios would take you many minutes. Finding the number of turns wanted to give a certain frequency with either a known or to-be-reckoned capacity and, in fact, any of that kind of problem is child's play on this calculator. McGill's circular speaks for itself and we commend the instrument to you.

Ivan Miller, VK3EG, has donated £1/1/- as award to VK station in October contest who effects a W.B.E. in the shortest time. (No VK need be worked). Those claiming this award must clearly enter details on log return. Thanks, 3EG. — VK3ML, Contest Manager.

## Complete your Volumes . .

Back Issues of "Amateur Radio" may be obtained by writing to the Secretary Magazing Committee W.I.A.

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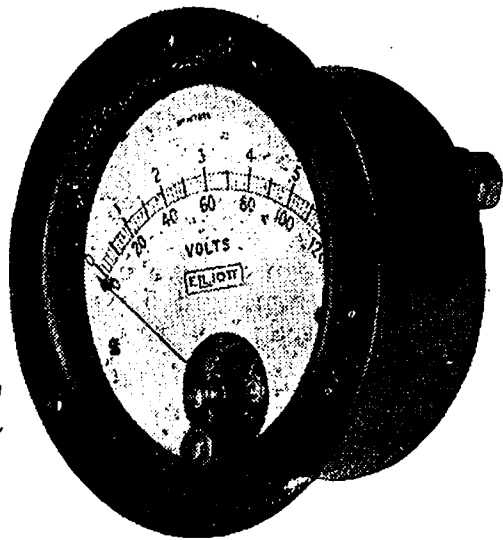
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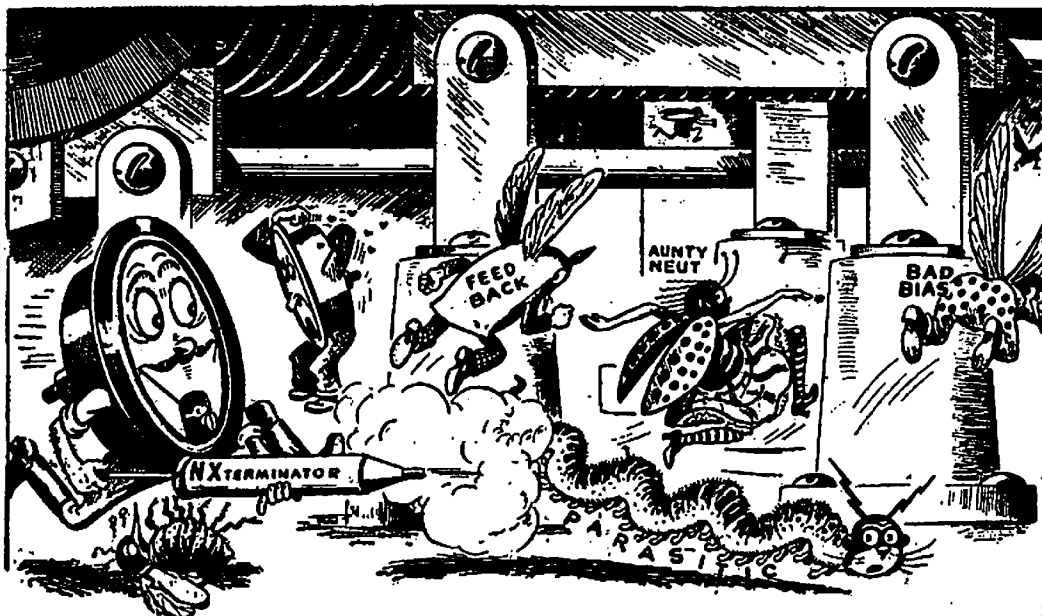
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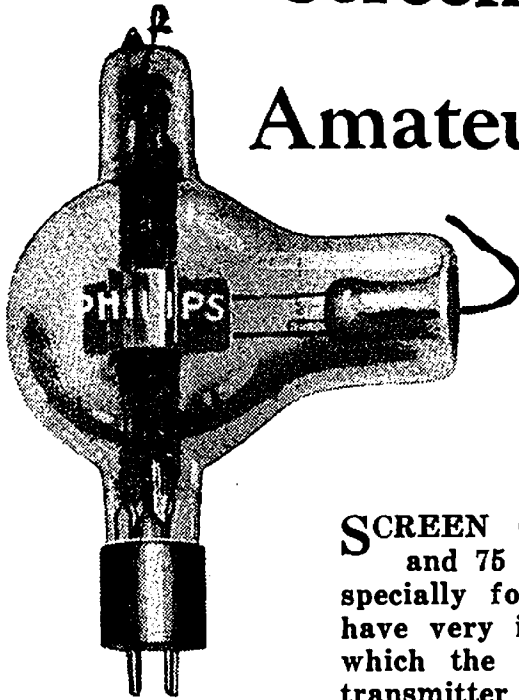
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# Screen Grid Valves

For

## Amateur Transmitters



Types:  
QB2/75, QC05/15

quarter of actual size

**S**CREEN GRID Transmitting Valves for 15 and 75 watts have been designed by Philips specially for use by amateurs. These valves have very important properties, as a result of which the construction and adjustment of the transmitter can be greatly simplified. The control-grid and anode of these valves are screened from each other by a screen-grid, thus reducing anode-control grid capacity to a minimum. When used as H.F. amplifier or frequency multiplier in controlled transmitters there is practically no reaction of the anode circuit on the grid circuit, and self-oscillation is impossible with screening outside the valve. Neutralisation is unnecessary, so it is very easy to alter the wave-length at short notice. These screen-grid valves give greater amplification than triodes under the same conditions.

Table A shows the various electrical properties of the Philips amateur transmitting valves:—

### CHARACTERISTICS:

Table A. Type.	Screen Grid Valves	
	QC 05/15.	QB 2/75
Filament Voltage	4.0	10.0
Filament current*	1	3.25
Saturation current*	400	2,000
Anode voltage	400-500	2,000
Screen grid voltage	75-125	300-500
Max. anode dissipation	15	75
Anode dissipation on test	20	100
Max. screen grid dissipation	3	15
Amplification factor*	225	200
Mutual conductance (slope)*	1.4	1.4
Int. resistance*	160,000	150,000
Anode-grid capacity	.001	.02
Max. diam. of bulb	50	100
Max length	160	210

\*Approximate values.

# PHILIPS

## TRANSMITTING VALVES



# AMATEUR RADIO

Published by the Wireless Institute of Aust., Victorian Division.

Vol. 3. No. 10

1st October, 1935.

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# Amateur Radio

## IT REQUIRED TWO YEARS

Here is the book you have waited for . . . a Handbook by "RADIO." New as to-morrow. Chockfull of the kind of information you don't find in other books. Frank C. Jones, W. W. Smith, Jayenay Hawkins, Clayton F. Bane, I. A. Mitchell, D. B. McGowan . . . are the men who were assigned the task of writing this modern handbook, one the novice and experienced radio man alike can understand. There are 64 pages of facts on receivers . . . from a one-tuber to a 12-tube crystal superheterodyne, with complete information on the engineering, design, construction and operation of each. You will find ANY high-frequency receiver of your choice described in this book. Each receiver is the best in its field. Then there are 64 pages of new facts on CW transmission, showing how to design any kind of a transmitter from a one-tuber for beginners to a de luxe 1 KW high-efficiency transmitter. The many new methods of neutralizing, antenna coupling, low-C tube operation, etc., are all described in this great book. 64 pages devoted

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to Radiotelephony. Here, again, you find the information needed for building any kind of a phone set from the single-tuber for beginners, to the 1 KW job for the high-power man. New modulation systems . . . all the data on various types of new controlled-carrier systems . . . many pages of new microphone data . . . theory of radiotelephony, etc. Everything is explained, step by step. You cannot go wrong if you use this book as your guide to better radio. And another 64 pages devoted to ultra-high frequency communication, showing everything important. Last, but not least, the antenna chapter is alone worth the price of the book. It is COMPLETE! Tells how to tune all types of antennas for best results. Gives tables, charts, curves, etc. The chapters on transformer design, audio systems, rectifier, and filter design, monitors and frequency meters, laboratory equipment, transmitting and receiving tubes tell you what you want to know. Here is your new AUTHORITY. 7/6 per copy, plus 5d. postage.

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## EDITORIAL . .

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### *The Plain Duty of the Member to the Advertiser*

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When, about twelve months ago, steps were taken to add to the importance and prestige of "Amateur Radio," a very definite pledge was given by members of the Institute that whatever firms supported the magazine through its advertising columns, they were the firms for their money. Since then, at monthly meetings and social functions, this pledge has been reiterated with enthusiasm, and has been perpetuated in the news columns of the magazine. We do not hesitate to assert that the pledge has not, with a few loyal exceptions, been honoured. Certain advertisers have complained that they have not received the support from hams that they were led to expect. This complaint is intensified and made more real in cases where, through the advertisements, definite invitations were given to write for free literature of different kinds, which constituted a real test for the efficacy or otherwise of the publicity. These invitations, necessitating for acceptance the expenditure of a few minutes of time, envelope and notepaper, and a twopenny stamp, have not been accepted as they should have been, and naturally the advertisers are dissatisfied.

There can be no question of the definite appeal which "Amateur Radio" offers. There can also be no question that, in the ordinary way, the advertisements are, shall we say, automatically responded to. But in the case of a publication such as this, the connection between the subscriber and the advertiser is more clearly defined than that of even a daily newspaper. That is to say, there are no class, political or other side issues to cloud the plain concrete fact that here is a magazine which belongs to a band of enthusiasts, who are pardonably proud of it. They spend quite a lot of money in divers directions in the pursuit of their investigations. They commit certain business concerns, who are out to serve them with the goods they require, to support the publication with their advertisements; they hope and expect that their magazine shall thrive and progress in a manner commensurate with the importance of their calling, yet—! Get to it, Hams!

---

*A Message from the Advertiser—*

**"HELP US TO HELP YOU!"**

## "Rectox" Instruments as Output Indicators

(By Westinghouse Electric and Manufacturing Co., through courtesy of A. S. Duke Pty. Ltd., Bourke St., Melbourne).

There are numerous means of measuring percentage modulation of a received signal. The most accurate require the use of a cathode-ray oscillograph, while others employ simple rectifying devices. The latter method may be applied to the average amateur super-heterodyne receiver since it incorporates one rectifier, namely, the detector, and a second may be applied in the form of a Rectox instrument. The results obtained will have sufficient accuracy for amateur purposes. When calibrated the Rectox output indicator can be used for checking and adjusting operation of the modulated stage or following stages of transmitters, and numerous other adjustments requiring accurate readings of percentage modulation.

In a later article the installation, calibration and use of a second detector plate current indicator will be described, and since this device is necessary with the output meter, the receiver will have to be so equipped. The function of the detector plate current indicator in this case is to indicate the level of the incoming or received signal so it can be held constant while readings on modulation are being taken.

The output of the detector and the following amplifiers consists of pulsations at audio frequencies, their amplitude being dependent upon the percentage they have modulated the received signal. In other words, an audio frequency applied to a carrier so as to modulate it 100 per cent. will have the greatest amplitude and give the highest output from a detector. This is true for amplitude, or the so-called Heising modulation. Since per cent. modulation is a linear function, the output of the detector will increase in direct proportion and the output indicator may be read directly in percentage modulation, provided the input to the detector is held at a constant level. In simple terms, all that this means is that if a 10-volt Rectox instrument is used across the output of your receiver, and the level is set so it reads full scale on a 100

per cent. modulated carrier, 9 volts indicates 90 per cent., 5 volts 50 per cent., etc., provided the input to the detector is held constant at all times.

This holds for the average receiver if the signal level is kept low so as to not overload the preceding stages. Should the receiver employ variable-mu tubes, or a duo-diode detector, the calibration becomes more difficult due to distortion, automatic volume control effects, or general change in operating point of the detector, and for these reasons the accuracy may be considerably lower.

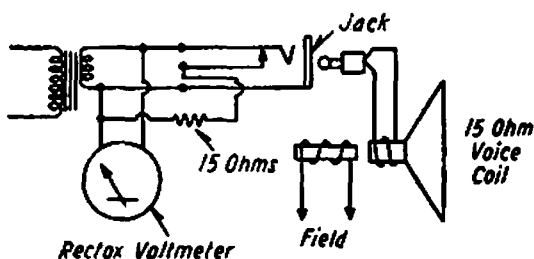
The choice of an output indicator depends upon the conditions set by the amateur. Should he desire a higher degree of accuracy, it is advisable to replace the loud speaker with an equivalent resistance load and connect the output indicator across this load. Should he not be desirous of the higher degree of accuracy, he may connect the instrument directly across the loud speaker voice coil and discount the inaccuracies induced by the change of speaker impedance with change in frequency. Should the speaker be a dynamic with a 10 to 20-ohm voice coil, a 0.5 or 0.10-volt Rectox voltmeter will be satisfactory. When a pair of phones or a magnetic speaker of several thousand ohms is used, a 0.10 to 0.50-volt Rectox voltmeter will serve. These meters should be of the 1000-ohms per volt type or preferably higher for magnetic speakers. It is possible to simply connect a Rectox milliammeter of 0.5 or 0.10-mil range in series with a magnetic speaker or phones and use the impedance of them as the voltmeter resistor. In this case considerable error will be induced due to change in speaker impedance with change of frequency.

The easiest method of calibration would be to check the receiver on a carrier having known percentages of modulation, but since this is seldom available it will be necessary to resort to the method of determining the 100 per cent. reading and calibrating the output indicator from its

# Amateur Radio

voltage or current scale. This is satisfactory since the proportion is direct. Stations using a-c. on the final amplifier stages emit a carrier that closely approximates 100 per cent. modulation. In this class are quite a few Army and Navy stations, but one must wait until they transmit a steady carrier or long dash, so that the instruments have time to settle down. The best class of stations for calibration purposes are the trans-Atlantic phone stations, where 100 per cent. modulation is employed in setting levels and making adjustments. At such times they use 1000 or 1500-cycle tone applied for reasonable periods of time.

Following is the procedure:—Tune in a station having a known 100 per cent. modulation carrier. Set the detector level or volume at such a point that the output indicator reads full scale. Note the reading on the second-detector plate-current indicator, and always adjust the plate current to this value on future readings, when signals are compared. Calibrate the scale of the Rectox output indicator

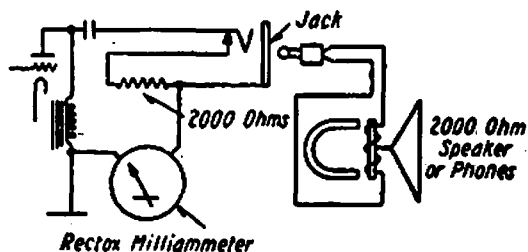


so that per cent. modulation is directly proportional to output volts, or current through the voice coil. Remember to always adjust the level of the incoming or received signal to the proper level as indicated by the second-detector plate-current indicator and then all readings of per cent. modulation will be correct.

Some stations employing grid modulation often bias their modulated amplifier almost to cut off, and when modulation is employed their carrier will increase up to a hundred times. This is confusing on voice or music, but when steady tone is used for modulation the carrier settles down and a reading may be taken. Such a reading gives equivalent percentage modulation, but it would not be possible to compare this with an ordinary carrier since it is subject to such large changes in field strength.

In all the foregoing it has been assumed that the detector has linear

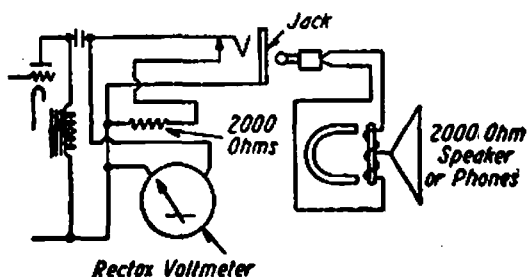
characteristics, but authorities disagree as to the existence of a truly linear detector. Departure of the detector from linear characteristics introduces some inaccuracies. Measurements of percentage modulation by this method are not precise, but they are sufficiently accurate to be extremely useful to the amateur. The frequency characteristics of the audio system have been ignored since it is assumed that the amateur will employ



a single frequency, say 1000 cycles, in his calibration, and if the same frequency is used in modulation adjustments and checks on other transmitters, this variation may be ignored.

Should the amateur desire to make an overall frequency check of his receiver, he may do so by choosing a suitable level of received signal and then applying different audio frequencies to a transmitter, always adjusting the level at the transmitter so as to cause the same increase in antenna current. The reason for using this procedure is that it eliminates all errors in the frequency characteristics of the transmitter and its associated speech equipment.

Should he desire to make frequency checks on other transmitters, he may use this calibration of his own receiver, or else replace its present audio system with a two or three-



stage resistance coupled amplifier. If a resistance coupled amplifier is used, he should carefully determine the point at which it overloads, and then adjust the signal level so that he is well below this point. Connections for a Rectox instrument in both low and high impedance circuits are shown in Figs. 1, 2 and 3.

# A Single Stage Three Band Xtal Exciter Unit

Using the New R.F. Pentode RCA 802.  
(By VK5ZX.)

The inherent disadvantage of having a crystal controlled transmitter and multi-band operation in ham work is the necessity of several frequency doubling stages preceding the final amplifier, making quite an array of power supplies, tubes and associated tuned circuits, etc. With the development of the Tritet principle, the number of stages could be reduced to a certain extent, but tubes with suitable characteristics have not been available; consequently the real advantage of the circuit could not be realised.

Tritet oscillators using tubes like 59's, etc., have good fundamental and

doubler or grid modulated amplifier.

From a structural standpoint it is particularly adaptable as a Tritet oscillator because (1) the suppressor grid operating at earth potential almost completely isolates the plate from the screen-cathode circuit internally. (2) The lead from the plate element is brought out to a cap at the top of the tube, keeping the hot end of the plate inductance well away from the grid-cathode circuit. (3) There is an internal shield which can be grounded at the socket. (4) External shielding is unnecessary. In practice, with an 80 metre xtal, the 802 performs well down to the fourth harmonic, which will be on 20 ms.

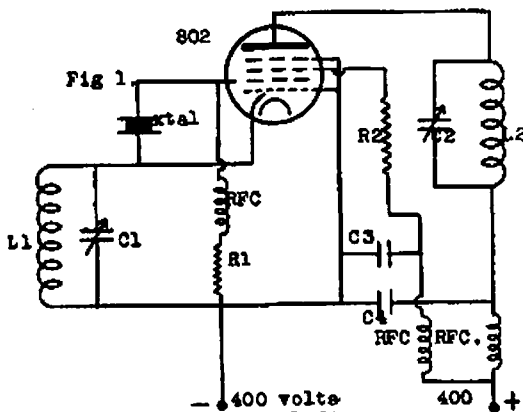
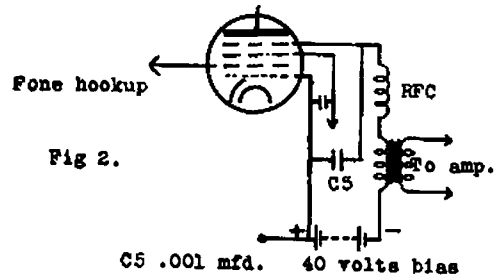


Fig 1.  
L1-C1 Resonant at xtal freq.  
L2-C2 Resonant at desired harmonic  
R1 50,000 ohms, R2 25,000 ohms.  
C3, C4 0.002 mfd mica. S.G- 200v at 8mills

second harmonic output, but not enough on third or fourth harmonic to be useful as a driver for a power amplifier unless amplified by an intermediate stage. Also in working the plate circuit of the oscillator on the fundamental of the xtal with these tubes, considerable R.F. is developed in the grid circuit, due to the closeness of the grid and plate circuits at the base of the valve causing feedback and parasitic oscillations very near the xtal frequency, with consequent heating and risk of fracturing the xtal.

The RCA 802 is one of the new R.F. pentode series of tubes designed specially for suppressor grid modulation, although it can be used as class B amplifier-oscillator-frequency



(quadrupling). This is as far as it is practicable to go, as the next useful harmonic will be the eighth (10 metres). Actual R.F. output could not be measured due to lack of equipment, but on the fourth harmonic there is sufficient to drive a pair of 46's in push pull, operating with 500 volts on the plates, up to an input of a little over 50 watts. The power input to the oscillator was 12 watts.

The circuit (Fig. 1) is quite conventional. Plate high voltage supply is series fed, with a blocking capacitor C4 .002 mfd. Screen voltage is through a 25,000 resistance R2, with an R.F. choke in series to the high voltage supply. The screen is by-passed with .002 mfd. C3. Bias is obtained through a 50,000 wire-wound resistance R, also with an R.F. choke in series. A considerable number of tests were made with and without these chokes, and it was found that their presence decidedly improved the harmonic output. The sup-

pressor is earthed except when the plate circuit is tuned to the fourth harmonic of the xtal, when the output is greater at a slightly positive potential. This should be about 40 volts and can be derived from a battery or to a clip on the bleeder resistance of the power supply. The tuned circuits should not prove difficult.

The cathode circuit L1C1 can be fairly high C about .00025 mfd.; with a coil of 20 gauge enamelled wire, wound on an inch diameter, former will need about 20 turns close wound. This circuit (L1C1) has to tune to the frequency of xtal—in practice it is nearly always detuned considerably on the high frequency side of resonance. The plate condenser C2 can be .00015 mfd., and the coil can be proportioned so that 40 ms. will be with the plates almost fully meshed, and 20 ms. at the minimum capacity end, so improving the plate efficiency on the higher frequency band. No noticeable difference was evident in the grid circuit. A separate plate coil will be necessary for the 80-metre band.

In tuning up the circuit at first try it on a harmonic — preferably the second (40 ms., when using an 80 ms. xtal). Let the filament heat up sufficiently and set C1 at minimum capacity. Apply the plate and screen voltages. With a neon lamp or any R.F. indicating device touching the grid or top plate of the xtal holder, gradually increase the capacity of C1 until the lamp glows, indicating oscillation in the grid-cathode circuit. A mill. meter in the plate supply lead possibly reads about 40 mills., remaining the same while the capacity of C1 is increased and oscillation gets stronger (unless C2 happens to be tuned to a harmonic, when plate current will decrease.) Having the grid-cathode circuit oscillating fairly strongly, the plate condenser C2 can be tuned, watching the plate meter for a sharp dip in current, indicating resonance in the same way as an ordinary amplifier. The decrease in plate current will vary according to the amplitude of oscillation in the grid circuit, and to the harmonic that the plate circuit is tuned. That is to say, the dip in plate current will be more pronounced when L2C2 is tuned to the third harmonic of the xtal than on the fourth harmonic. If there is no decrease in plate current, or no

R.F. in the plate circuit at any setting of C2, increase the capacity of C1 and re-tune C2, touching the grid with a neon lamp occasionally to see that there is not excessive R.F. on the xtal. When C1 is increased to such an extent that L1C1 resonates at the xtal frequency, oscillation will stop and the circuit will have to be detuned on the high frequency side always. When there is R.F. in the plate circuit re-tune C1 for maximum output. This will reduce plate current, but do not tune C1 for minimum plate current, as the R.F. output generally falls off before that setting is reached, also causing excessive R.F. feedback and heating of the xtal. Listening to the signal in a monitor—after the frequency has been found—will help in telling if the xtal is heating by noticing any frequency creep, especially if only a small xtal holder is used.

In checking the frequency of the R.F. output, don't forget that the third harmonic of an 80 m. xtal is about 27 metres and of no use. By using a 60-metre xtal the third harmonic will be on 20 ms., but cannot be used for 40 m.

Tuning procedure for fourth harmonic output will be the same as for the lower frequency. R.F. output can be considerably improved by having about 40 volts positive potential on the suppressor grid. It will be quite easy to obtain this from the bleeder in the power supply as the voltage is not critical, and any variation that is likely to occur through bad regulation will not have any effect.

When tuning the output circuit to the fundamental of the xtal the cathode circuit will be de-tuned almost to the second harmonic to obtain optimum output. However, the output is such that we can afford to sacrifice efficiency for the sake of stability, and to ease the strain on the xtal.

A test was made for frequency creep over a period of about three-quarters of an hour with the plate circuit of the osc. tuned to the fourth harmonic of the xtal and full load put on the osc. Other than a slight drift during the first few seconds, when the rig was started up, the carrier remained steady in a S.S. receiver during the whole period.

This tube is meant for suppressor grid modulation. Well, why not modu-

(Continued on page 29)

# How to Get Complete Reception Data

A milliammeter in the plate circuit of the second detector of a superheterodyne, can be calibrated to give an accurate comparison of incoming signals.

Among the readings that can be made on received signals with this indicator are:

1. Signal strength.
2. Extent of fading.
3. Amount of signal strength increase with increase of power.
4. Change of signal strength with transmitter adjustments.
5. Lopsided or overmodulation.

6. A number of calibrated receiving sets in different stations can be used for antenna experiments on directional transmission. Located at cardinal points from the transmitter, the results of the observations will compare with the accuracy of a good field survey.

Also, it tells whether changes in the receiving antenna make a change in received signals and how much.

## What the Plate Current of the Second Detector Means.

What results, when a milliammeter is placed in the plate circuit of the second detector, and carefully calibrated, is in effect a vacuum tube voltmeter, which measures the field strength of the transmitter from which the signal is being received. Any changes in received signal voltage may be interpreted to mean changes in field strength and general stability of carrier.

The average second detector, or demodulator, is usually of the biased or self-biasing type and the tubes mostly used are the type "57", "227", or their six-volt companion type. By inserting a milliammeter directly in the plate lead, or in the cathode lead if the receiver has a coupled audio beat oscillator, these changes in plate current may be noted and the tube calibrated. The range of the meter used will depend upon the type of tube used and the plate voltages applied. An 0-1 or 0-1.5 mil milliammeter is suitable for the new receivers of the "single signal type" which usually use a 57 tube. An 0.5 mil milliammeter will usually be needed when the re-

ceiver is a combination job employing an old broadcast superheterodyne such as the Radiola 60 or 66. These sets use a "227" type detector and employ high plate voltages. The instrument inserted will read between ten and twenty per cent. of full scale when no signal is impressed on the detector grid, and do so throughout the stable operating range regardless of the setting of the volume control. When signals are received, the plate current will rise, depending upon the strength of the received signal and reach nearly full scale before any overloading occurs. The audio output at higher levels will be more than ample.

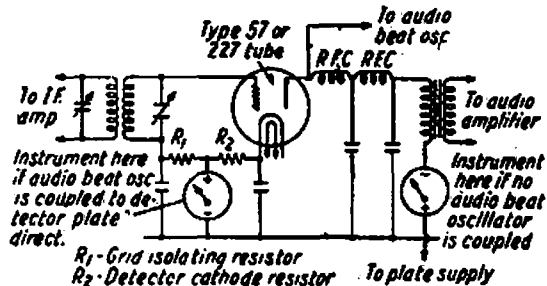


Fig. 1—Diagram showing possible locations of plate milliammeter for receiver using audio beat oscillator and without beat oscillator.

The ideal way to calibrate the detector would require a standard signal generator or a low range thermal voltmeter, but since these are seldom available to the amateur, he can fall back on the old method of changing the antenna current in an antenna and noting the results upon the receiver. Since power in an antenna varies as the square of the current, and the field strength varies directly as the antenna current, this furnishes an easy method.

The procedure is as follows:—

Have some near-by station whose signals are received with constant strength reduce his power to a very low value. He should have a low reading radio frequency milliammeter such as a 100 mil milliammeter and a one-ampere radio frequency ammeter. With these two instruments he can vary his field strength over a hundred to one ratio, this being more than needed to calibrate the receiver over the range permitted by the detector

(Continued on page 12)



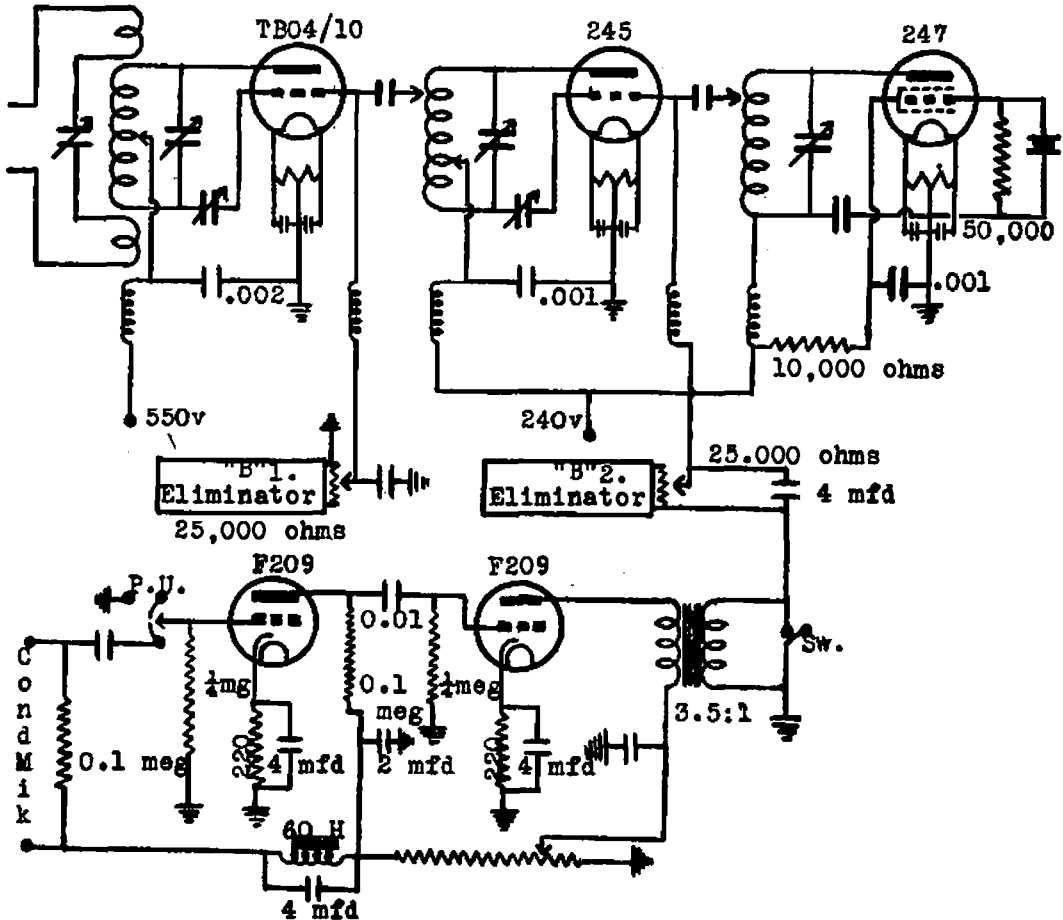
# A 25 Watt Phone Transmitter

By W. J. C. WISEMAN, VK5WJ.

The purpose of this article is to give some practical details on the operation of a 25-watt 'phone transmitter minus theoretical considerations. The equipment at the writer's station has given very fine results, particularly on 'phone, and even when the system has been explained over the air, quite a lot of hams have written for further details regarding the method of modulation.

The R.F. portion of the transmitter

denser. Microphone hum level is hardly audible with this supply, and even when amplified through a talkie amplifier very little ripple can be heard. The output of the speech amplifier is fed into an ordinary 3.5: 1 transformer, and this is then placed in series with the bias lead for the buffer stage. Two eliminators are used for bias, and by shunting a voltage divider across each, one is able to pick-off up to 150 volts bias. In



Grid modulated transmitter at VK5WJ

is quite conventional, and follows the more or less usual line up. Three power supplies are used, although really more than necessary. The power amplifier supply is obtained from two 1562 tubes, and the buffer stage from type 80's. Potential for the condenser microphone head amplifier and sub modulator stages is also obtained from the mains, the filter being a 60 henry 5 milliamp. choke, and by-passed by a 4 mfd. con-

the case of the buffer stage bias supply, it is essential that the divider be shunted by a 4 mfd. condenser in order that the audio frequency currents can flow in this circuit.

Adjustment of this transmitter is simple. Firstly, the P.A. and buffer stages are biased to cut off, that is, until no plate current flows when the excitation from the crystal oscillator is cut off. Excitation to the buffer is then varied until "downward" modu-

lation in the P.A. stage is obtained. Excitation to the P.A. is now decreased slightly until "upward" modulation of aerial current is occurring. One of the many methods of decreasing the excitation to the buffer is by detuning the crystal oscillator, and this scheme is effective at VK5WJ. That is all the adjusting necessary, and reports received with the transmitter thus tuned indicate heavy and good quality modulation.

The speech amplifier gives all the gain necessary with the condenser mike, and miles too much when a single button type is employed. With the gain turned down two-thirds, over-modulation can easily occur. It is suggested that only one stage be used when single button mikes are to be handled.

DX results are quite fair. VU, OK, PK1, 2, and 3, ZL, VE, ZT, and other countries have been worked with this transmitter.

The speech amplifier consists of a 56 resistance coupled to a 56, which is transformer coupled to a pair of 45's in push-pull. The amplifier is housed in a metal box, the front panel of which carries volume controls, mike switches, audio oscillator, gramophone and signal relaying controls. In conjunction with speech amplifier and transmitter, is incorporated a speech operating relay, which enables duplex working on same band, by putting transmitter on the air, and cutting receiver off when mike is spoken into.

The five metre equipment consists of a 6A6 unity coupled oscillator modulated by a 6A6 in class "B" which is driven by another 6A6 with grids and plates in parallel. The receiver is a 56 super-regenerative detector and 2A5 audio. The aeri-als used on both transmitter and receiver are eight foot vertical rods, hung from the ceiling of the shack. The feeders are four feet long and coupled to bottom of rods a la zepp. The results on this small power job have been very encouraging, having worked about sixteen stations on the five metre band in and around Sydney. The best results to date being good loud speaker signals duplex between VK2BP Hazelbrook, and Maroubra, a distance of approximately 58 miles. The 56 megacycle

band is certainly the one for local rag chews, as duplex working is so simple.

(Continued from page 10)

plate milliammeter. Power can be reduced by lowering the plate voltage, or by cutting out the final power amplifier and feeding the antenna directly from the first amplifier or the buffer. It is suggested that the antenna current at the start be ten mills, and that it be increased in steps to 20, 30, 40, etc., up to one hundred mills, at which point the instruments are changed and the process continued in tenth ampere steps up to one ampere or until the range of the detector instrument has been covered.

The observer at the receiver should set his volume control at the start of the run so there is only a visible change in the plate current of the detector, and during the run he should not change the setting. On some receivers changes as high as 50 to 1 have been calibrated, while others have covered ranges as low as 10 to 1.

Remember that this calibration is in terms of ratios and not actual voltages. You are now in position to check adjustments of antenna or transmitter by another amateur, compare merits of different receiving antennas and detect lopsided or over-modulation of a received signal. In the last case the detector plate indicator gives an indication which is much more useful than a simple measurement of percentage modulation, since over-modulation is a common ailment that is to be avoided at all costs.

Fig. 1 shows the locations of the plate milliammeter for a self-biased detector either with or without a coupled audio beat oscillator.

Westinghouse instruments recommended:—

For signal strength indicator—

On sets using type 227 tubes, 0-5 mil d-c. milliammeter; type MX, Style No. 818510; or type NX, Style No. 820213.

On sets using type 57 tubes, 0-1.5 mil d-c. milliammeter; type MX, Style No. 818505; type NX, Style No. 820208.

## New Batteries for Old

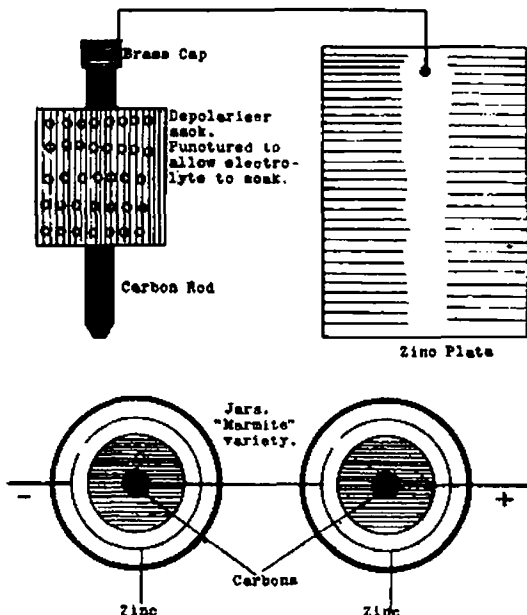
(By VK5LG.)

This is the story of VK5TX, otherwise James Foster, 11 York-street, Kensington, South Australia. His transmitter is a two-stage crystal controlled, using a Phillips A415 CO and type tube 49 as PA, plus a 40-metre crystal; a separate CO using B406 works on 80 MX. The receiver is a two-tube Schnell monitor, using type 30 tube, and, as a "sky wire," a matched impedance antenna. James is of necessity a QRP addict, for although living in a suburb only a few miles from the Adelaide G.P.O., there is no AC or power at his QRA. The power supply used is home-made B batteries, and as the making of these is very simple, and may be of help to some other unfortunate ham, the

spirits of salts. Plunge the zinc into the acid and then amalgamate zinc with mercury, treating each zinc square in the same way. This helps to protect and prolong the life of the zinc electrode. The method of amalgamating the zinc and mercury is as follows:—

Put a bead of mercury into a dish. Now, with a piece of clean linen wrapped round a stick rub the mercury all over the dipped zinc. It will be found that a little mercury goes a long way, and that the mercury readily unites with the zinc and forms a pasty amalgam. This will prevent the zinc electrode from wasting away while the cell is not in use. Place the carbon positive in one jar and the zinc negative in another after the manner of the old-time chemical rectifier. Disused marmite pots make ideal containers for these electrodes. Fill the pots with a solution of sal ammoniac and water, the proportions being half a teaspoonful of sal ammoniac to a jar of water (the 4oz. jar). The cell is now ready for immediate use. It may be necessary to puncture the sack round the carbon electrode to allow the electrolyte to penetrate. This forms a type of primary cell, each cell having a capacity of about  $1\frac{1}{2}$  volts, the life of the cell being the life of the zinc. If thick zinc is used the sal ammoniac requires changing approximately every three months, as the zinc tends to kill the electrolyte. Cells in use at 5TX are thin zinc and last about six months, the whole battery standing a drain of approximately 18 to 20 mills. easily.

5TX uses between 160 and 180 of these cells in series, giving him 200 volts pure D.C. for his transmitter. These cells, if properly constructed, can be used for almost any radio purpose requiring a light current drain. They are also used on his receiver, and I can vouch for the fact that they are extremely quiet in operation, even when nearly worn out. The fact that they give a steady tone or note to a crystal can be vouched for by all who have worked 5TX since his advent on the air.



story hinges around these batteries. Firstly, beg, borrow or otherwise acquire a supply of discarded B batteries, or, better still, torch re-fills. Remove thoroughly all the old zinc and worn-out electrolyte. This will leave a carbon pencil and depolariser, or small sock filled with sawdust and black mixture. This must be perfectly clean. Solder copper wire to the cap on the end of the carbon pencil. Next cut out pieces of zinc about  $2\frac{1}{2}$  inches square, and bend this zinc into a tubular shape. Solder the other end of the copper wire to the zinc. Now get some hydrochloric acid, better known as

Excerpts from the A.T.E. Journal

We are giving you a little of the dope not generally known on the type of equipment used in the record-breaking flight last November 20th into the upper regions. The transmitter was a simple push-pull Hartley, using 230 series tubes, with class "B" modulation, as this type of tube gave utmost efficiency and maximum power output with the least battery consumption. The receiver employed two stages of tuned RF, a regenerative detector and class "A" pentode output. All of the 230 series type again. The antenna was a half wave vertical, supported between the balloon and the gondola and fed by a parallel transmission line one-quarter wave length long. The receiving antenna was of the trailing wire type and was used to support a drift ring twenty metres below the gondola.

The power output of the transmitter was approximately three watts, and was operating on 15.760 kc. One point of interest was that at about 2000 feet there was a sharp dividing line at which distances up to several miles satisfactory communication could be maintained, and below that altitude communication was unsatisfactory, even over relatively short distances. On the second flight the power output was approximately one watt to the antenna, and signals were received at Point Reyes, California. Continuous communication was carried on between the balloon and Chicago, New York, and Akron, Ohio. Below 12,000 feet there was an absence of extraneous noises, a residual roaring of almost constant intensity was reported. This was probably carrier noise, because as the altitude increased the signal was increased, and at the highest point reached during the flight the received signal was of such intensity that it could be heard all over the gondola with the phones lying on the shelf.

An interesting fact was the special considerations given the mikes and the equipment to prevent them from gathering moisture and "breathing"; liquid oxygen was allowed to evaporate in the transmitter and the receiver in order to maintain a pressure greater inside than outside.—By W6DO, per W6BIM and URSLG.

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## Correspondence

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The Editor, "Amateur Radio."

Sir,—The growing use of the ghastly doggerel that passes for tone from many of our stations calls for concerted action on the part of all right-minded "hams." The reactions of the man in the street when, as in the case of a visitor here lately, he hears such fearful expressions as "personality station," "the voice of the radiant operator," etc., can only be to judge us all by these freaks who pollute our bands.

Now, Sir, I don't suggest that you attempt, Mussolini-like, to dictate just how our fones shall be run, nor do I for a moment infer that all fone stations are a blot on the escutcheon of Amateur Radio. Rather, there appears to me to be an alarming tendency for many newcomers to the ranks to, immediately they get on the job, litter the air up with meaningless Yankee slang; indeed, even assuming any normal man would attempt to, it is almost impossible to understand what these foolish fellows are trying to talk about. An occasional hi is alright in code working, but in fone why waste time in, parrot fashion, running off strings of the things. The beauty of fone, to my mind, lies in the fact that one can have a good personal yarn with the other chap free from the unnatural, stilted phrases inseparable from C.W. contact. Why, then, spoil this fine friendly means of sharing our ideas with our fellows by introducing ridiculous and undignified jargon?

Another thing, Sir, if I do not weary you unduly, and that is the language and jokes put over by a few stations. I recently had the humiliating experience of, during a demonstration of 3.5 fone to a young lady, having a particularly low joke come over before I had a chance to slam the set off. In fact, at this station I now hesitate before putting anything at all on the speaker. One or two such experiences are more than enough!

At various times QST has appealed to "hams" to uphold the fair name of our hobby, but up to this I am not aware that much has been said in Australia since the days of QTC. I consider it the bounden duty of every decent operator to scotch these pests;

they are found in every organisation, and although in the minority in our ranks will, unless strongly handled, hold us up to public ridicule. The Australian amateur has a record second to none, and I appeal, Mr. Editor, through your excellent paper, to the brethren to uphold our traditions.—Yours, etc.,

J. RICH. PHILLIPS, VK3CD.  
Murraydale,  
25th July, 1935.

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To the Editor,

"Amateur Radio," Melbourne.

Sir,—Some months ago I wrote to you concerning signal reporting. My letter was acknowledged by printed card, for which many thanks.

However, since receiving your card, three issues of "Amateur Radio" have arrived, in none of which has my letter appeared.

I am at a loss to know why this is so, but it would appear to be due to one or two reasons. First, lack of space; second, and the most likely one is fathered from a statement made by you in your editorial in the March, 1935, issue, wherein you say the RST system is a failure. Whether the RST system is or is not a failure is not for any single individual to say.

If the amateurs as a body (or majority) think a system is right or wrong, then, of course, the position is altered, and it becomes a case of majority rule.

Another point: so far no correspondence has been published in "Amateur Radio," either for or against the RST system. Every amateur should be given the right to express his (or her) views on subjects of interest to radio amateur as a whole. Signal reporting necessarily concerns all active amateurs.

In conclusion, I will quote from your editorial of November, 1934, which states, inter alia, ". . . Individually, because each must see that he does his part towards supplying notes and articles; . . ."

Again wishing you and your staff every success with "Amateur Radio."—Yours, etc.,

W. T. HOOKER, VK7JH.  
47 Bay-road, New Town,  
Hobart, 31st July, 1935.

## "Silly Interview" — No. 4

(By "Yo-Yo.")

"Who shall we see this month," asked the special reporter. "Well," spoke the office boy, "everyone's talking 5 metres. Why don't you go and see Bob Cunningham?" "Great idea!" boomed from the editorial chair. "3ML should produce something interesting." The editor's word being law, we immediately sallied forth with our pencils in our hands.

Taking the scenic railway route along High-street, we arrived, after many ups and downs, at the home of 3ML. At the moment of our coming he was in the midst of a QSO on 56 m.c., so we looked about us with interest. The first thing that claimed our attention was a 10 tube single super lying on the table.

Putting it into action, we were amazed at its quietness of operation, particularly as we knew that many electric trams were passing by at a distance of less than a hundred feet.

Switching off the super, we peered over ML's shoulder at his 56 m.c. gear. We weren't sure which was the transmitter and which was the receiver, owing to the small proportions of all the little shielded boxes on the operating desk.

At this moment ML finished his QSO. "Nice little 'mitter there," said the assistant reporter. "That's not the transmitter," laughed ML, "that's the monitor." After showing what was what in the 56 m.c. business, our host said, "I suppose you would like to see the big outfit," and then, with a startled exclamation, he rushed across the room and removed a hat and coat that was hanging on a knob of what turned out to be his newly-finished transmitter.

"Sorry," grinned one of the visitors, "I mistook it for a hat rack."

Upon closer inspection we saw that the transmitter was the same one which was described in "A.R." recently. It was complete with large shiny knobs and rows of meters. The outfit would be a credit to any station, whether amateur or commercial. The rectifiers are mounted on supports at the front of the transmitter, together with the main switch, which has the

appearance of being capable of breaking the current at a power station.

Another interesting piece of equipment was a 112 m.c. transmitter of midget proportions, lying on the mantle over the fire place, with its copper tube antenna pointing toward the ceiling.

The antenna systems in use at 3ML are many and various, ranging from a 40-metre zepp. to a 56 m.c. beam array. Standing under the collection of wires at the rear of the house, the sky pattern has quite a futuristic aspect.

"How long has it taken you to get all this gear in action?" came a query.

"I have been licensed since 1927," replied ML, "but my interest in radio goes back to 1921, in the days of crystal sets, VIM and QRM."

At this moment his voice grew very husky, and a hastily summoned doctor, who investigated the reason, pronounced the trouble as "laryng-jiggers," brought about by a surfeit of duplex phone working on 56 m.c. His prescription turned out to be rather a palatable medicine, and we all decided that such a well-known cure should be shared, much to 3ML's disgust, who had become a changed man when he saw the brand on the bottle.

Having seen our patient to bed, we made a few more notes and then travelled back to town via the aforementioned hilly High-street.

VK3ML is owned and operated by Mr. R. Cunningham, Pilot Officer, R.A.A.F., O.C. R.A.A.F., W.T. Reserve, W.A.C., W.B.E., Traffic Manager W.I.A. (VK3).

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## A Standardised System for Reporting Signals

The following is a report tabled before, and adopted by, the W.I.A. Federal Executive as a suitable international system for the reporting of signals:—

Under item 23 of the Annual Convention Agenda, the Federal Executive was required to furnish such a system, and Mr. P. Adams, VK2JX, Federal Vice-president, has drawn up the following, which has been accepted by F.H.Q.:—

It is interesting to note that, since this report was drawn up, the S portion of the R.S.T. system has been changed, and that portion has now been graduated from 1 to 9.

It has long been felt that the usual system of reporting signals has not been entirely satisfactory. Some time ago an effort was made to overcome this difficulty, and the R.S.T. system was put forward; and although this system was boosted by both "Q.S.T.", "Radio", our own "Amateur Radio" and other magazines all over the world, the response it met with was very disappointing.

However, this was not really surprising, as the R.S.T. system had several disadvantages, the greatest of which was the cutting down of the signal strength report from nine to five degrees of loudness. As the average ham is interested in DX and experimenting, and has become used to differentiating between signals whose loudness differs by quite small amounts, five degrees are not sufficient.

The method of reporting suggested here, whilst not being radically new in any respect, is simply an attempt at rationalising the systems at present in use.

In the first place, the three essential pieces of information to be conveyed in a report on signals are copiability, strength and quality. In the first of these the Q.S.A. system has proved itself adequate. Whilst "Q.S.A.?" officially means "How strong are my signals?" the official answers would seem to indicate that "readability" is the thing aimed at, and general amateur usage supports this.

Therefore, it is suggested that Q.S.A. be retained and used purely as an indication of the "copiability" of a signal, in accordance with the following scale:—

- QSA 1.—Unreadable.
- QSA 2.—Readable now and then (50 per cent. copy).
- QSA 3.—Readable, but with considerable difficulty. (90 per cent. copy, with concentration.)
- QSA 4.—100 per cent. readable, but still requiring some concentration.
- QSA 5.—Perfectly readable without effort.

It should be noted that the above table has nothing to do with the strength of the signal. A signal may be audible several feet from the

- R1.—Almost inaudible.
- R2.—Just audible.
- R3.—Very weak signals.
- R4.—Weak signals.
- R5.—Fairly good signals.
- R6.—Good signals.
- R7.—Strong signals.
- R8.—Very strong signals.
- R9.—Exceptionally strong signals.

phones, but owing to severe QRM might be only QSA 2 or 3.

For reporting the strength of signals, the old R system has proved itself to be very satisfactory. The majority of hams have a definite idea of the R strength of a signal when listened to on their own receiver, and it is a question more of a mental concept than a definite loudness, but a scale is given below more as a guide than a hard and fast ruling. It should be clearly understood that it is the strength of the signal rather than its loudness that should be reported. For example, a certain W station may be heard in the same locality by two receivers, one a detector and one audio affair, and the other single signal super, finishing up with a pentode driving a dynamic speaker. With the first set the signal might be audible a few inches from the phones, and with the larger set it might be clearly

readable out in the street, and yet in each case the correct report would be, say, R6. It is really a matter of each operator getting a good idea of the loudness of the weakest and the strongest signals, as heard on his own receiver, and calling them R1 and R9 respectively, then all other signals can be mentally graded to fit in between these limits.

It is when we come to reporting on the quality of signals that the greatest confusion of thought exists. Originally, of course, the character of the signal was described in words and for clearness alone, this has much to recommend it. However, some years ago the RSGB introduced the T code, and this has been in more or less general use ever since.

However, at the present time it is given two quite different interpretations. One group use it strictly in accordance with the definitions given in the original scale, and the other

- T1.—Hissing note similar to power leak.
- T2.—Broad AC spread over band.
- T3.—AC confined to one frequency.
- T4.—Rough RAC.
- T5.—RAC.
- T6.—Smooth RAC.
- T7.—DC with large amount of ripple.
- T8.—DC with trace of ripple.
- T9.—Purest DC.

takes T1 as the worst AC signal possible and T9 as pure crystal DC and rate all signals falling between these limits, according to their purity. Naturally, having the two standards leads to confusion, and it is suggested that the scale given below be employed.

It will be noticed that this refers only to the degree of purity of the note, and makes no mention of key clicks, etc. It is felt that special peculiarities such as these are best covered by words added to the report. Where the signal appears to be crystal controlled an X should be sent after the T grading, such as T8X.

Now that modulated CW signals are against the regulations, it will be seen that the T code covers all the types of signals likely to be met with

## Federal and Victorian Q.S.L. Bureau

(By R. E. Jones, Federal QSL Manager.)



A supply of the photographs of the Oakland Bridge, over San Francisco Bay, mentioned in these notes in August "Amateur Radio," has come to hand. Any station desiring one of these photographs should forward twopence to cover postage.

Log forms and printed rules for the forthcoming Combined International D.X. Contest, to be staged by the W.I.A. (Victorian Division), in conjunction with the N.Z.A.R.T., during October, may be had on application to this bureau.

Conditions did not favor contacts on 28 m.c. during the week-ends covered by the Fisk Test, and the only contacts on that frequency were those between VK4BB and VK6SA and VK6SA and VK4EI. VK6SA, in addition, worked a PK station.

Ron. Tandy (VK3KX) has received a report that his 28 m.c. signals have been heard in Europe. The report checks up O.K. with his log.

New Victorian "hams" should advise the QSL manager as soon as possible after they become active. Particulars of their call signs, QRA's and instructions as to the disposal of their wallpaper would greatly facilitate the work of the bureau.

Cards for the following Victorian stations are on hand at the bureau, 23 Landale-street, Box Hill, Victoria, and will be despatched on receipt of covering postage:—SAH, AN, BK, BL, BX, CA, CV, CW, DD, DS, DZ, ET, FB, FC, GB, GM, GU, GW, GV, HE, JV, JW, KI, KO, KV, LE, LF, LM, LP, LT, LY, NG, NM, QX, QZ, RW, TY, UJ, WC, WM, WP, WX, XK, XU, ZA, ZB, ZK, ZL, ZR, ZO, Adams, Dinan, Nye.

on the air, and they are arranged in order of relative "goodness." T1 and T2, of course, refer to the "power leak" type of signal which is heard all too often from badly adjusted transmitters, and usually caused by parasitic oscillation or an arc across condenser plates.



## 28 and 56 MC. Section

(Conducted by VK3JJ.)

The approach of summer is being accompanied by an improvement in conditions on the 28 m.c. band, and during the past month the stations in northern States have again been able to carry out successful D.X. contacts. VK3BD (2EP) has not yet been on the air since returning to Melbourne, but surprised the VK3 gang by hearing several W. and J. signals which were not audible at other local stations who were listening at the same time. This proves that our receivers are not as sensitive as the super heterodyne in use at 3BD, unless he has fluked an exceptional location, which is very unlikely.

VK3KX received a QSL from Germany, reporting his 28 m.c. signals—QSA4, R5, T9—at 0840, GMT on 12th May, which checks with his log. The time of this reception bears out the contention that the best period to work Europe will be during the early evenings, around sundown.

While at Canberra, 3BD did a large amount of experimental work with antennas, and is much convinced of the advantages to be gained by the use of beam arrays on both 14 and 28 m.c. One type easy to erect, and which gave extremely good results, consisted of two horizontal half-wave radiators placed end to end and fed in phase, with two half-wave reflectors placed horizontally a quarter wave behind them. The radiators were fed from a quarter-wave stub line tuned by a shorting bar, the feeders from the transmitter being tapped at points found by experiment on the stub line. 3BD is of the opinion that the best angle for radiation or reception at U.H. frequencies continually varies, and he has found the above beam antenna more flexible in this respect than vertical reflector systems.

### 28 M.C. IN NEW SOUTH WALES.

September has opened up much better than August, and the outstanding event to date was the first VK2/PK QSO between VK2HZ and PK3ST. Bill received a report of QSA5 R6, and gave the same; but, just to prove it was not the only place he could work, he then had a QSO with J2HJ. We won't mention Con's (2LZ) breakdown when he heard about the PK, but he was cheered no considerably, as he worked W6AWT, W6CXW, W6JJU and a W5 the week following. The time was around 8.30 to 9 a.m., and, with the addition of a contact with J2IS, the contest score of 2LZ is now over 2,500 points. His chances of leading VK are very bright now that old 2EP has retired. In a QSO with 2LZ, ON4AU mentioned he had worked 10 W's, an LU and a VE, but gave no aggregate score.

This month ends both the RSGB and ARRL 28 m.c. contests, but it is to be hoped another one will be started, as activity on this band is now greater than ever before.—VK2YC.

### FISK CONTEST QSO'S ON 28 M.C.

On 1st September there was a break in 28 m.c. conditions in Western Australia, and between 11 a.m. and noon both J2IS and J2HJ came through. The latter was

only R3 at best, and was worked with some difficulty by 6SA. Shortly after VK4BB was worked and contest cypher groups exchanged. VK6MN and VK6FO were also on 28 m.c. at the time, but were unable to raise anyone, although 4BB heard them both. The following Sunday 6FO had better luck and had a contact with PK3ST at 11 a.m., the PK coming through very well and did not fade below readability at any time. VK4EI and 6SA then connected and exchanged cypher groups without the least trouble. 4EI mentioned he had worked PK3ST earlier the same morning. Since then 4BB has had a few QSO's with J. and W. stations.

The tests on 56 m.c. between 6LR at Northam and 6SA have been unsuccessful to date, probably owing to the distance being too great or on account of the hills between. 6CA has rigged up a resonant line, 56 m.c. transmitter, using a pair of 45's in push-pull with grid modulation, and has had good results up to three miles.—VK6SA.

### VICTORIAN 56 M.C. FIELD DAY.

The first field day on 56 m.c. was held on 15th September, and the results obtained were very successful when compared to those we have been accustomed to from fixed QRA's. The following parties set out with portable gear:—3KQ and 3RS, 3BQ and 3UK, 3ML, 3WG, 3YP and 3YX, 3MR, 3OC, 3WL and 3YO, 3DH and 2nd op., 3NY, 3OF and 3KE.

Owing to a defect in their transmitter, 3NY's party decided at the last minute to join 3BQ at One Tree Hill.

The weather did not favour the venture, and the cold wind forced 3KQ and 3RS to pack themselves in the back seat of their car after mounting the gear on a board across the front seat. They were the first to get going, and their rig, which consisted of a pair of 210's in push-pull coupled to a vertical half-wave antenna, put an R9 signal through to 3YX. The latter was manning the receiver, while the remainder of 3ML's party arranged the transmitter and beam antenna. Another push-pull rig was used here with TBO4 10's, but coupled to a beam antenna consisting of a half-wave radiator, with three reflectors and one director. The 12 miles between Arthur's Seat and Oliver's Hill, where 3KQ was located, was soon spanned with R9 signals, and then a watch was kept for the other portables.

In the meantime 3BQ and 3DH, at One Tree Hill and Mount Dandenong respectively, had erected their gear and were QSO, although they were not in visual range. 3BQ also worked 3HK, who was operating from his QRA. 3OF had his receiver in action and logged 3KQ at excellent strength—distance about 30 miles—who reported 3BQ's signals. Both 3KQ and 3ML were then worked from 3BQ, the signals remaining extremely strong till lunch time.

It was after lunch that the real thrill came, for 3MR's party had gone further afield and took longer to get on the air. Unfortunately, their receiver gave out, and they had to content themselves by calling only. They were located at Wallan, and were heard at each of the portable stations surprisingly strong. The distance to 3ML was 80 miles, 70 miles to 3KQ, and about 45 miles to 3BQ and 3DH. During the afternoon stormy conditions

(Continued on page 29)

## Divisional Notes

### Federal Headquarters Notes

#### I.A.B.U. Calendar.

The half-yearly report of the I.A.R.U. has just been received, in the form of a calendar. A brief summary of the most important items is included hereunder.

#### Extension of the 7 M.C. Band.

The Cairo Conference of 1938 promises to be of the utmost importance to the "hams" the world over, and as the table of allocations of frequencies is open to revision the I.A.R.U. feels that it is not only necessary to defend our own frequencies, but, in addition, to endeavor to secure more frequencies. It is proposed to secure the additional frequencies of 7,350 k.c. to 7,500 k.c., so that the 40-metre band reads 7,000 k.c. to 7,500 k.c.

In order to do this it is urged that all who can afford the time assist in the 6,000 k.c. to 8,000 k.c. survey. This is a definite step to check up the activity of the commercials around the "ham" bands who just put on the well-known "vvvvvvv" wheel and let it run for hours on end. It is requested that volunteers check up on all commercials between these frequencies and note the type of traffic, if any, that passes through these stations.

Further details on these surveys will appear in these notes next month.

#### The Bucharest Conference.

This Conference is a preliminary to the Cairo Conference, and the I.A.R.U. feels that, in view of the importance of the Cairo Conference and the momentous matters to be decided, it is advisable that the amateurs be represented. The I.A.R.U. is prepared to finance the Cairo Conference, but feels that member societies should be willing to bear some expense in the matter of the Bucharest Conference. With this end in view, they propose that the expense be divided between the A.R.R.L. and the member societies of the I.A.R.U. on a membership basis. This means that the A.R.R.L. pays 59 per cent. of the total amount, and the remaining 41 per cent. is divided amongst the member societies. On this scale it becomes necessary for the Wireless Institute of Australia to find 100 dollars (about £25). This is the maximum amount that the I.A.R.U. can demand, and the demand might conceivably be less than this.

This whole matter is just a proposal, and has not been definitely decided upon, but will no doubt be dealt with fully at the Annual Convention, to be held early next year in Brisbane.

#### W.A.C. Certificates.

There is a new proposal that W.A.C. certificates be issued to all who apply for them at a charge of 50 cents, and free of charge to members of member societies. This has to be voted upon and passed by

the majority of the member societies before becoming effective.

#### B.S.T. New "S" Code.

The I.A.R.U. suggest that the R.S.T. code be used with the strengths "S," ranging from S1 to S0, and the old "R" code be used for this purpose. This suggestion is made following on the objection expressed by all amateurs of all countries to the restricted "S" scale.

#### W.A.C. Certificates.

Only one application has been received of late, and that is one from VK2XJ.

#### Vigilance Officers.

The matter of Vigilance Officers has been approved by the P.M.G., and an early start is expected in this matter. All divisions have been notified and asked to appoint their Vigilance Officers.

#### Standard System for Reporting Signals.

Under Item 23 of the Annual Conference Agenda, the Federal Executive was required to furnish such a system, and Mr. P. Adams (Federal Vice-President) has drawn up such a system, and this has been endorsed by the Federal Executive.

#### Kilocycle Club of Milwaukee.

The Kilocycle Club of Milwaukee, U.S.A., desires us to make known that they transmit a programme on 31.6 mega cycles through the Milwaukee Journal Radio Station, W9XAZ, every Saturday—1,800 GMT till 1,930 GMT.

Reports are requested from members of the W.I.A., and should be addressed to the Kilocycle Club, care of the Milwaukee Radio Station, W9XAZ, Milwaukee, Wisconsin, U.S.A.

### N.S.W. Division

A motion, as a notice, was recorded at the August meeting of the New South Wales Division. It concerned an increase in subscription rates for the Division, coming into being at the beginning of the new financial year. The consensus of opinion seems to favor the increase, as it is imperative for the well-being of the Institute.

The Council is concentrating on getting matters of a contentious nature cleaned up and to get a flying start in the new year.

The initial meeting of the technical section of the Division was held on the 2nd September, at the Y.M.C.A. and VK2JX was elected President of the Section and VK2ZH Secretary of the Section.

It was decided that at each meeting two members read a paper pertaining to some phase of radio. The meetings are to be continued on the first Monday of each month at the Y.M.C.A.; all welcome.

The publicity pamphlets are available, and anyone requiring information regarding the Institute should obtain one of these from the Secretary (R. H. W. Power,

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Wembley House, Railway Square, Sydney). Printed application forms are also available.

VK2OC still continues standard frequency transmission each Sunday morning at 10 a.m. on 7,000 k.c., and at 10.30 a.m. will give frequency checks till 11 a.m.

Congratulations are extended to Z02 2HV on the arrival of his first second op.

The average VK2 amateur is anxiously awaiting the arrival of the first week-end in the VK-ZL DX contest.

The VK2's are inky, as the Monday after the first week-end is a public holiday, and they will have an opportunity to recuperate.

The rule regarding 500 points award for 28 m.c. contacts has been receiving much attention, and if 500 points can be gained for each 28 m.c. contact, as the rules seem to read, 2LZ should not have the slightest trouble in winning it, now that VK2EP has retired to Melbourne.

The Australia Air League asked that a delegate be appointed for their Educational Advisory Committee, and J. N. O'Dea (VK2FQ) was elected.

The Fisk Trophy went off with what was certainly a bang. It seems to be the most successful interstate contest since the original five pointers.

Although 10MX did not supply the surprises, the 160MX band was opened up for interstate contacts for the first time, and the results obtained were remarkable. R8 interstate reports were well awards, and various stations contacted all States.

With the bonus awards for multiband operation, the contest was supplied with a new interest, which has not been evident in any previously-arranged contest.

The comment that it was complicated seemed unwarranted, and, anyway, the success of the Fisk Trophy showed it was appreciated.

## NORTH SHORE ZONE NOTES. (By VK2VQ.)

September has brought with it the usual run of spring DX conditions, which leave us in the happy position of being able to hear and work Europeans from 1 p.m. onwards on 14 m.c. VK2EO, who is probably one of our most successful DX men, has had no trouble in contacting 20 in an afternoon, with almost as many prefixes. It is a good augury for the forthcoming world-wide DX contest in October. 7 m.c. has also improved out of sight, and allows many European contacts to be made. In addition, the band bristles with Yanks, and also US 5, 6, 7, 8, KA, K5, J, and numerous PK's, many of whom are on 'phone. K5AG is a consistent signal on 7.140 k.c., and is only too glad to QSO U.K. Europeans are heard from 4 p.m. to 6 p.m., but at present one more or less difficult to contact owing to Yank QRM. 80 m.x. has attracted the usual run of static, and only the very bravest are heard up there. On 28 m.c. conditions remain the same—as dead as the proverbial door knob—whilst 5 m.x. has a large following of the faithful, who appear well satisfied with that particular slice of territory.

And now for the local urgers. That blighter, 2DE, has decided to forget his headache and return to the "ham" game. My sympathy goes to yon Don. (OM), and here's hoping you find another. Hi! 2AE is in the throes of rebuilding and has not been on the air. Roseville will be a hotbed of QRM when 2ZH shoves the jolts

on his DET1, but both he and Bill (2SV) use single signal receivers, so perhaps it won't be as bad as all that. Anyhow, who cares? I don't live there. 2HG would take first prize at any field day, as his uncanny sense of direction allows him to steer a course for home at 4.30 a.m. and get there. Maybe it is his navigation, maybe it is bushcraft, but it is all the more wonderful, as Jack refuses to sign the pledge! Croaks of "Wowser"! Hi! The other Chatswood ether buster isn't busting these days, being too QBL; so we don't hear 2HL. 2BJ makes the most of every QSO he gets, thus holding up to his old form. It has been said that Lane Cove is the "only cemetery with lights," and 2VM and 2KJ must be resigned to the fact, as they are only on in spasms. Keith (2VM) has threatened this humble scribe with murder if I relate his foul deeds; so perhaps we had better sling off at 2KJ for a change. This worthy had has a nice idea in rack and panel work, and his 208A final scares the birds away from the sky wire. Evidently not a member of the Gould League. Hi! Congrats. to 2HA, who was recently presented with a junior op. Seems to be quite the rage these days, eh gang? Who is next in line for a birthday call from your Uncle Jimmy? Hi! 211's in push-pull, modulated by another pair of similar tubes; forms a new final for 2VG. 2VP makes but rare appearances on 7 m.c., and has a M.O.P.A. with 40's squirting RF into the air. Howdy VK2VE, a new "ham," who uses 15 watts on T.P.T.G. to let us know when he is on. Noel intends changing to crystal, so he should get out better then. Again howdy to VK2IP, another newie in Crows Nest, who is making the best of matters with cannons to the right of him and cannons to the left of him. Pardon, gents! Meant 2LZ and 2WW. Here at 2VQ, in spite of increasing old age and decay, we manage to fool around. With a hey nonny hey and a hot-cha-cha! Catch on? Con. (2LZ) busy chasing elusive Europeans on 14 m.c., as is also 2HY. Boy has been more active of late, so maybe she has tossed him in. The Fisk trophy contest claimed 2WW's attention, but it was given up in favor of 5 m.x., where droves of second ops. helped Bill to throw his voice around. Hearken, 2HZ! What has happened to the Old Bill? The boys are beginning to think that he is too proud to chin wag any longer. 2SS is taking his place as the "Big Bad Wolf" with horrible effect. Support me, someone! Bob always claims that a joey has been using his call when he is reported as being T5! Jim Corbin has a new sky wire in position, being 2HZ's 50ft. stick in disguise. If you want a laugh, ask him to give you the low-down on remote control. He has his oscillator in one room and link couples it to the rest of the boloney in the basement. Hi! 2DT has forsaken 7 m.c. in favor of 5 m.x., and seems to get out fairly well. Jim (2AG) knows more about "wine, women and song" than "ham" radio, but we gave him up as a bad job long ago; so enough said. Tut! Tut! Coming to Cremorne, we find the answer to a maiden's prayer, dividing his favors between LY's cricket and radio. Yep, gents! I mean 2VN. The BCL's have hunted 2FM out of Mosman, and he has taken refuge near 2VN. Alec has given up QRO in favor of 1 wall on a 199! Can you beat it? Take more soda water with

# Amateur Radio

## NEWCASTLE NOTES. (By 2RG.)

your bovril, Alec, and lose those tom-fool notions of yours. Hi! 2JE still going strong, and has come to the conclusion that 2VQ's YL is the "gal" with the silver-plated voice! Oh, well, that's something for me to pawn! Eh, Billy? Hi! Welcome, 2FV! A new "ham" in Mosman; by name Jack Fairweather. Has been using a two-stage crystal to good effect. Were you responsible for the recent drought, OM? Another addition to the criminals in Mosman is 2PY, who, rumor hath it, is one Nancarrow, from VK5. Did they deport you, OM? 2XC will be missed from the air, as he is bound for Newcastle. Ian, no doubt, will try ways and means to get on from there. Who is the tall blonde who has taken pride of place in 2HI's young life? Perhaps we shall never know, as Fred for some unknown reason likes to keep these little affairs to himself. Now that we have both Fairweather and Hailstones in Mosman, 2PV should stand every chance of becoming a weather prophet. This with apologies to 2FV and 2HI. Hi! Pete throws point six at the Yanks now and then with fair to gloomy results. You do better when you shut your eyes, Pete.

The usual sinners are active in Manly, 2HF, as of old, throwing his weight around. Yes, I said weight—400 pounds of it—or perhaps it's measured in watts, eh? Hi! 2FF, the lad from Deewhy, making a noise on fone—fair enough, OM. 2IX wearing the seat of his pants out riding what I'm told is a mobike. What exactly is it, OM, and also what sex? That's enough for Manly. Anyhow, they are far too busy looking for mermaids to bother reading this tripe. And now we say cheerio to 2XJ, who has decided to give the same a rest—only for a short while, we hope. Frank, in spite of a rough deal from Mother Nature, in the matter of a horrible face, managed to make many friends. These include 2DL, 2XZ, and all the fone ginks. Hi! The lies I tell! And, by the way, 3DQ, you don't stand an earthly chance in the next DX test, with all VI's primed up. May I issue a lot of fatherly advice to all and sundry? It is a well-known fact that T9 sigs., for some unknown (?) reason, change to T5 when a contest commences. From BERS288, Terry Adams, of India, comes news of how the B.E.B.U. contest was spoilt there by this practice, and also by grinding out records in DX hours. So it would appear to be a universally selfish habit, which might well be dropped in the coming test. Remember, gang, the world judges you by the quality of the signal you put out. There is no more to be said, except that I will be glad to explain the Amateur Code to any who disagree with my remarks.—73.

### ZONE 8.

Albury gang fairly active, and 2IG and 2YI getting their share of W's, J's, etc.

2YI was unable to work with W, but since raising the west end of his antenna has been more successful.

Congrats. to 2TX, of Wyong, who called here on honeymoon tour. Going to VK3; thence back via South Coast.

3FG mostly on 14 m.c., using Parabolic beam, and reports effective.

Conditions point to improvement on 7 and 14 m.c. for VK contest. Yanks very enthusiastic, and many constructing beam antennas on VK. So we can expect some R9 sigs. from there.

73's (VK2OJ).

A debate was recently held between two sides consisting of 2MS, KG, CS and UF, against 2RG, ZW, FN and R. Best, as to whether new "hams" should be confined to 80 m.x. for their first year. The former side won.

2FN gave a lecture on "The New Metal Tubes," and another recent talk was by KG on "Suppressor-Grid Modulation."

Club interest lately has centred in the weekly DX contest, and, after five weeks, 2YS leads with 77 points from 2ZC, 73, and 2RG, 68.

Conditions on 40 m.x. have been fairly good lately, though 2ZC is troubled with incessant power QRM. Up to date, 20 countries have been worked in the contest, the best being K5, VU and SU by 2YS, F8 and G by 2MTU, PA and D by 2ZC, and HJ by 2UF. By working the HJ (South America), 2UF made sure of his long coveted WAC. 20 m.x. is not so bad for DX. Eh, Frank!

2RG has been undergoing some changes. After changing his shack and his bread-board rig for a rack, he has been notified that his call-sign is to be changed to 2RF in November. While bemoaning his bad luck, Ron. is hoping that the letters of the new call will inspire his rig to greater output. Hi!

2YS has been luckier, having been given back his old call, held for eight years, of 2KB. It was taken last year for BCL purposes.

R. Best and F. Finlayson are sitting for the next A.O.P.C., so it is hoped that there will soon be two new "hams" in the club.

## LAKEMBA RADIO CLUB. (By VK2LR.)

The general meetings of the above club are held every second Tuesday at the club rooms, 334 Canterbury-road, Hurlstone Park. The Morse Class, which meets every Tuesday and Thursday nights, is progressing very favorably, and indications are that several club members will be sitting for the next examination. Miss L. Litchfield, formerly second op. at 2XZ, was successful at the last examination, and shortly will be on the air under her own call sign, 2YG. The fact that a young lady can obtain her licence after four months' study certainly puts to shame those mean individuals who not only have been "pirating" the air, but have been making use of two of our members' call signs. 2XZ and 2OD have been receiving reports on their 40 m.x. transmissions despite the fact that neither has been on the air for some time. Then we have the other type of thief who recently broke into the shacks of 2XZ and the Waverley Radio Club (2BV) and stole radio apparatus of considerable value.

At the recent W.I.A. Field Day, held at Wyong, Lakemba Club was represented by 2IC, 2OD, 2OW, 2DL and J. Langley. The direction finding apparatus installed on 2OD's car proved very effective until the car was within 100 yards of the hidden mobile station. 2NU, when the loop became ineffective. However, Jack Langley discovered the transmitter 13 minutes after the Newcastle Radio Club, thus winning second prize for the Lakemba party. The arrangements were excellent, and the W.I.A. and Wyong organisers are to be congratulated.

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At a recent meeting of the club five new members were accepted, including Mr. Pinnell, 2ZR. The QSL officer (2QP) reports that the club's Outward QSL Bureau is proving very satisfactory, many thousands of cards having been handled. The 5 m.x. group have been very active during the past months, the following call signs being heard on this band:—2OD, 2CY, 2EV, 2QX, 2EH, 2XD and 2XM. 2KS and 2IO have forsaken 5 m.x. and are experimenting with modulators on 240 m.x.

This month we will have a little club "gossip." 2XM reported very QRYL, but we trust this will not hinder his radio activities to any great extent. 2XW reported likewise. Has not attended meetings for many moons, but often induces his YL to call CQ on 'phone. Western suburb members complain of QRM from a local "ham," who, it is alleged, is almost conducting a 24-hour recorded musical session on 40 m.x. for seven days per week.

2QP, 2CY, 2XM and party visited 2PX one night for the purpose of taking a flashlight photo. of the shack. 2PX got in first with the flashlight, when he accidentally plugged a 110-volt lamp into the 240 socket. There was a terrific bang, and 2CY received a bath of powdered glass.

2IC, the "DX Merchant," was recently informed by PAOAZ that all the Dutch gang will be looking out for the boys in the forthcoming test.

All enquiries, addressed to the Hon. Secretary at the above address, will receive immediate attention.

## Victorian Division

### KEY SECTION NOTES.

(By C. Woodward, VK3YO).

The September meeting was noteworthy, in that our popular ex-President, Mr. Harry Kinnear (VK3KN), was welcomed back to Melbourne after his overseas trip. Although KN had little time for radio whilst away, his account of conditions in the various countries and his visit to West Hartford and the A.R.R.L. headquarters was very interesting.

Arrangements were made at the meeting for a 56 m.c. field day, which has since taken place, and turned out a huge success. A full description of the day is published elsewhere in this issue.

In accordance with the usual custom, Mr. De Cure (VK3WL) gave a talk on "Radio Interference," which was very well received.

A move is afoot to organise the social side of the section, and Mr. Cook (VK3OX) has been placed in charge of arrangements.

Most of the active members of the Section have spent the last two or three weeks putting portable 56 m.c. gear together for the field day, leaving many vacant spots on the 7 and 14 m.c. bands. The tremendous interest which has been aroused on five metres is evident by the fact that there were no less than 10 in the party that went to the top of the Great Dividing Range to try and QSO the numerous parties around the coast. Those who were unable to attend the field day have taken the opportunity to overhaul their gear for the International DX contest, which is now only a few days off.

Owing to all these preparations there is not much to report on the doings of the individual members of the Section. However, it was learnt on good authority that 3RI worked their first W. Congrats!

3KE is still enjoying himself with local rag chews on 80-metre 'phone, whilst 3JO assures us that he is swinging something. We are not sure whether he said cats or chokes.

3YP has added yet another RF stage to his receiver.

Everyone else is talking 56 m.c., and they won't stop until the DX Contest starts.

### 'PHONE SECTION NOTES

(By VK3DH.)

The usual good attendance was recorded at the August meeting of the 'phone gang. Other Sections of the Victorian Division of the W.I.A. are heard sometimes to pass sarcastic remarks about the good muster we obtain at our meetings, coupled with something about "allocations of frequencies." Whether they really mean that the former is a direct result of the latter we don't know, but the fact remains that our gang do show up at the monthly meetings.

At this meeting the chair was taken, as usual, by 3TH (Mr. G. F. Thompson), whose opening remarks were to the effect that, if members applying for frequencies next month were not financial, no allocations would be forthcoming.

A certain amount of discussion took place about the new method of allocating frequencies, but all was satisfactorily settled. The Allocations Committee shone in their improved style; in fact, I believe the chairman had the "order of merit" out before the meeting started. Mr. Kerley does a lot of homework now. It certainly saves a tremendous amount of time at the meetings, and you are to be congratulated, Jim.

Referring to the transmissions and private doings of the 'phone gang, there is actually nothing to say. On the air they speak for themselves, and the "high-fidelity" transmissions need no comment.

As for the members themselves, they don't report anything revolutionary or outstanding. They never seem to go QYL or such like; if they do, they never say anything about it.

In connection with the competition staged by the New Zealand DX Club on the night of Sunday, 18th August, and Monday, 19th August, this took place between the July and August meetings, and the official report will be delivered by our chairman (3TH), who was the judge, at the September meeting.

It is reported that 3HF and 3BH are active on the 56 m.c. band. I know that 3KE has a receiver and 3FW a transmitter. I have heard the latter at East Brighton on 56 m.c. So with a few more on the UHF band we could probably stage some quite comprehensive 'phone relays.

3KQ has been relayed by 3DH and was reported QSA 5R9 at Geelong, but on 200 m.x., not on 56 m.c. It is hoped that in the not too far distant future we will be on the air via 56 m.c. from an auto. touring around the suburbs of Melbourne.

Speaking of ultra high frequencies, the very successful field day held on Sunday, 15th September, included representations from the 'phone gang, in the form of 3HK, 3YK, 3KE, Geoff. Searle and 3DH,

# Amateur Radio

and did we have an FB time? Ask 3YK about the "bottles of lunch," which caused him to ride his motor cycle (not megacycle) from 3HK's QRA up to Mount Dandenong in just a few minutes, after a QSO between 56 m.c. gear at 3HK and portable 3DH at Mount Dandenong.

Early in September 3BY (Mr. O. Hoist) was rather suddenly rushed off to the hospital with appendicitis. He is now progressing satisfactorily after the operation, and I confidently take the liberty of expressing the sympathy of the members and their hope that he will very soon be back on the job. Meanwhile the transmissions from 3BY are ably carried on by 3TH.

That is all for the present, and may the gang have some new, novel and interesting news for next month.

73'S DE.

## WESTERN DISTRICT NOTES.

(3OW-3HG.)

With the improvement in conditions on 20 m.x., more of the gang are now using that band. There still appears to be a fair amount of activity on 80 m.x., however, in spite of the increasing QRN there.

European stations are now coming through very well in the late afternoons on 20 m.x., also several South Americans, whilst W. stations are getting scarce.

The Fisk contest proved that the 160 m.x. band, used probably for the first time by those "hams" who worked there, is quite effective for contacts with all VK States, and it is a wonder this band is not used more during the winter, especially by country stations who do not, as a rule, have BCL's to contend with.

3NQ complains of some pirate using his call. Jim has been trying to work W7CC on sked on 7MC, but finds the QRM too bad for his 7 watts.

3PG's total of countries now 41, the latest being HJ and OZ on 2 watts. A new aerial has been erected at this station, and Norm. now has a total of 1,100 feet of wire in the air (Any "ham" aviators please note!)

3HG recently put fone over to J2MB. Got R6. He is at present on QRP, pending repairs to his engine.

3JA is active on 7MC and working considerable DX, including LU.

3KX put R6 'phone to HC1FG. Guess he is about WAC on 'phone now.

3QW more active with work on the ranch than with radio, but hopes to land some of the DX next month.

Best of luck for the big contest, chaps, and don't let the ZL's get all the DX.

## NORTH-WESTERN NOTES.

(By VK3CE.)

Nearly everyone in this Section has been rebuilding their gear and having a general tune-up while awaiting the improvement of conditions, which are slowly, but surely, taking place.

VK3TL has rebuilt his RF squirt. Now he is able to use a buffer on all bands, and by means of switches changes bands in a few seconds. He has also built a frequency meter, working on the same principles, instead of the usual plug-in coils.

3OR has changed to a Pentode C.O., and has raised his output as a result.

3KR has gone back to d.c., after having a lot of trouble with his converter, and

his 80 m.x. fone has once again reached his usual f.b. quality. Has also worked W. ON, J, G and K7 during the month, but perhaps the most interesting are his experiments with a portable rig, which is built into a small suit case, consisting of a 201A in a Hartley circuit and an OV1 rx., with the antenna fitted around the hood of his "Model A." Has a power of between 1 and 2 watts from 100 volts of "B" battery. He puts a Q5 R7 sig. to 3QR over about five miles, and Q5 R5 fone, using loop mod. He also found he could modulate the rig simply by shouting at the suit case, due to the tank tuning conditions becoming a condenser mike. Hi!

3NN is on a visit to VIM. He no doubt will bring back some new gear, but guess his main object will be a look over the Royal Show exhibits.

3WN is another "ham" who has rebuilt his rig. Although the circuit is still the same, he has improved his note a great deal. 3CE has almost persuaded Jack to pin his QRH to a "shivering rock."

No news of 3HL this month, but we understand he has built a rig for 160 m.x., and has been working in the recent contest. Good luck, Allan, and may you keep the old watts watting!

3CE is waiting on a 40 m.x. pebble. He hopes to land some DX with its help. However, we hope to be able to give some further dope on its performance and results next month.

The boys are very pleased with rains, just received, as they have arrived just in time to save the crops and push along some feed for the hungry sheep.

Well, QRU for this time.—So 73's.

## South Australian Division

(By VK5LP.)

VK5AI is the call of Ted Riley, of South Terrace, who has started up on 14 m.c., and his first QSO was with HB9, f.b. OM.

What did KA1EE say to 5MD? No QSE here and local KA's on your frequency. Get some crystals, Doc!

The S.A. police force will soon have plenty ops. if they go radio. VK5DK, of Torrens-road, Croydon, has just started up, using 80 EC, OSC, 46 PA, and doing f.b. Ralph is a budding cop. Hi!

5LB and LN have left the higher frequencies for the broadcast on Sunday mornings. Leave the VL's early Saturday night to be on in time Sunday a.m.

If you leave the "ham" ranks and go commercial, you must come back to "ham" radio, which 5MB has done. Merv. is on from Crystal Brook with a hefty signal.

Several of the country "hams" are now coming through f.b. Recently had 5WJ, 5DQ, 5WG, 5XR and 5HR.

5UK only on now with skeds with VKZ; too busy at the aerodrome. Don't leave us, Tom! Come back and tell the VK2's off about their harbour and bridge. Hi!

The code classes of Thursday evenings are in charge of Harold Marsh and Lisle Trebilcock, of the P.M.G.'s. Department.

Don. Linklater, who has gained his A.O.P.C., hopes to be on the air shortly and do some research into dynamic instability of tubes. Hi!

VK5BH has just come on the breeze. QRA is 6 George-street, Payneham, and is busy building up crystal rig, so he

# Amateur Radio

won't have T8 note. New "hams" take notice.

If you are called by VKZ at Alice Springs, you can lay the odds that there will be QTR in the QSO. The sand must affect the clocks up the bush.

The 80 m.x. band has been very quiet. Only the usual old stagers on, and QRN has been very bad on the band.

5LG thinks that radio is better than work. Does plenty of walking around, visiting other "hams" shacks.

5AL, who is kid-belter near Willunga, hopes to be on after the school holidays.

Those posted missing of late:—5NR, 5KB, 5SU, 5MY, 5RH, 5JU.

Well, gang, cheerio.—73's.

## VK5 NOTES.

(By VK5LG.)

200 m.x.—The usual crowd of B.C.L. entertainers will soon be augmented by VK5LN.

80 m.x.—Was popular during the Fisk test, but except for a few die-hards is quiet now.

5MO and 5ZC are the main VK5; fine exponents heard here.

40 m.x.—Like a beehive, minus the musical buzz. Some DX, lots of QRM and bum notes.

20 m.x.—Patchy and at times very disappointing. However, DX is there if you are lucky.

10 m.x.—Ask 5GR, not me.

5 and 2½ m.x.—Hi! I don't listen there; my receiver won't work. Hi!

Now for some scandal:—

5SU.—Has what looks like a half-wave matched imp. antenna, about 50 feet high.

5LD.—Packs a hefty T9 rig right on my best DX. Hi! on 14 m.c.

5WK.—Was QSO HCIFG on 20 on loop fone. Shades of Helsing!

5RX.—Recently worked his 60th country on 20.

5KL.—QRS two Japs. on 10 m.x. Clarrie will soon be as enthusiastic as 5GR.

5LY.—Worked PA and OK on 40 recently; f.b., Bill.

5RT.—Trying out fone on 20. Mody. a bit mushy, Bob.

5GF.—Also packs a hefty rig down here.

5MK.—Won the recent VK5 traffic handling test. Good work, Jack, OM. Skeds and sound judgment again.

5BH.—A newcomer to VK5 radio, Payneham. Seems that place is getting as crowded as my QRA. Hi!

5FW.—Waiting for results of his second-class. Are you still trying to put 425 volts on that 171A PA, Eric?

5LP.—I heard that the doctor says he can get up a bit now. Best of luck to you, Laurie, OM.

5LG.—Busy making meters of all descriptions out of junk. They work. Hi!

5MB.—Was heard on the air after a spell of unteem moons.

Hope 5LP has some more dope. I've been QRL. All for now.—73.

## West Australian Division

### NOTES BY VK6LJ (PEB 3ML.)

At the last monthly meeting a debate was held, "Phone versus CW," and resulted in a win for the CW men AAA. 6GM, 6MW and 6SA were for fone, while 6MN, 6KO and 6LJ were CW, with 6FG adjudicator AAA. Mirth was the main

member made by statements said and later contradicted, but all voted quite an excellent evening spent in smiles AAA. The conditions ensuing over here are only fair, 1.75 m.c. being exploited by 6MN, 6FO and 6SA during Fisk contest; 3.5 m.c. used by fone birds, and is also just about gone to the dogs; 7MC lets us hear our ole ZT-ZS coppers; R4 to R7 as early as 2,300 local time.; 14MC quite fair, and 28MC another revamped in Fisk AAA. All portable gear will be dusted again for September 28 and October 5, when the Motorcycle TT and Aero. Pageant require radio assistance AAA.

Now for some bull:—6AE heard with a PDC note, good kick, but plenty chirps; 6BB sometimes comes on the air—better chalk it up, hi! 6BN cheating the cops and getting a car licence; 6BO and 6AA got the boys baffled; 6CB gone back in shell except at meetings, when he spouts enough—matter of have to, hi! 6CX built 2A5 Tritet and 2A5 modulator, but hasn't been heard with it; 6CP QSO-ed a CM6 other night—f.b., Clarrie; 6DH had his aerial wafted away in the gentle breeze; 6FL on the air with crystal at last and says he strikes trouble; 6GM still on 3.5 m.c. fone; 6FH going up north with A.I.M. scheme—best of luck, Fred!; 6HW at the Port uses shuvgrab with 20 watts—the 1 is missing, hi!; 6JK seen up at last meeting—recently shifted to new QRA and will be on again shortly; 6JG makes a row on 7 m.c.; 6JE waiting still for his FBXA from the land of the kilowatts; 6KZ not needed for Abyssinia yet! Hi!; 6LR, of Northam, not on much—what's the matter with you all? 6FT and 6LK, also at Northam, but both QRL and no "ham" work; 6LJ still mucking around! Tiger, of 6LY, never seen, heard, worked or talked about—has an attack of YL-itis; 6MN recuperating after Fisk contest; FB Syd.; 6MW rises 50EC, 50 Buff, 46's—heave ho!—wide suppressor, mod. on the buffer; 6NJ a fone bird on 7 m.c.—ought to be scrounged, hi!; 6VA hasn't QSO Northam yet on 28 m.c. or 56 m.c., but may work 6RL on 56 m.c., who is a few miles away using TC04/10's push-pull; 6WI will be on again at the aerodrome for the pageant; 6WM hasn't broke the ether since field day, and last, but not least, is a new "ham," 6ZZ, at Katanning AAA. Congrats., O.M. Stephens; hope QSO you soon.

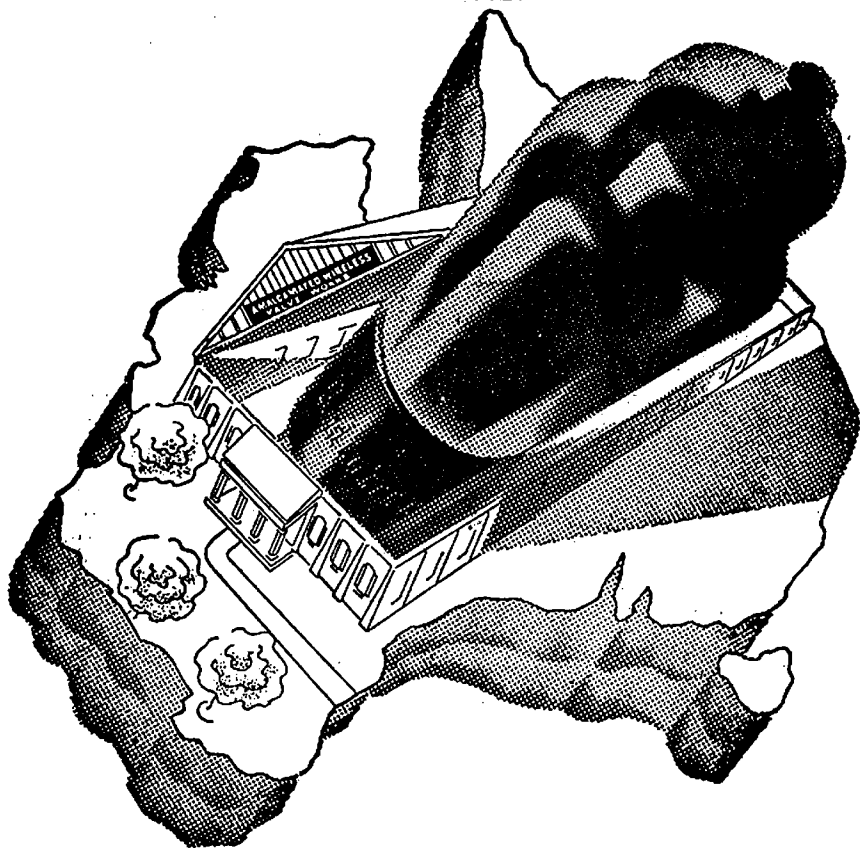
## Tasmanian Division

The September monthly meeting of this Division was well patronised and quite a lively meeting conducted.

We had the pleasure of entertaining two visitors, in the persons of 3ZR, who is holidaying in his native town, and 7RY, who was on a visit from the north. We are always glad to see any of the gang who happen this way.

General business for the evening being of small order, more time than usual was left for discussions. The President and Secretary jointly outlined the results of their trips to the north recently, and gave an account of the business conducted and their experiences during that week-end. Visits were paid to the shacks and also TNT was inspected, and generally a busy time was had.

(Continued on page 29)



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## R.A.A.F. Wireless Reserve Notes

### Federal Notes by the C.O.

The recent issue of the reservists' "Bulletin" has met with great success and general approval from all Districts. From all accounts it fulfils one of its objects, and that is as a magazine of solid material for the members to work on. This paper is issued free to all members of the Reserve quarterly. It is compiled by Reservists for its members, and contains details of District training, procedure articles, interesting accounts of Air Force work, and a mass of general matters in common with a member's interests.

Membership of the Reserve has always necessitated a person holding a transmitting licence for eligibility, and requires his resignation should that licence expire or be allowed to lapse. This should be borne in mind by all, as when such a thing happens it means stopping of all issues of the "Bulletin."

Several cases have been cited lately where members have had the misfortune to lose their Reserve badges. Should this occur, it is necessary that full particulars of the loss be made out in the form of a report to the Officer Commanding, in order that a replacement may be effected.

Within a very short time now all members will have their crystals and holders issued. This will require a slight change in Section working, because every member of a Section will be working on the same frequency within a few cycles. Traffic and general training should be speeded up considerably, owing to the absence of "dial twisting."

The Fisk contest showed that there are a great number of real operators in the amateur game that are not members of the Reserve. For those who delight in traffic handling there is no better past-time than the Reserve. Full particulars may be obtained from the Air Board, Melbourne, if desired.

### SECOND DISTRICT NOTES.

(By 2A1.)

Members of the Second District of the R.A.A.F. Wireless Reserve will remember the promised series of visits to the 'drome at Richmond, mentioned in the last issue of "Amateur Radio." Well, last Sunday, 1st September (N.B.—Fathers' Day), Messrs. Henry Bischoff, Thompson and self caught the 9.28 ac emma from Central en route for Richmond, and found Eric Ferguson (2A6) waiting at Parramatta with a case in his hand which yours truly took to be some liquid refreshment (Fluid ambrosial), but which only contained those obsolete articles known to the unsophisticated as "peejamas." The shock of this revelation left is (i.e., 2A2 and myself) rather cold, and we were darned glad when, watching the train pull out at Clarendon, to find that Eric had left behind his bally case, pyajamas and all.

At the signal office we were met by Corporal Purdy, who immediately set to work to expose our abysmal ignorance of station working generally. Sergeant Eudean, and he then showed us the

mobile station for reconnaissance work, and gave us some good dope on its working and general usefulness.

It was about this time that the firebell rang, and Eric beat the gun to the mess-room, where our spirits were raised R5 to R9 in double quick time.

We then paid a visit to the transmitting station, at the far end of the aerodrome, and inspected the high-power station installed there. The whole outfit was particularly neat, with plenty of emergency gear and some excellent antennae of various types. They tell me that there are a couple of bottles of the best at the top of the transmitter masts, but I didn't go up, for fear I might be disappointed on arrival at the top and commit suicide by jumping off.

Another very interesting hour and we went back to the hangars to look over the gear carried by the Wapitis and Demons. Typical of all Defence W/T and R/T equipment, this is remarkably thought out—compact, easily adjusted, and built on the unit system, with quickly replaceable spares. With these sets you can instantly plug in anything from a wave trap to a Wapiti.

Then followed an interesting talk on air to ground working by Sergeant Eudean, in which he pointed out the effects of clouds, swinging aeriels, framework of machine, inclination of ground stations, aerial, etc., on the signals to and from the plane, and convinced us that the best of us would be at sea (!) in the observer's cockpit of a Wapiti for the first time, however we would like the chance for him to be able to prove it.

A practical demonstration of air to ground working was then fixed up, and we watched a Wapiti being fitted with wind-driven generator and W/T R/T equipment, preparatory to taking off. We threaded back to the signal office and sat tight, listening for the plane's C.W., which came through very well. Fone from the plane was only fair, however, due to the usual troubles associated with open cockpit, craft engine noises, etc., but we feel sure that you would have applauded the observer for his efforts. He yelled "Hades!" and we became afraid he would do in his larynx. Anyway, we wouldn't waste our time listening to Jimmy Allen after that.

In the workshops we saw wings under construction, engines being overhauled, and all the usual gear associated with those who go up to the air in ships.

The general impression gained was one of scrupulous efficiency, cleanliness and good-fellowship, and, above all, a remarkable tolerance for the kind of saps like us who go up there pretending to be wireless men.

Thank you, cheerio, and the best of luck, and don't bother fetching out the band when we come up next time, please.

### THIRD DISTRICT (3ZI—VK3UK).

Practically all Reserve interest has been centred around the Fisk contest this month, and the Reserve members seem to have provided the bulk of the partici-

# Amateur Radio

pants. Every active Third District member was on for some part of the contest at least, but it was unfortunate that the contest period came at a time which made it difficult for many to take a fully active part. One of the disappointments was the lack of VK2 stations with which to work. This was especially noticeable on 20 m.x., and any ideas that the absence of VK2 signals was due to skip effects was dispelled by the way any N.S.W. signal pounded in, when it was heard. On the second Sunday afternoon, VK2NY seemed to be the only VK2 on the band for any length of time, and he was coming in at a full R8 for most of the time. The only conclusion one can draw is that the N.S.W. men were conspicuous by their absence.

3A5, although he stayed off the air for most of the contest period in order to give 3D2 a clear run, was able to pile up a respectable total, none the less.

3A6 was heard consistently each of the week-ends. Dud. has his sigs. so well educated to skip over to W. that he found it hard to make them come back to earth a mere 1,000 miles away! He is becoming a very enthusiastic 5 m.x. man, and should be in a great position where he is.

Following the success of the recent 5 m.x. field day, VMC will have to take up the thread of the experiment now, as the distances over which we can establish solid communication are beyond the scope of a field day with all stations emanating from one centre. One of the great features of this work is the simple gear required. 3Z1/3Z2 used 2 45's in PP, fed from a 180-volt generator and modulated by a 42. The aerial was just a single wire somewhere in the region of 60 feet long, slung over the side of the iron tower on One Tree Hill, where the station was located. This month we are hoping to organise a Victorian test, so that we can lift our record up near the 200-mile mark.

3B1 has gone up with his PA gear for a tour of the Wimmera. He will be away about eight weeks, and has taken a portable 80 m.x. outfit with him, so that he can keep his Reserve schedules while he is away. This portable consists of a 46 as a CO, feeding a quarter-wave current-fed aerial. The receiver is a 19, using the first Triode section as a detector and the second section as a resistance coupled audio. Leo. will be on the air most evenings, and will welcome schedules with interstate stations.

3B2 had the satisfaction of building a 5 m.x. outfit on the morning of the field day and contacting both 3DH and 3Z1/3Z2 at their respective portable locations.

3B3 put up a great performance in the Fisk contest, and should be well up with the leaders.

3C1 is having a very busy time at work, and has the unpleasant prospect of facing a number of examinations in the future. We hope he will be able to carry on his Reserve schedules; they should provide a very welcome relaxation from the strain of studying.

3C3 is, unfortunately, feeling the strain of the overwork of the last few months. He has been particularly busy, but we sincerely hope he will be able to let up on most of his work for the next few weeks, in order that he can recuperate, to some extent at least.

3C5 was second op. to 3B2 during the Five-metre Field Day.

3C6 is as active as ever, and no doubt piled up a big score in the Fisk contest.

3D4 will be down in Melbourne for the Show this week, and 3D5 will be temporarily taking over SIL position.

Owing to the preparations for the Fisk contest, the test itself and the reacting afterwards (hi!), traffic totals are very small this month, so we are not totalling them.

## SIXTH DISTRICT NOTES.

(By 6Z1—6MN.)

This District is looking forward to the visit of Demons and Bulldogs next month, and to the handling of traffic during the period of the pageant. However, it is disappointing to note that no W/T exercises will be conducted with the machines. Nevertheless, we are looking forward to paying a visit to Maylands to inspect the Demons.

A new member this month—VK6SG, of Harvey—who is building a three-stage rig, working from a rotary converter from 220 DC mains. 6B1, at Kalgoorlie, is still awaiting arrival of his FBX receiver from U.S.A., as the lower frequency working is impossible because of the power noise racket. 6Z2 is still on the rebuild and unable to keep watches. 6A2 has installed a pair of 48's in the final stage, excited by a Tri-tet oscillator, but in doing so never missed a watch. Jack won a pair of 48's in a local contest. 6A3, another boy with the rebuilding bug, but keeps a Hartley oscillator tuned up for watches. In the recent Fisk contest. 6Z1, 6Z2, 6A2 and 6A3 entered, but 6B1 was heard so little that it is not known whether he participated or not.

NOTES OF RESERVE ACTIVITIES  
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# Amateur Radio

(Continued from page 19)

appeared between 3BQ and 3KQ, and lowered signal strength greatly, which could not be improved on a beam antenna tried by the former.

The fixed stations—3KW (Geelong), 3BW (Portarlington) and 3JJ (Melbourne)—did not hear a signal all day, probably through being out of the visual range. Their signals were not heard either. 3UH had slightly better luck and heard 3DH. 3HK could work 3BQ, but could not hear the others.

There is to be another field day on a larger scale during October, and, with the co-operation of all W.I.A. groups, it is determined to gain for Victoria the 56 m.c. VK distance record.

(Continued from page 25)

Amongst the affairs discussed at a meeting of the clan on Sunday morning, at Colonel Wright's, was the prospect of another State Field Day in the near future. No definite arrangements were made, but it was unanimously decided that one should be held, and there is no doubt that it will receive good support.

When these two notabilities had exhausted themselves—and everybody else, hi!—7BJ was brought from hiding to complete the evening with a lecture. He chose for his subject the Ultra H.F., and held the floor most ably with an outline of the simpler receivers and transmitters most used in operating the 56 m.c. band. This lecture was one of the best heard in the club for a long time, and was received with the round of applause that it certainly deserved. Joe certainly has radio at his finger tips. It was very noticeable the amount of interest that was aroused, members asking questions and quietly discussing the pros and cons of U.H.F. at the conclusion.

A few lectures of this class would do much towards pulling VK7 into action, and it is to be regretted that we have so few able or willing to do their bit in this direction. A recent incident, here recalled, makes one sit and wonder. A member was approached to give a lecture. He accepted, and it was announced in all good faith. On the meeting night there was no appearance of this lecturer, and, on enquiry later, an answer was received to the effect that he was only joking in his accepting. Now, I ask you, is that 'ham' spirit?"

Before going further, I might mention that 7BJ went through the July A.O.P.C. paper at the previous meeting (August), and gave a brief outline of each theory question.

Much has been said and done about 7WI's transmitter, but we are again in the midst of a rebuild. We have stripped the 46's to build a M.O.P.A., one of the younger members having built and donated a rack for it. If the speed with which the start was made can be maintained, it might be perking any day now.

(Continued from page 9)

late the oscillator? We did, and there could be nothing simpler. It is recognised that modulating an oscillator is not the best of practices, but no untoward happenings were noted here. The circuit (Fig. 2) should explain itself. The only alteration necessary is the insertion of the secondary of the modulation transformer in series with an R.F. choke, in suppressor lead, by-passing with a small capacity, and biasing with about 40 volts. No other adjustments need be made. Like the daring young man on the flying trapeze, this modulates with the greatest of ease! A 256 is capable of supplying enough power for 100 per cent. modulation. However, a word of advice. If the audio peak voltage should cause the suppressor to go more than 50 volts positive, nothing will be gained in R.F. output and may cause trouble in the grid circuit. Modulation in this way seems equally as effective when the plate circuit is tuned to harmonics.

Any standard method of coupling may be used for driving a PA; from tests made, preference was given to link coupling.

## HAMADS

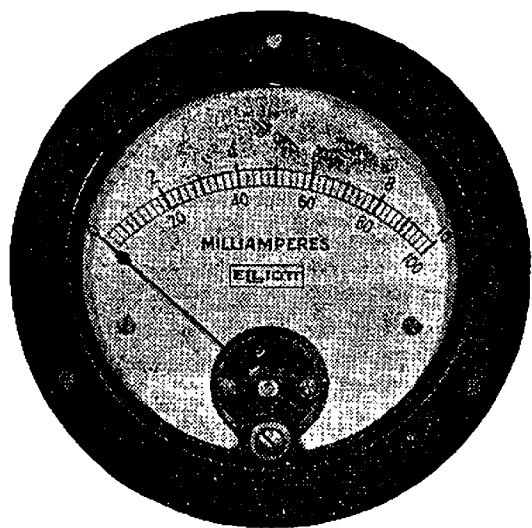
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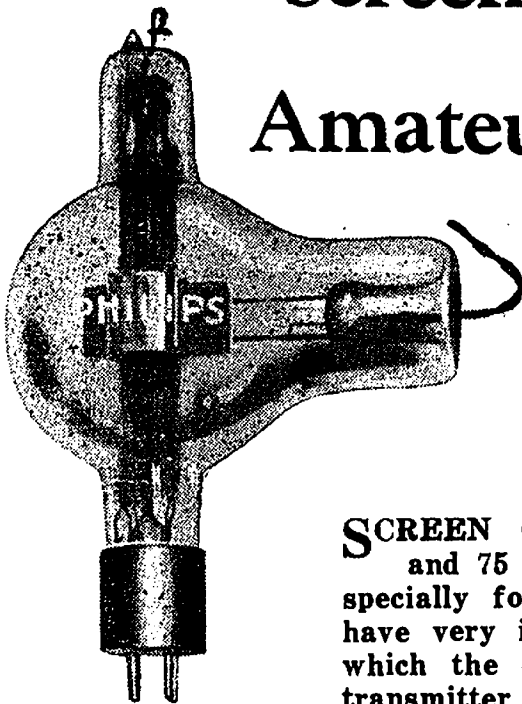
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Table A shows the various electrical properties of the Philips amateur transmitting valves:—

### CHARACTERISTICS:

Table A. Type.	Screen Grid Valves	
	QC 05/15.	QB 2/75
Filament Voltage .....	4.0	10.0
Filament current* .....	1	3.25
Saturation current* .....	400	2,000
Anode voltage .....	460-500	2,000
Screen grid voltage .....	75-125	300-500
Max. anode dissipation .....	15	75
Anode dissipation on test .....	20	100
Max. screen grid dissipation .....	3	15
Amplification factor* .....	225	200
Mutual conductance (slope)* .....	1.4	1.4
Int. resistance* .....	160,000	150,000
Anode-grid capacity .....	.001	.02
Max. diam. of bulb .....	50	100
Max length .....	160	210

\* Approximate values.

# PHILIPS

## TRANSMITTING VALVES



# AMATEUR RADIO

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## EDITORIAL . .

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There can be no doubt that amateur radio, as a hobby, has attracted more "types" of men than any other we know of. We have them rich and we have them poor, and possibly with no two minds alike. There are scores of reasons why a chap takes up radio, and to quote even one example would be superfluous; but there is a sole common object behind all these reasons, and that is to get what one can out of the game, whether it be enjoyment or satisfaction. The number that are in the game for what they can put into it are few and far between, but let that pass!

Radio costs money, and so does the enjoyment or satisfaction that is derived from it. The rich man can naturally afford more than the poor man, but, unless he is a fool, he is just as anxious to get as much out of radio per pound put into it as his not-so-fortunate brother ham.

Watts-per-pound is one form of efficiency and financial gain, but to get those watts requires something more than skill—it requires £.s.d. A "wise" ham is one who can make his finance stretch a long way. A still wiser ham is one who considers that a shilling well spent is a pound saved. The former "wise" ham thinks that by buying a dozen cheap articles for his pound he is getting more for his money than the latter, who purchases only one good article for the same amount.

Experience of those who have been buying radio gear for years tells that bargains in the "junk" store are few and far between. It also teaches that cheap gear is actually dearer in the long run than the quality stuff. The life and performance of the cheap gear cannot approach that of the genuine article. Workmanship, precision and efficiency cannot be purchased cheaply.

To have a shack of quality gear is something to be proud of, whether it represents £2 or £200. Junk has no attraction, and speaks for the intelligence of its owner. The advertisements in "Amateur Radio" come from houses of repute and reliable quality. Buy their goods and watch the watts as well as the bank balance go up.

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*A Message from the Advertiser—*

**"HELP US TO HELP YOU!"**

# Radiating Systems

Design and operation of the Hertz antenna and transmission line feeders.

By Douglas N. Linautt, N.S.W.

Antennas may be divided into two fundamental groups—the Hertz antenna and the grounded antenna.

With the grounded antenna, this operates as a capacity with the flat top forming one side and the ground the other. Power is supplied near the ground connection, while the actual length normally is calculated in  $1/4$  wavelength, or if operated on a harmonic frequency,  $3/4$  wavelength,  $5/4$  wavelength, etc.

Here the current and voltage distribution will be such that the current at the extreme end of the antenna will be zero and maximum at the ground connection; while the voltage will be maximum at the extreme end and zero at the ground. This is illustrated in Figure 1.

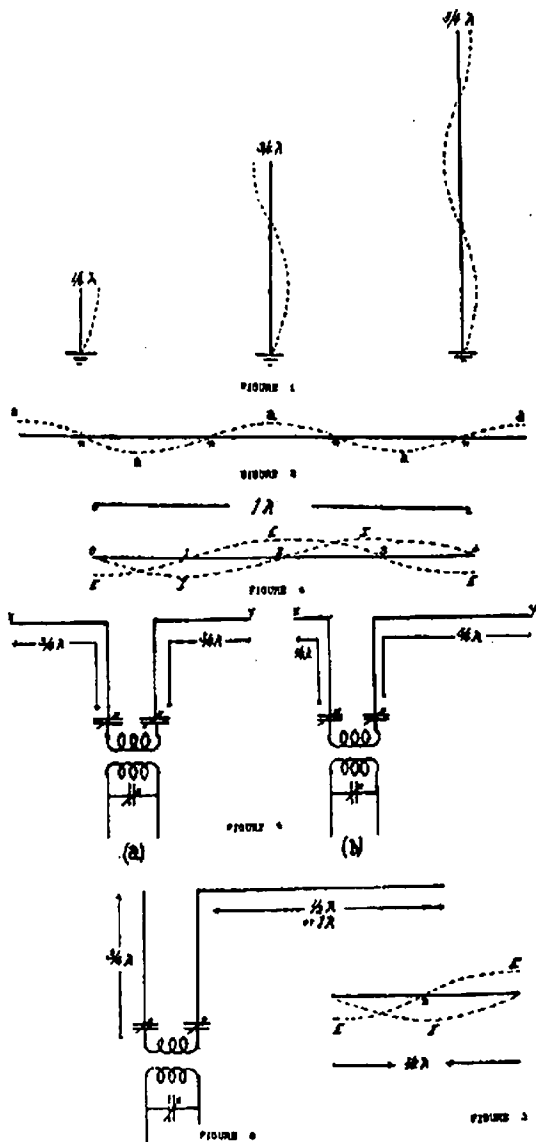
If this antenna is loaded with inductance and operated at a frequency lower than its fundamental, the same conditions will exist; although the symmetry of the voltage distribution curve will be distorted as electrical length has been added in a lumped form. The potential across the coil will be high. But all this will not change the fundamental voltage distribution in which the voltage is maximum at the extreme end and zero at ground. The current and voltage are displaced 90 degrees, thus causing zero current at the extreme end and maximum at ground.

The Hertz antenna, however, operates independent of the ground connection. This may be erected vertically, horizontally, or in any desired plane.

Electrical disturbances travel through space or along a good conductor at a velocity of approximately  $3 \times 10.8$  metres per second. Thus, if such a disturbance travels along a long conductor isolated in space, or practically free from the effects of other conductors or ground, the effect will be

practically the same as when the disturbance is travelling through space.

And if the wire is very long compared to the wavelength of the electrical energy, there will be set up "standing waves" of voltage along the



conductor. This is nothing more than points of maximum and minimum voltage, as shown in Figure 2.

This is a true wave motion illustrating the manner in which the electrical disturbance travels along the

conductor. The points "n" are the nodes or points of zero voltage, and points marked "a" are the anti-nodes or points of maximum voltage. The distance between two peaks of the same polarity is one wavelength. And in a good conductor, if perfectly isolated in space, the linear distance along the conductor corresponds closely to the same distance in space between the crests of two waves.

Practically, however, the conductor always is near the ground, towers, or other conducting objects, so it is not perfectly isolated in space and a certain correction factor must be used. These increase the distributed inductance and capacity of the conductor, so that actually the wavelength of the energy is slightly greater than the linear dimensions of the conductor.

Now, if the conductor, instead of having an infinite or great length, is exactly one-half a given wavelength long; and an electrical disturbance, whose period is such that it corresponds with this given wavelength introduced, a wave motion will be set up in the conductor. The standing wave will be such that the voltage node is in the exact centre with the loops at each end. The current will be 90 degrees out of phase, as illustrated in Figure 3.

With the supposition of a single initial impulse of energy transferred to this conductor, the impulse will travel in the form of a wave from one end to the other. If some means were provided for dissipating all this energy, nothing would happen. But in the free conductor, no such means are provided; and when energy reaches the end, it is reflected back and so on until all the energy has been expended in the resistance of the system. Thus the system will oscillate at a given frequency, which frequency depends entirely upon the length of the conductor.

With arrangements to supply a continuous supply of energy at this exact frequency, the amplitude of oscillations will be maintained and the conductor will form an excellent radiating system.

Figure 4 illustrates how the Hertz antenna is suitable for harmonic operation.

In designing the Hertz antenna, however, the fact that the velocity of the wave through the conductor is not quite equal to its velocity in space must be taken into consideration. At frequencies above 30,000 Kc/s. the correction factor is approximately .9, and for frequencies below 30,000 Kc/s. a correction factor of .94 to .96 should be used. But due to the high resistance of the antenna at the higher frequencies, this value is not critical.

Calculating the length of a half-wave antenna for operation at 8,500 Kc/s.

$$\text{Wave-length} = \frac{V}{F} = \frac{300,000}{8,500} = 35.29 \text{ metres.}$$

$$\text{Half wave-length} = 35.29/2 \times .94 = 16.59 \text{ metres.}$$

$$\text{Converting to feet } 16.59 \times 3.28 = 54.45 \text{ feet, or } 54\text{ft. } 5\text{in.}$$

This antenna would be suitable for 17,000 Kc/s. operation on its second harmonic, or 25,500 Kc/s. on its third harmonic.

For supplying power to such an antenna, there are two general methods—the tuned feeder or the untuned matched impedance transmission line.

The tuned feeder is nothing more than a tuned extension from the antenna into the coupling circuit of the transmitter. Either current or voltage feed can be used.

Figure 4 shows that there is a current loop at the odd 1/4 wavelength intervals from the end of the antenna. This diagram also illustrates that the voltage loop occurs at the end and at every even multiple of 1/4 wavelengths from the end of the antenna. Thus, if a current feed system is used, power must be fed into the circuit at a current loop, and in voltage feed the power is supplied at a voltage loop.

In the case of current feed, arrangements such as Figure 5 may be used. In both of these, the coupling coil is located at the odd 1/4 wavelength multiple from the end of the antenna. In regard to the left-hand end of the antenna in (a) the coupling is made at the third 1/4 wavelength point, and in (b) the coupling is made at

the first  $1/4$  wavelength. In both cases the total length of the antenna, including the feeders, is  $1\frac{1}{2}$  wavelengths and is operated at its third harmonic.

Since inductance is necessary for coupling to the transmitter, there must be series capacities on each side of the inductance to neutralise its effects on the electrical length. If the lengths are properly proportioned, however, and if the feeders are spaced only a few inches apart, the radiation from the two feeder wires will cancel, and the only appreciable radiation will be from the straight portions, x-y.

For current feed from the feeders to the radiating portion of the antenna, the total electrical length of the feeders should consist of multiples of  $1/2$  wavelength. Under these conditions, the length of the radiating portion x-y will also be a multiple of  $1/2$  wavelength, and the feeders will connect at a current loop. Thus, in Figure 5 (a), x-y is  $1/2$  wavelength, and each feeder is  $1/2$  wavelength; while in (b) x-y has a length of one wavelength and each feeder of  $1/4$  wavelength, with the entire system having an electrical length of  $1\frac{1}{2}$  wavelengths as in (a). The difference, however, is that in (a) x-y is a half-wave antenna and in (b) it is a full-wave antenna.

In voltage feed, the most commonly used antenna employs two wire tuned feeder with a voltage loop at the point of connection. The radiator may be a half or full-wave antenna, with each of the feeder wires an odd multiple of  $1/4$  wavelength. The same arrangement for coupling the feeders to the transmitter may be used, as shown in Figure 6.

By means of the series condensers shown in each feeder line, the electrical length of the antenna can be shortened somewhat so that tuning range can be had. But if it is desired to slightly lengthen the electrical length, parallel tuning may be used. Thus a limited frequency band can be covered with an antenna and feeder system by tuning the feeder circuit.

The untuned matched impedance transmission line, however, has the great advantage that its design and operation are almost independent of length.

A two-wire transmission line has a surge impedance that is a function of the spacing between the conductors and the diameter of the wires. In the tuned feeder systems, the length of the feeders was just as important as the length of the antenna, because the entire system operated at some resonant frequency with the standing waves along the entire length of the conductor, due to the reflection of energy.

But if a transmission line is terminated by an impedance equal to its surge impedance, there will be no reflection along the transmission line, and therefore no standing waves on the conductors. And in common with all transmission lines working into matched impedances, the circuit also will transfer power very efficiently.

The desirability of this system is that the antenna can be loaded where buildings, etc., are mostly out of the induction field, with the consequent decrease in the absorption of power from this field. At high frequencies this becomes more and more important, because of the screening effect of buildings.

A 600 ohm impedance usually is accepted for most radio frequency transmission line work. Since this impedance is a function of the spacing and the diameter of the conductors, the following equation, which is based on a 600 ohm surge impedance, can be used:—

$$D = 75d$$

where D is the distance between the centres of the conductors, and d is the diameter of the conductors.

Thus, in constructing a 400-foot transmission line to have a surge impedance of 600 ohms, using No. 4 copper wire, we can determine the spacing required. From the wire table, the diameter of the wire is 204.3 mils.

$$D \ 75d = 75 \times .2043 = 15.3 \text{ inches.}$$

Of course it will be necessary to feed the transmission line from a 600 ohm circuit and feed it into a 600 ohm circuit if the greatest transfer of power is to be obtained.

# DK6 Fires up Five

By 6LJ.

Some dope has been gathered together by 6CA with the aid of 6HW, 6CY and Mr. Heinrich's 6GEH, on 56 m.c., but all are too bashful, so I have done the dirty work. The transmitter was left running at 6CA's gra, and the receiver in a car was taken distances from 3 to 3½ miles radius around the transmitter. The aerial used on the rx was a 4ft. wire inside the car, and several peculiarities noticed. For a start, definite fading was noticed every 20 feet travelled from R max to R2, like an undulating plane. Even a qsc, complete fade out was noticed in clear paddocks, open fields and in a clear open line to the transmitter at certain intervals. The directional properties are very pronounced; this being proved by the fact that when the car was in one direction signals were R max and turn the bus around sigs were only R4.

Duplex work was done with 6HW and 6CY, but the latter stations were on 3.5 and 7 m.c. According to reports by these stations, the tonal quality was excellent and the frequency as stable as crystal.

As a point of interest, 6CA has a bel neighbour, who receives him (6CA) excellent on 7 and 3.5 m.c.'s, but when he qsy 50 m.c., CA "thort it wud be O.K." However, in the course of conversation, the bel praised the quality of his 50 m.c. telephony, so 6CA is going to buy that bel set as a 56 m.c. receiver. Hi!

Now for a bit of dope on the gear:— The transmitter uses a pair of 45's with 350 volts and innumerable mills arranged in a push pull, as previously published by 3MI.

The grid shorting bar is about 21 inches from the outside end and connects to a RF choke and ordinary 25,000 ohms bias. The plate bar is about 16 inches from outside end and usual to RFC and B + via audio choke, as per Helsing modulator. Plate and grid rods are ¼ inch tubing spaced 1½ inches and run in parallel vertically spaced from each other by about 6 inches. The aerial is our friend, the Pickard system with three 3-turn coils wound in spiral form. Inside diameter is ½ inch to outside diameter of 2½ inches. First coil is ½ inch to 2½ inch outwardly wound and the second 2¼ inches to ¾ inch inwardly wound, and the third ½ inch to 2½ inches outward. The feeders clip on the tank rods and can be adjusted for individual improvements.

The aerial also has copper rods, two lengths each 46 inches tapped on the coils, as shown:—

More dope on this antenna can be had from August, 1933, QST page 24.

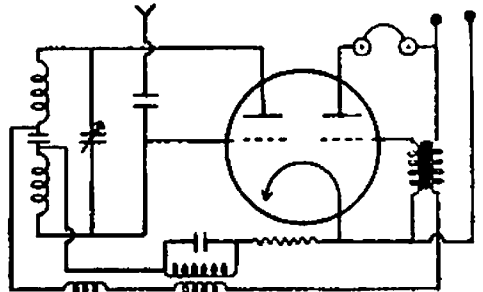
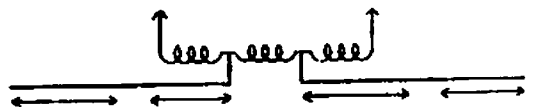
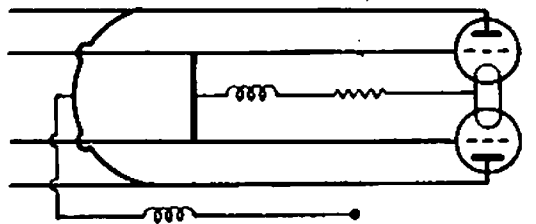
And now the receiver. This piece of work employs a Type 19, as detector and audio.

L1 and L2 are each 7 turns, 16 SWG copper wire, ¾ inch interval diameter spaced diameter of wire. RFC consists of 30 turns, 30 SWG on a ¾ inch diameter, and winding occupying about 1¼ inches. The quench coils are as shown, 1200 and 800 turns of 38 SWG, but the size of wire doesn't seem to make much difference. The condenser C1 is a very small one, consisting of two ½ inch square brass plates, mounted ¼ inch apart.

Well, gang, all the dope for the present, and let's here in on 56 m.c.

### TECHNICAL EDITOR'S NOTE.

1. Correspondents to "A.R." have reported having had greater success with 46's in place of 45's on 56 m.c. These tubes are well worth trying.



2. Much RF has been lost in several transmitters through the use of moulded mud valve sockets. Use only Isolantite or porcelain types.

3. Every ham who has done any mobile reception on 56 m.c. has noticed the dead spots 6LJ refers to every wave length or so. It is well, when erecting an aerial around the shack, to experiment with the location of same. A few feet either side might make all the difference.

4. When using a vertical dipole, near ground, always try reversing feeder connections. It makes a difference sometime. Better still, don't use dipoles; they are NBG. Use an array of same kind and get efficiency.

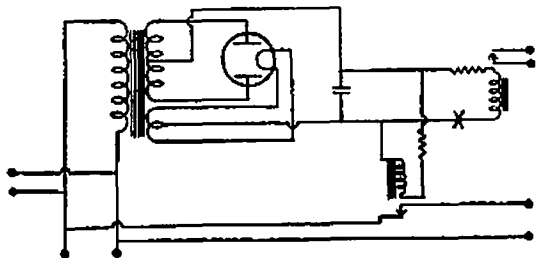
5. Correct impedance matching on 56 m.c. and above is imperative if a few watts are to do their stuff.

## A.C. Operated Keying Relay and Time Delayed Switching System

By VK2ER.

The author, whilst "pensioning off" all batteries in the shack, had to find a method of operating the keying relay. Plain A.C. proved out of the question. The method by which the trouble was overcome is shown in Fig 1. The rectifier valve came out of a Philips' 1.3 amp. battery charger, and is of the mercury vapour type.

When it was noticed that this valve made a considerable time lag before coming into operation, it immediately suggested how the pressure could be raised on the plates of a pair of 281 rectifiers. The author found that if filament and plate were switched on together on the 281 valves, the limit of plate voltage was 700v. Above this they flashed over.



By having the filaments hot before applying plate voltage, successful operation could be had on 1200 volts (yes, using the same valves).

Accordingly the plate pressure to the 281's was raised and delayed plate transformer switching arranged by the relay connected across the output of the keying rectifier. This relay also constituted a ballast on the system, with beneficial results.

An alternative to the above would be to use high resistance relays and a 100vct or 200 vct transformer, a 282 rectifier and, say, an 8 mfd condenser. The supply does not need to be well filtered. Very nice relays for either system may be purchased from automatic telephone accessory houses. However, it may be necessary to re-wind them to ensure satisfactory insulation of the winding from frame.

The resistors shown in Fig. 1 are old filament rheostats.

## Correspondence

Cloncurry, Queensland,  
September 24, 1935.

The Editor, "Amateur Radio,"  
Box 2, P.O., S. Melbourne, S.C.5.

Dear O.M.,—Please allow me a little space in your worthy magazine in which to ventilate my pent-up feelings regarding the present "rotten operating procedure" adopted by some hams.

First of all there is the fellow who, by no fault of his own, is compelled to use a bug key. The code manufactured by this type of key, when in the hands of a man who knows how to adjust and use it, is most pleasing to the ear; in most cases more preferable than the average sending on an ordinary hand key. But what do we get? A most horrible corruption of code, dots going at such speed that they sound only a blur, and the dashes, following on at about 12 words per. Then, again, ridiculous speeds when calling. The fellow who calls endless CQ's, then signing his call once at about 45 per, running everything together into such mush that only he himself knows what he is sending. Probably these fellows think this style, and beneath their dignity to send at a reasonable speed, plus clarity.

Then we have the other extremist—the fellow who sends so painfully slow and repeats himself every now and then that it is absolute agony trying to listen to him—and the fellow who calls CQ about 20 or more times, plus DX, etc., at about 5 WPM, and keeps this up for about 15 minutes before signing, then wondering why he never works any DX. Hang it all! The regulations state 3X3 calling, repeated as often as necessary to establish communication. Now, I would like some of these chaps to convince me that they are observing this particular regulation. It would do some fellows a lot of good if they were to spend a little time listening to the standard of operating practised by most commercial operators, particularly the "Bug Fiend." For his benefit I would ask him to listen to VIS when on press schedules, and take an example of good sending; then try to use this lesson for everyone's benefit when playing with his bug.

Furthermore, I would like to know why some chaps must operate outside the assigned frequencies. During the course of my duties a watch is maintained on 45 metres with the overseas mail planes, and at times it is quite surprising the number of self-controlled ham signals you hear on this wave, calling in blissful ignorance of their frequency, until by chance someone should hear them and be good enough to let them know they are off frequency.

This sort of thing cannot go on for ever. The time will come when the radio inspectors will act, and the lads who commit this breach will undoubtedly be sorry that they were not a little more particular in checking their frequency, to see that they are within the assigned band before commencing to operate.

Trusting that these remarks will be accepted with the correct spirit.—Yours faithfully,

V. L. KERR (VK4LK/VJI).



## Fisk Trophy Contest

The Fisk trophy contest entrants have been examined by the Federal Executive and carefully checked. They officially declare VK4 the winners, VK3 second, and VK7 third. The total points scored by the three leading stations in each State were as follows:—

VK4, 4192 (4EI, 4BB and 4AW); VK3, 4074 (3MR, 3RJ and 3HL); VK7, 3986 (7XL, 7KV and 7JB); VK5, 2963 (5FM, 5KL and 5MY); VK6, 2495 (6SA, 6FO and 6MN); VK2, 2416 (2ZV, 2EO and 2KJ); VK9/8, 460 (9NW).

A total of 55 entrants was received from all States, VK3 with 16 entrants, and VK2 and VK4 with 11 entrants each, VK5 with eight entrants and only a few from VK6, 7 and 9.

To VK5FM goes the honor of having the highest individual score of all stations participating, and also, incidentally the highest number of qso's (176 contacts).

The following are the points of the leading twelve stations throughout Australia, irrespective of States:—VK5FM, 1676; VK4EI, 1602; VK7XL, 1520; VK3MR, 1466; VK4BB, 1428; VK3RJ, 1334; VK3HL, 1274; VK7KV, 1266; VK7JB, from all State, VK3 with 16 entrants, 1200; VK4AW, 1162; VK4US, 1156; VK2LZ, 1124 (non-competitor, Federal executive member).

It was apparent that the majority of the participants enjoyed this test and all are looking for another, which encourages operation on all ham bands. In fact, the majority prefer it to a relay test; so those relay operators had better have their say now if they prefer that type of test. The Federal executive wishes to arrange these Fisk tests to please the majority, and so far the majority do not favor the relay tests. An expression of opinion on the type of the next test will be cordially received and appreciated.

A few extracts from the participants make very interesting reading:—

VK2ZV says, "My congratulations on arranging such an FB test, must say on our part that we certainly had an FB time. Personally, I think this type of test is to be preferred to the relay type."

VK3MR says, "As a matter of fact, it was the best test that I have ever been in, with plenty of time to work DX in between qso's. Personally, I did not know there was so much fun and interest in a 'local' test after being in many DX tests."

VK3RJ says, "Contest proved very interesting, and am glad to congratulate FHG on amended rules and added interest."

VK3HL says, "It was a good show and a decided improvement on the contests requiring lengthy messages to be exchanged."

VK3ZC, "Thanks for the contest. By far the best yet. Rules and scoring system were FB—the bonus points being quite worth the work expended in earning them."

VK3UK, "The contest itself was very pleasant departure from the ordinary run of tests and the members of FHQ are to be comended on the introduction

### Complete Scores of Participating Stations in Fisk Trophy Contest.

State: VK2	VK3	VK4
Score: 2416	4074	4192
*2LZ 1124 ..	3MR 1466 ..	4EI 1602
2ZV 916 ..	3RJ 1334 ..	4BB 1423
2EO 890 ..	3HL 1274 ..	4AW 1162
2KJ 610 ..	3ZC 1112 ..	4US 1156
2CW 508 ..	3ML 860 ..	4UU 940
2NY 498 ..	3BQ 720 ..	4JF 650
2DQ 400 ..	3HG 590 ..	4UR 620
*2EL 350 ..	3UK 535 ..	4JU 620
2HY 305 ..	3XQ 450 ..	4YL 474
*2HZ 250 ..	3OW 435 ..	4UW 338
2YB 100 ..	3PS 416 ..	4DO 69
— ..	3RH 388 ..	—
— ..	3CG 375 ..	—
— ..	3HE 365 ..	—
— ..	3WQ 180 ..	—
— ..	3MK 75 ..	—

State: VK5	VK6	VK7
Scores: 2963	2495	3986
5FM 1676 ..	6SA 1000 ..	7XL 1520
5KL 655 ..	6FO 780 ..	7KV 1266
5MY 632 ..	6MN 715 ..	7JB 1200
5RT 335 ..	6RW 184 ..	—
5RD 196 ..	6CP 82 ..	—
5LD 170 ..	— ..	—
5HD 126 ..	— ..	—
5ZX 70 ..	— ..	—
— ..	— ..	VK 9/8
— ..	— ..	9NW 460

\*Members of Federal Executive and Non-Competitor.

of a 10 letter cypher, and also the allocation of bonus points. To win, a man needed not only to be a good operator, but also required flexible and efficient gear."

VK4EI, "The contest seemed very well supported, and all bands appeared to be used by stations in all States (except, of course, VK/8/9)."

(Continued on page 14)

## 28 and 56 M.C. Section

### Record Smashing on 28 M.C.

(Conducted by VK3JJ).

Very promising changes occurred on the 28 m.c. band during October, and the stations who were active broke some long-standing records. The credit of the first 28 m.c. contact with Europe goes to VK4EI, who worked ON4AU on October 5. The following day VK2LZ contacted F8VS, but 4EI managed QSO's with D4KPJ, F8VS, ON4AU and D4ARR. He has since worked several more Europeans.

VK4BB has been having a better run with the W's, but on October 9 worked both F8VS and ON4AU. On the first day of the VK/ZL DX contest, he worked 14 W's, J2IS and XIAY on 28 m.c., thereby gaining a start of 8000 points from bonuses alone. FB, OM!

VK6SA reports that October 6 seemed to be an International super super DX day, and although his share was small, he had the pleasure (?) of hearing 4BB and 4EI making their excellent logs! 6SA heard R2 signals from ZS1H at 0350 GMT, and raised him with the first call getting R3. He was unable to obtain ZS1H's contest number owing to fading. This was the first 28 m.c. QSO with South Africa since 1929. 6SA has worked 4BB several times, also VK2BX and PK3ST.

In Victoria most of the work has been done by 3BD, 3YP and 3BQ. The latter has not been very successful with DX, but 3BD and 3YP, who are often able to be on the air on week-days, have worked dozens of Yanks, also XIAY and J2HJ. They have heard signals from LU1EP around 2230 GMT, but could not QSO. 3BQ and 3BD have heard ON4AU in the evening.

The only other VK3's active were 3MR, 3NM, 3BW and 3KX, but they have had very little luck with the DX, making only one or two contacts. Some of the strongest W's are 6DIO, 6CXW, 6VQ, 6EWC, 5QL, 7AVV, 6GX and 6DHZ. J2HJ and XIAY also put over very strong signals at times. Other DX heard include W9NY, W9GBJ, W4AJY, W6-JNR, W3EVT, W4MR, J2IS, W5AFV, W2TP, etc. Some of these stations have been heard calling VK5FM, VK5HG and VK7KV, so, no doubt, they are getting their share of DX.

The best time for Europe appears to be in the early evenings at present, but the peak period for W's is apparently getting earlier, and in the Northern States they are coming through before 7 a.m. The J's are likely to continue coming in at various times during the day.

With all the DX work going on and the apparent good conditions, it is surprising that Interstate signals have been very weak when heard at all, the reverse to March and April last. Evidently, the minimum skip is at present too great for effective Interstate work, but this should

decrease with the approach of Summer.

There has been a little activity on 56 m.c. around Melbourne during the month, and 3DH, 3KQ and 3OF continue to hold their three way QSO's. They are joined now and then by other stations, and 3JG carried out tests with them one night. 3WQ has built a one tube transceiver, but no QSO's to-date. 3BD is also thinking of trying out 56 m.c., mainly with a view to DX. It is quite possible that Interstate work will be accomplished at times during our mid-summer, similar to the 800 to 1000 mile contacts made recently in U.S.A.

#### EUROPE AT LAST!

This news overshadows everything else in N.S.W. 28 m.c. work. VK2LZ's patience was rewarded with the first VK2/European QSO when he worked F8VS at 8 p.m. on October 6. Not to be outdone, VK2HZ worked ON4AU two nights later. The following weekend the peak period was two hours earlier and 2LZ worked G6LK and F8VS again. At 6.15 p.m. the signals faded, but VK4EI, who was audible on and off, seemed to be still working stations at 6.30 p.m.

Yanks!!--well, are they any more unusual now on 10 than on 40? Hi! 2LZ and 2HZ work them by the dozen these week-ends. 2LZ has received a report via a W7 that LU1EP heard his 'phone R8!

Naturally, the news of 10 m.x. DX has meant newcomers and 2AS and 2HF have appeared and worked W and J. 2BX, one of the old-timers, doesn't appear to be able to QSO W's; is it due to his rough chirpy signal and the W's S.S. receivers?

2HY is another who seems to be having difficulty with QSO's. He can get as good a report from J's as 2LZ, but can't raise or hear many W's. He can hear Europeans well, but can't work them either. 2XY and 2YC are still among the missing, but they should be on again very soon.

We VK2's would like to sympathise with the 3's, re ex-2EP; we didn't think he could do it either from Melbourne. Hi! Poor old 2LZ! Beaten by a day for first European QSO, when telling of working the G said, "I worked G6LK, but I suppose 4EI has worked him before me."

In the BERU 28 m.c. test the scores known here are XIAY 4500, VK2LZ 4071, W6VQ 2900, VK4BB 1670, J2HJ 1250, VK2HY 782, VK2HZ 300, VK2YC 117.


In the VK/ZL DX contest 2LZ and 2HZ had 13000 and 8000 points respectively at the end of the second week-end.—VK2YC.

# R.A.A.F. Wireless Reserve Notes




**VMC**

Total Msgs.	306
Stns. Rptng.	11
Ave. Per Stn.	27.8



**VMC 1**

Total Msgs.	171
Stns. Rptng.	4
Ave. Per Stn.	42.75



**3A6**

Total Msgs.	68
-------------	----

(Federal Notes by the C.O.)

The compilation of the second issue of the Reserve Bulletin is well on the way now. In this number a considerable amount of extra procedure will be given in order to expedite the present traffic handling. As the issue will not be out until late November there is still time for further suggestions and contributions from all members.

The P.M.G. laboratories received a large bundle of crystals this week for calibration before issuing to members. They should not be long now. Holders are to be supplied with these pebbles on the plug-in style.

Federal watches, held on Monday nights, on 4,155 Kcs, have turned into schools for exercises. The whole of the 7th District attend as well as three of the 2nd. So many have joined that it is hard to conduct a systematic watch owing to the frequency difference of some of the stations. On changes from 4,155 to 3,500 Kcs amidst 'phone qrm and general mush. Three to four hours of exercise work is hard going and 1A1 feels ready for a long sleep after same!

Owing to a shortage of procedure manuals at H.Q., and whilst waiting for the new one to arrive, it has not been possible to supply new members with these books. If any members feel that they could do without their manuals it would be as well if they returned same immediately to the Air Board, and they will be credited with the return.

A totally revised register of members is being printed now and will be posted to all members within a very short time.

**THIRD DISTRICT NOTES.**  
(8ZL—VK3UK.)

Owing to the fact that the majority of VMC stations were entering for the VK/ZL Contest this month, schedules on the normal Sunday morning watches have been

suspended for the four week-ends of the contest. Most stations who are not actively engaged in the contest have spent the time rebuilding essential parts of gear which have been long awaiting attention, whilst the remainder have carried on section and inter-section working just to keep their hands in.

3A6 has been endeavouring to get the other hams in Shepparton five-metre minded, and now that one of the five-metre stalwarts (3RS) has gone up to Shepparton for a while, their united efforts should have the town developing an ultra-high complex very shortly.

3B1 is away touring the bush again, and has been so busy he has not had time to get his portable gear functioning properly. He will be in Glenorchy and Stawell as this issue goes to press, and no doubt, with the assistance of 3C3 and 3B3, will have the QRP transmission and receiver on the air before his return to Melbourne.

3C2 has had to temporarily withdraw from his section, as pressure of work is precluding him from keeping schedules regularly. It is with the greatest regret that we are transferring Ken. to one of our inactive sections, as he has been with us from the inception of the Reserve. One of the greatest pleasures we hold in anticipation will be ours when we receive his word requesting transfer back to an active section again.

3VW will be taking his place, and he is making an auspicious beginning, as his fist and signal leave little to be desired.

We have to congratulate 3C6 on his appointment as traffic manager of WIA, Victorian Division. It would certainly be difficult to find a better man than the present Ramsay trophy holder.

By the time this issue is in circulation we will be in possession of our new crystals on their allocated frequencies, and

(Continued on Page 28)

## Federal Headquarters Notes

### I.A.R.U. CALENDER.

This has been finally dealt with and the I.A.R.U. has been communicated with and told of our decisions. The matter of the Bucharest Conference has, however, been left in obedience until it has been discussed by the Convention, to be held in Brisbane, in January, 1936, where the matter will be discussed in full.

### 28 M.C. International Test.

This test concluded at the end of September and was, no doubt, responsible for the great interest taken in 28 m.c. during the past year. So far as is known, the world winner will prove to be XIAY with over 4500 points. The RSGB are to be congratulated on their enterprise in staging such a contest in spite of apparent dead conditions, which were in evidence last year.

### VK—ZL Test.

This test should be very interesting and some very high scores are anticipated owing to the manner in which 28 m.c. has become a DX band.

### Fisk Test.

This has been won by VK4, while VK3 ran a very close second. 118 points separated these two States. It was comparatively well supported, but much more support could have been forthcoming from many States, notably, VK5 and VK2. Full details appear elsewhere in this issue of Amateur Radio.

(Continued from page 11)

VK4YL, "I enjoyed the contest very much, but as you will see by the log I did not give much time to it. Nevertheless, Madeline, a very fine effort (FHQ)."

VK5RD, "I had a vy FB time indeed, during the contest, and have never worked so many stations before in my life in such a short period. The addition of the bonus points for different bands was a swell idea. My congrats to the committee for a fine contest indeed."

VK6SA, "Allow me to congratulate the executive in departing from the usual procedure, whereby 7 m.c. band carries most of the traffic. The system of encouraging multi-band operation by allotting bonuses cannot be too heartily commended."

9NW, "Please do not send the trophy up to me here, as I will have to pay duty on it." All right, Nev, we won't. (FHQ).

10 metres came to light when VK4BR and VK4EI both contacted VK6SA, but otherwise was dead in all States.

20 metres was fairly active from mid-day, but owing to skip between adjacent States only few VK3/5 and VK2/3 qso's were had.

40 and 80 metres were, as usual, well supported, but 160 metres certainly was worth looking into.

## Federal and Victorian Q.S.L. Bureau

(By R. E. Jones, Federal QSL Manager.)



KAI CM expresses disappointment with regard to the number of cards he has received from VK. During the present year KAI CM has worked and QSL'd 77 Australian stations, and to date has only 15 received cards in return.

VK3KO has gone to New Zealand to represent his firm for a few years. He expects to be on the air shortly under a ZL call sign, and has taken steps to pre-serve his VK3KO call during his absence from Australia.

W and J are coming in on 28 m.c. during 9 a.m. to noon at good workable strengths. During the first week in October several—W6, W5 and J—were heard, but only the extremely QRO VK3 stations have managed to QSO them. Commercial harmonics from JNJ, JNB and TDC, at the low frequency edge of the band, are exceptionally strong from noon onward to 5 p.m., and should serve splendidly for VK's anxious to locate the band.

Cards for the following VK3 stations are on hand at the bureau, 23 Landale-street, Box Hill, and will be forwarded on receipt of postage:—BE, BK, BL, BX, BZ, CA, CK, CW, DS, EM, FC, FG, GM, GP, GU, GV, GW, HH, JC, JH, JL, JN, JT, JV, JW, KA, KB, KG, KT, KV, KY, LE, LF, LM, LP, LT, LY, LZ, NG, PM, PY, QX, RE, RW, TG, TU, UJ, WC, WH, WM, WN, WX, XK, XU, ZA, ZK, ZL, ZO, ZR, ZX, VJQP, NYE.

Many of the leaders owed their high scores to contacts on 160 metres with all States (except, of course VK8/9). The average strength between adjacent States was, indeed, surprising and R8 was a good average report, with between 10 and 20 watts input. Unfortunately, VK2LZ was the only VK2 active on this freq., and VK5FM predominated in VK5. Other States were quite well represented, however. The majority left it till the last week-end to try this band and on Saturday night, and on Sunday early, a.m., it was, indeed, alive.

The Federal executive wishes to thank all participating hams for their support, and hope that the next Fisk test will receive even greater support; making it quite a national test, similar to the ARRL sweepstakes.

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## Hams and Hamming

(By 5LG.)

These notes are written without bias or malice aforethought, and if in the writing thereof the compiler unwittingly treads on one's pet corn, please smile sweetly and forgive him. So now here's for the first scandal of the month.

5ZX called CXICG so long and heartily that he got a blister on his finger.

5KL confided to 5LB that he (5KL) was now the possessor a condenser mike! Home-made, hi!

5BL looked worried and said, "Fone on 40? Oh, help!"

The WIA are going to try body-line against Waymouth Motors on November 10. Now, if it had been five days earlier!

Enough gear to start a radio shop, and only three receivers that worked properly at the field day; good job the committee wrote out lots of directions. Even so, our QSL officer (5BX) got himself so lost that he never saw the gathering of the hams.

And 5RH and Joe McAllister found themselves at Aldgate and not Belair. I didn't know that alcohol radiated on 3.5 m.c. before. Hi!

Who were the two hams who, having had an argument, fought a duel in the traditional way with "park lands" ammunition?

The said ammunition also brightens the ideas of a stonewalling batsman, I'm told.

5WW looked like some prehistoric being, so loaded up with junk was he. However, it worked, as results showed. Hi!

5MD now WAC, and if everyone earned WAC like "Doc" the title would be well worth while. Congrats., O.M.!

5LY also WAC, and in eight hours on QRP.

5FM has shifted QRA close to me now, and I'm a new convert to the use of the death ray. Pete certainly can get DX, though.

5LO wants more WIA traffic to handle. The more the merrier.

5WR evidently has been QSO the League of Nations. He sent a pile of cards away three inches thick, and not a VB amongst 'em.

5TB has gone bush. He joins 5PL at Iron Knob. Any blacks up there, Ralph?

5RF collected his first-class op's. ticket. Congrats., Colin!

5FW awaits results on his second-class attempt.

5CB very quiet; results of cigars and audio amplifiers.

5JH QRL his grocery business.

5GR.—If Gordon makes as much noise on ten as he does playing table tennis, VK5 is well represented. Hi!

5RT.—Bob can give you all the dope you like on antennas.

5WJ puts over FB fone on 80 m.x.

5YK finds time to pound brass occasionally, but is generally QRL, WIA. Rich. is one of the staunchest supporters the Division possesses.

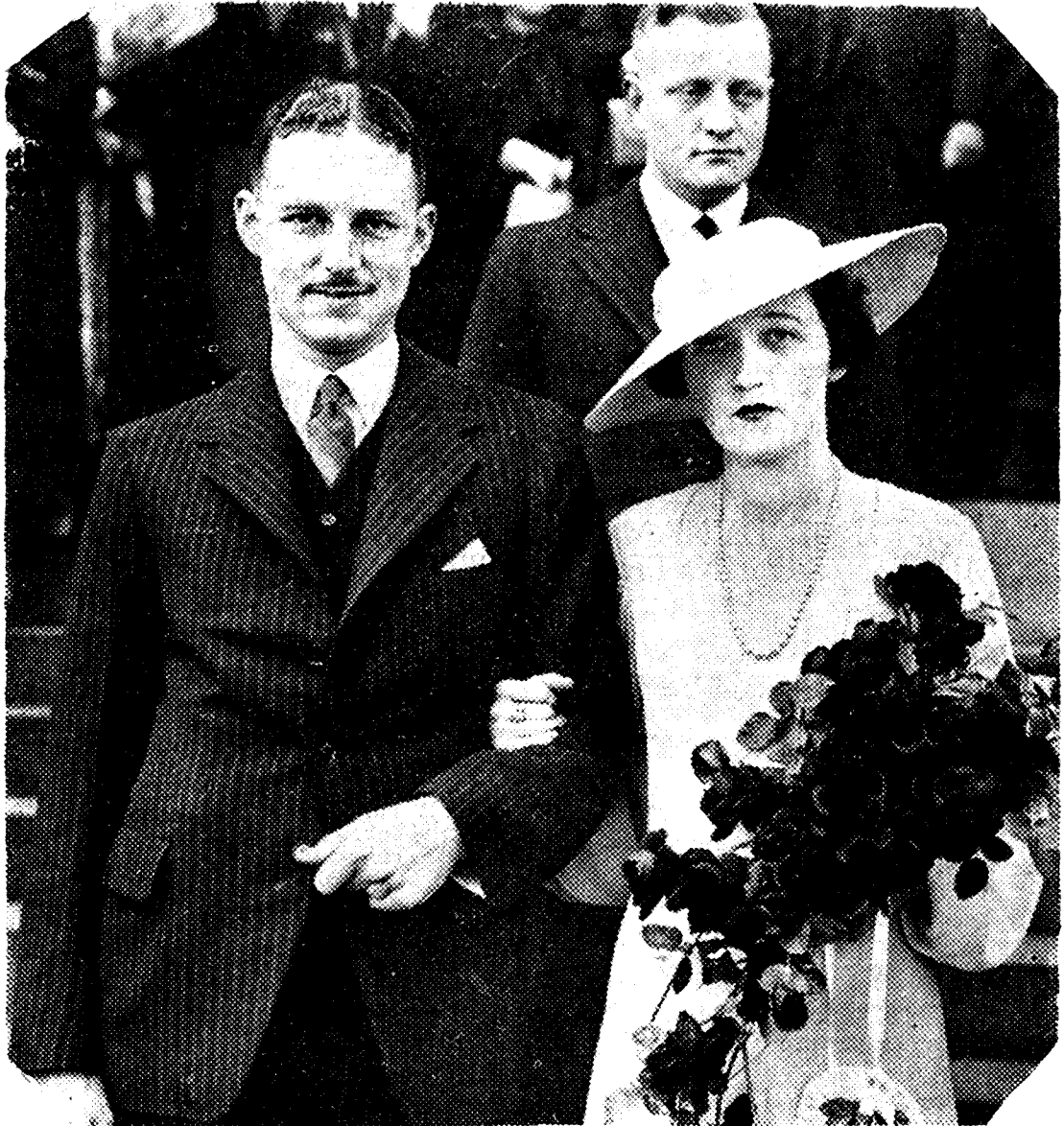
5HD and 5BC, the Lloyd brothers, have each a station in the same house. I'll bet the atmosphere gets electrified when DX looms up and they both want a go at it.

Bumping into old A., then OR5HY—Arthur Cotton—the other day, brought back memories of olden times. What about an old-timers' night or a Back-to-WIA Night? Sometimes I wonder how many of the old hams are with us now.

## Scoop !

### *“Amateur Radio” Secures Pictures of Secret Wedding of Famous Amateur [and Town Clerk of Gulch View]*

**3CX GETS HIS ON THE 18th!**



**LOOKEE!**

—“Argus” Photo.

We are glad to be able to present the one and only picture of Mr. and Mrs. Alan G. Brown leaving the church after their marriage on the 18th October. Even his best friends didn't believe him, but we guess that this will convince the most sceptical that 3CX has been and gorn and

done it at last. It has been reported that there were no hams at the wedding, and even the Lawd Mare of Gulchview, 3RX, didn't realise what was about till he read it in the papers on the following day.

So that's the reason that he is off the air—and do we blame him?

## "Do unto Others"

By FIVE ELGEE.

## B.E.R.U. Notes

(By VK3BG.)

"Sure, I'll QSL, mani tks OM 73, etc." With a gasp of relief the new ham releases the key.

The tease expression relaxes and he allows a smile of triumph and happiness to wander over his face.

His first QSO!

He reaches for the top card of that new and clean pack on the shelf, and with meticulous care fills in the spaces, VK - - - Q5R7T9.

He must make a good job of it. An envelop; a stamp; and he is off to the letter box and consigns it on its way.

Weeks pass and no card comes in return. Our ham friend now has several QSO's to his credit; but still no cards. Alas, for hams, inhumanity to ham. Soon he will be as hard-boiled and cruel as the other old stagers.

"Sure, will QSL, OM. Bunkum! ! ! Twaddle! ! ! We have all been through the same stages. All have experienced the same result. Now let us look at the problem set before us.

How can we alleviate this state of affairs? Examine the case, Brother or Sister Ham. To post a card direct costs 1½d. or 2d., and several cards soon make a hole in one's pocket money. The only point in favour of this idea is that the card gets delivered quickly. But the same card through the W.I.A. costs only ½d. for interstate or foreign deliveries and nothing at all for local cards. MORAL! Join the W.I.A. ! ! !

Although it takes slightly longer the card gets there just the same.

Most of the older hams are members of W.I.A. and are familiar with this service, so are we to understand that they are too blaze-careless—callous or lazy, to QSL.

Over a period of six months a census of QSL's was taken by a competent observer at my station, and of 100 first QSO's only 40 per cent. QSL'ed. Of these 98 per cent. were NEW HAMPS! We all like the other fellow's card—even if only a local. Even if we only put DX cards on the wall. Why not? Do unto others as we would have them do unto us. And here is a point that would make the work of QSL officer much easier.

The idea was mooted some time ago at a meeting of the VK5 Div. If all hams, whether members of W.I.A. or not, were to send in a large self-addressed envelope to the local QSL Bureau distribution of cards would be greatly simplified. The writer adopted the system when first it was mentioned, and it has proved 100 per cent. successful.

There is no more hunting through hundreds of cards for that elusive 5LG one. It's there in the envelope waiting for him. There is less time wasted, and no confusion. So why not try it, hams?

So, from now on, O.M., when you say "Sure QSL," mean it! Thanks for QSL sounds much better than "How about that car 'u cow!" and it's much easier in the end.

With the summer season approaching, the Empire stations are again coming through, and in future I hope to furnish regular notes from overseas.

VSIAJ wishes to QSO VK, and is on every Thursday, 7m.c., 7,175 k.c., at 1,500 c.m.t., and will be anxious to supply the VSI end of the contest. "Connie," of VS8AQ, and VS8AX assure me they will also be "on deck."

At the present time these districts are best: QSO from 1,500, c.m.t. onwards.

VUTFY, on 7,285 k.c., and VU2CQ, 7,150 k.c., both ask for VK to keep them in mind, and wish to enjoy the QSO's in October, as last year. Both these stations are workable 1,600 c.m.t., when their zone is usually R5/6 and QSA5.

G6CL remarks: "The September 'T. and R. Bulletin' will contain a full 'story' on the contest, and activity in Europe should be keen."

Nothing has so far been heard of our old friends, VSAF and VSAB.

In view of the approach of the contest, it may be interesting to "hams" to note that the Colonial Office has approved of the list of prefixes submitted by the R.S.C.B., so far as it affects the territories within their jurisdiction. The prefixes altered are as follow concerning the Oceania Group:—

Old Prefix. — Gilbert and Ellice Islands; VP1 and 2, Fiji; VQ1, Fanning Island.

Suggested Prefix. — VR1, Gilbert and Ellice Islands; VR2, Fiji; VB3, Fanning Island; VR4, British Solomon Island; VR5, Tonga Islands; VR6, Pitcairn Island; VR7, nine other Pacific Islands under the British Government.

A full list is published in the June "Bulletin," excluding Oceania. The most important alterations are:—V8, Mauritius, becomes VQ8; VP3, Malta, becomes LB1; Gibraltar becomes LB2.

Negotiations are proceeding with the Government of India to secure greater uniformity of prefixes in that region.

Members desiring the W.B.E. certificate are asked to forward their verification cards direct to myself (Box 41, Tallangatta), or to the Federal headquarters, W.I.A.

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**Conventions and How?**

The outcome of Federal Conventions of the past few years make one wonder just what we are getting out of them. The same old questions appear year after year, and some of the Divisions spend large sums of money in sending delegates to other States. Others, being unable to afford such expenditure, have to satisfy themselves with a proxy. A proxy is of little value to the Division he represents because he is able to vote as he thinks fit. Then again, one's outlook is apt to change completely when the facts of a matter in question have been explained. Thus, a Division may direct its proxy to vote one way, and after the facts are known, be sorry it did not vote in the opposite manner.

For a successful Convention we must have a representative from each Division present. This is out of the question from a monetary viewpoint. That leaves us with the unsatisfactory position of having to leave someone else to do the battling. The main outcome of Conventions is the effect of the personal contact that the representatives establish with one another. Divisional views and conditions are freely discussed, and a better understanding of the other fellow's point of view must follow. Well then, if this is all we get out of Conventions, why not hold them over the air, say every six months? We are radio men, and if we cannot conduct our business in the sense of the persons we represent, there must be something wrong with our faith in our operating abilities. Under proper control, this scheme should work well. We play chess matches with one State or two, don't we? All that would be wanted would be efficient organisation and good operators.

**The Lekmek Aerial System**

Australasian Engineering Equipment Co. Pty. Ltd. (T.C.C. Condensers) report excellent business with the Lekmek precision matched Double-Doublet Aerial System. For this system the Lekmek Laboratories of Sydney claim a 50 per cent. stronger reception, free of static, and more stations. It gives access to the world-wide short-wave stations, and improves the volume from inter-states. Victorian hams would do well to hop along to Australasian Equipment Co. in Evans House, 415 Bourke street, Melbourne.

A combined meeting of all Sections will be held on the 3rd December, 1935 in place of the General Meeting arranged for the 11th December, 1935.

A talk will be given by  
**Mr. R. H. Doyle**  
Weston Dept.  
Messrs. Warburton, Franki  
"STANDARD  
MEASUREMENTS OF  
FREQUENCY"

**COUNTRY STATIONS FREQUENCY ALLOCATION.**

Mr. Thomson requests all country stations to make applications in their usual way for their frequency allocations. All applications must be to hand on or before the 8th November, as after that date Mr. Thomson will be leaving for New Zealand.

**QUARTZ CRYSTALS**

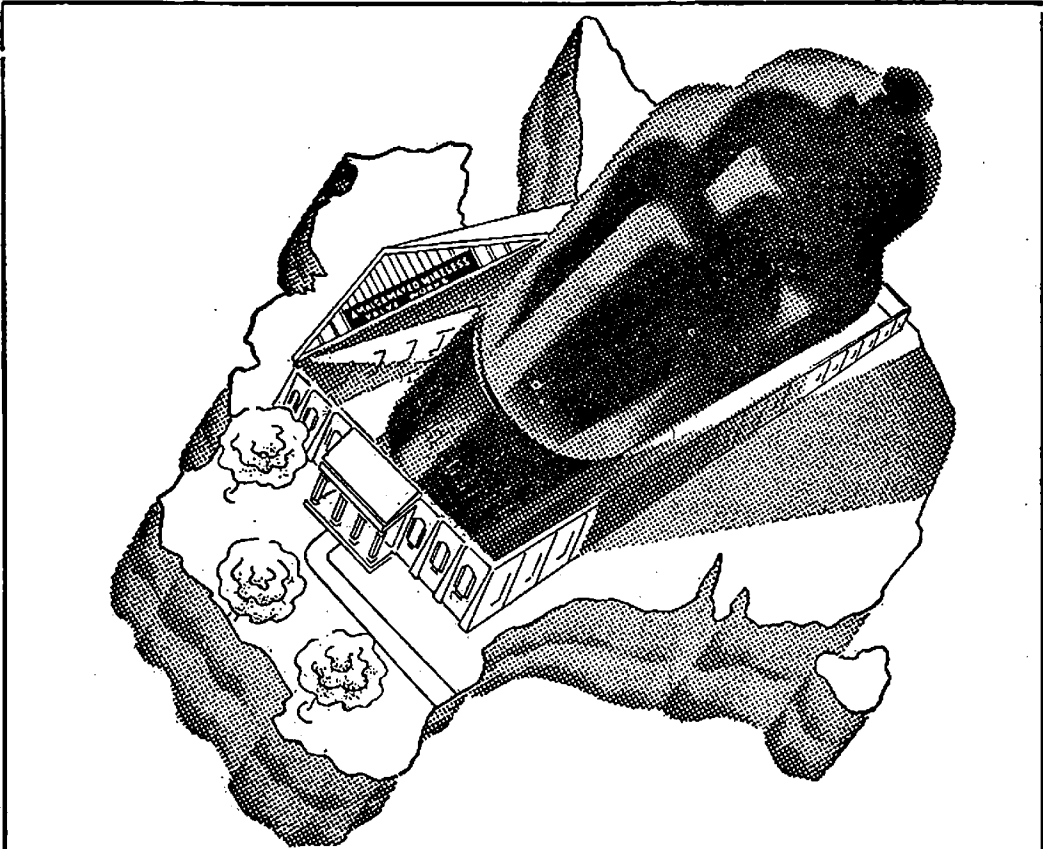
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## Divisional Notes

### N.S.W. Division

The Institute in N.S.W. has been extremely unlucky to lose the services of one of their most capable officers in Mr. R. H. W. Power, the secretary. Mr. Power, who was secretary since the beginning of the A.R.A. (now W.I.A.), performed his duties in a manner that was an example to all and sundry. A secretary and public accountant by profession, growing business has caused the resignation and the only thing we can do, while we are very sorry to lose him, is to wish him every success. Good luck, Bob, OM.

At a recent meeting of the N.S.W. Council Mr. Macgregor, VK2MY, was appointed Vigilance Officer for N.S.W. to observe how the boys were conducting themselves and, incidentally, to do something about the growing "Pirate" menace. There have been such breaches of the regulations of late that the Council took this step and members are invited to get in touch with 2MY, Mr. Macgregor, with any complaints, etc.

The following is a motion balloted upon by the members of the N.S.W. Division, who adopted the motion:—

"That the Constitution be amended to provide for subscriptions along the following basis":—

- (a) Full members—subscription £1/1/- per annum, to include "A.R." Full members must be licensed experimenters.
- (b) Associate members — subscriptions 10/6 per annum, not to include "A.R." Associate membership may be held by anyone generally interested in the science of radio.
- (c) Country members — subscription 10/6 per annum, to include "A.R." Country members must reside outside the county of Cumberland.

**Resolution 2.—Re Affiliation of Radio Clubs with W.I.A., N.S.W.**

"That Radio Clubs be invited to affiliate with the W.I.A. (N.S.W. Div.) upon the following terms":—

- (a) Each Club to pay an affiliation fee of £1/1/- per annum; this entitles members of such clubs to all membership privileges at the following rates. Full member 17/6 per annum, associate member 8/6 per annum, and country members 8/6 per annum.
- (b) This arrangement to take place as from the new financial year beginning March, 1936.

The membership of the Institute is growing and, judging from the number of enquiries, it will grow to even a larger degree in the next few months.

VK2YC resigned the position of 28 m.c. representative in N.S.W., owing to pressure of QSL's and VK2BX, Mr. Brunsdon, was elected in his stead. Any-

one interested should write him care of the Institute's Box 1734 J.J., G.P.O., Sydney.

On various occasions the Australian Inland Mission has loaned the Institute gear for exhibition, etc., and in the event of them forming the Australian Aerial Medical Services, the Institute was asked to co-operate and Mr. Chimner was elected delegate to this service.

The October general meeting was held on the 17th and Mr. J. R. Pinnell, VK2-ZR, provided a very interesting lecture on antenna systems, and judging from the number of queries from members a few antennas will be rotated in the near future.

The 500 point bonus as being awarded in the VK-ZLDX contest for 28 m.c. contacts was discussed at length and various opinions were expressed.

The October technical meeting provided a method for the check up on contest contacts and conditions and discussions varied from directional antennas to carrier controlled 'phone. The president, VK2JX, was, unfortunately, away in Melbourne and missed the meeting.

The entrants in the VK-ZL contest in N.S.W. seem to be doing well, especially those on 28 m.c. and tall scoring should be the order of the day.

On 28 m.c., 2LZ and 2HZ have both successfully contacted Europe, but VK4-EI got across first for the first Australia-Europe contact on 10 m.c. FB, OM.

The Manly and District Radio Club opened their new clubroom lately, and they started a new innovation as far as they have a complete house in which to store their gear and plentiful grounds to erect masts, etc., etc., and they should be congratulated on their initiative.

2JC complains of a pirate using his call sign on 20 m.c. fone and asks him to QRT.

2JZ, of Singleton, staging a comeback challenges all and sundry to a game of draughts over the ether. Please write him at Singleton.

### NORTH SHORE ZONE NOTES.

By VK2VQ.

Perhaps the most interesting phase of Amateur Radio occurred during the past month. VK2LZ, who's probably the most consistent of our ultra-high frequency men, succeeded in working all continents, but South America on 28 m.c. and that elusive continent, in the shape of an LU4, was heard calling him, and reporting his telephony as being R8. 2LZ is doubly fortunate in that this peak DX occurred during the contest arranged by the W.I.A. and netted him some 12,000 points—at the end of the second week. VK2HZ, not to be outdone, also broke into the point score with 7,000.

On 14 m.c. Europeans pounded through from early afternoon until evening and

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made many contacts with VK. 7 m.c. has its usual following of Yanks, who worked like Trojans for points. The general impression was the increasing number of crystal controlled stations that were heard, the majority with T9 signals. Of course, a contest would not be complete without a grievance and I believe I am justified in saying that several 'phone stations made themselves thorough nuisances during DX hours. One super optimist amused himself grinding out records hour after hour, and was unconscious to the fact that VK3EG was right on his frequency at R.max. plus. However, it's a good old game, so let's make the best of it.

Gather round and get an eyefull! That promised new rig from 2DR has not yet been heard. You leave yourself open to comment, Don. 2AE has caught the exam. fever and so radio is a back number. 2SV has been rarely heard, maybe there's a reason, but do your own detective work if you want to land him.

Jack 2HG has caught a mania for smashing chairs. He declares a party is not complete without a quota of crippled sit-me-downs. Exams have been more or less keeping him out of mischief. Welcome to VK2VI, who has shown rather a misplaced sense of humour in starting up 20 yards from 2HG's RV218. Hi! 2VI, V. J. Gay, 30 Archer Street, Chatswood, at present places itself on the map with a 59 Tritet. Another scheme has come to light from the fertile brain of 2BJ. Keith is all het up over the proposed formation of a district radio club. The only way to catch the boys, OM, is to lay on free beer, but even then it's doubtful, since 2SS is on the water waggon. Nothing stronger than a milkshake can tempt Bob. Oh, yeah!

2VG back to the xtal grinding racket and yet finds time to use loop fone on his 80 m.x. Col! 59, 59, 46 in par. is the line up at 2HA. Suppressor grid modulation is used with quite decent results. 2QF had the gang round to hoist his new stick, and 46's now do the necessary work for him in the matter of ether busting. 2VQ made 6 contacts in the test and each one was a continent. Too QRL to take it seriously. Hi! Keith 2VM decided that he needed sympathy when he broke an ankle, so gathered his goloshes and umbrella hot-footing it off to V.I.M. May be a married man when he gets back. 2KJ and DX agreed nicely in the test. 2HY does not get the time to work on 10 m.x., but then he does not put his foot down firmly enough. 2LZ, for example, tells his YL to buzz off during tests; and that's one reason for his success. Take a page out of his book, Roy. Hi! Another xtal has gone into thin air and 2IP is bemoaning the fact in no uncertain terms. These tritet ideas won't work for all and sundry, so try again. OM. Excellent keying is the future of 2WW's signal and he works quite a few on 14 m.c. The mania for busting xtals has spread to 2YC. Hi! Never mind, Jim, in spite of what 2LZ says, xtal is the one and only essential for a decent sig! Mopa! Whew!! Gang, did you hear the way Bill socked RF at the Yanks on 10 m.x.? 2HZ put it over the boys by contacting ON4A4 down there. Exams have placed a ban on 2VE's activities, but he hopes to be on in a

month or so with xtal. Output is the feature of the rig at 2VN. With a single 46 doubler, Morry can blow pea-lamps in the aerial. He has worked quite a healthy list of DX into the bargain. About 100 yards from him a 60 foot stick holds a Zepp with quite a pile of RF in it when 2FM presses his key. Alec has a great little two tube receiver and has no trouble with the DX on it. 2PY wallops in from Mosman and is active on both 20 and 40, with a nice T9 signal. Another Mosmanite—2FV—has not been heard so consistently. 2PV was heard with a T5 signal, calling CQ test. Hi! Read the regs. Pete, OB. Heard a WI calling you, though. Fred. 2HI spent a week in hospital—we can't say definitely whether it was the mobike or not—possibly he had only a bout of measles. Hi! 2XC still up with the Newcastle push and no news from him. The band was packed with Yanks calling 2HF in the test. A nice sig and nice keying—what more do you want? 2DA did not lag behind with the DX. Harry certainly shoves a wicked sig across. 2QK with T9 R9 sigs. makes the dynamics bounce over here. Enough of this agony except that for the latest in Mae West yarns you cannot do better than QSO 5UK or 5LD. Whew!

### LAKEMBA RADIO OLUB (VK2LR).

The meetings of the club are held every second Tuesday at the club rooms, 334 Canterbury-road, Hurlstone Park. Recently a very successful auction sale was held. Members having radio apparatus they wished to dispose of brought same along on the night of 17th September. 2QX was the auctioneer, and under his very capable hammer many bargains were "knocked down" to those who persevered with the bidding. After the sale refreshments were served, the chief steward being the President (2IC), who was attired in apron and cap for the occasion. At the following meeting two new transmitting members were nominated—2XU and 2VA. After general business, Mr. Pinnell (2ZR) delivered a very interesting lecture on "Wave Form."

On the night of Saturday, 12th October, three representatives from Lakemba attended the Manly Radio Club's "Smoko," held at the new club rooms at Fairy Bower, Manly. A very enjoyable evening was spent, and great credit is due to Mr. Cook, who provided some excellent entertainment, especially when he gave a ventriloquist act; but, not having a doll, he made use of a member of the audience, who had to sit on his knee and try to move his mouth at the right time.

Several members report having worked very good DX during the contest, but at times QRM makes things hopeless. The five-metre group state that the latter band is very dead, most of the boys having gone down to the lower frequencies during the test. The meetings of the club for November will be on the 12th and 26th. Visitors are welcome at any time, and any further enquiries will be answered by the Hon. Secretary.

### NBWCATTLE A.R.C. NOTES.

(By 2RG.)

Interesting lectures have been lately given at club meetings by 2FN on "The

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New Metal Tubes," 2MS on "Cathode Ray Oscillograph," and 2KG on "Suppressor-Grid Modulation."

Local hams have been concentrating on the International DX Contest, and some good contacts were made during the first week-end. 2ZC's bag included 26 Europeans, even with his reduced power of 40 watts. Jim said that, if he hadn't been working during half the week-end, he may have had a real score. HI!

2DG, who has only been on the air for a short time, uses SE on 20 MX, and, as well as a number of Europeans, recently worked an LU for his WAC. Vy fb work, Keith! 2UF and 2MT are also amongst the 20 MX. DX as usual, the latter now having worked over 40 countries. 2SO does not get the chance to get on much these days. A big bottle is now parked in the rig of 2CS, and the sig. gets out very well. Another bottle the same size is used as the neutralising condenser. HI!

After a couple of months' inactivity, 2FN is again punching the key, the rig now being 3D Trltet, 210 pa. Occasionally the crystal misbehaves, and a rac. sig. is the result.

Arrangements are being made to instal 5MX RX and xmitters for a plane to ground and vice versa; transmission on the occasion of a local aero pageant. 2ZW and 2C have the work in hand, and their thorough preparations should ensure success.

## WESTERN SUBURBS NOTES.

(20 2MY.)

Some of the boys are getting a bit slow on QSLL promises lately. KA-1-AP and VU-2-CQ complain of unfulfilled promises. KA-1-AP's card and photo would grace any shack, the photo, being a particularly fine piece of work and well worth any station's QSLL. What about it, boys?

Our sympathies to 2EL, 2XZ and 2RV, who have been visited by burglars. Obviously the one that visited Eric nt 2EL, however, was no ham, as he preferred jewellery to that famous '52.

2NJ heard on 40 again with nice T9 note first time since taking unto himself a YF. Congratulations, OB, from the gang.

2MQ also hath said "I will," and now that's over perhaps his FB rig will be brought into operation. Congratulations, Bill, B!

2QR puts out some nice fone on 20 m.x. R max here and sounds FB. Yet on 40 CW slgs. only R0. Sfnnny!

Things promise to become rather tangled in Western Suburbs now with the advent of Bill McGowan. We now have seven hams in practically 800 yards radius—2PT, 2DW, 2FO, 2FD, 2MQ, 2HR and 2MY. Still, as they are all QRP stations, things should sort themselves out all right.

2IG getting out well and has good share of DX. Heard W1 and J6 calling him almost on same freq. the other night.

2RY.—Ivan has just returned from three weeks' kangaroo shooting. Keener on driving that Vauxball car than DX.

2VE.—Heard on 40 with T5 QRI, but rather a good fist on the key.

2XJ deserves a pat on the fetlock for

the consistent XT9 sig. he puts out.

5LP is another who has a FB T9 sig.

2EJ.—With FB crystal sig. on 40 MX called you on 20, OM. Some Harmonic!

2KF using three-stage xtal rig. Gets out F.B. Works good DX.

2FV uses two rigs—one for BCL hours and one for DX. HI! Methinks it would be easier to use two keys OM.

2WH uses 50 SC and pair 46 PP, with about 8 watts. Comes in R8 in VIS. FB OM.

2VW going strong with three-stage crystal on 20 BS 80 MX.

2PH must have installed new filter. Now FB T9 sig. Ray, OB, good-oh!

2XU.—Skip on 40, but comes in Fone R8 on 80, and very nice.

2NE.—Fone on 80 R6, but inclined bit wobbly.

2WR.—Plus Mrs. 2WR. Consistent, good fone on 80. Quite right, Mrs. 2WR, Melbourne is a splendid place from Sydney.

2LA.—Nice TS note, but inclined to murder the L and make it 2A1A. By the way, OM, was it May or Jackie Mann at 5EM? HI!

Some of the local stations have hefty Overtones or Harmonics. During listening in 2AS, 2NP and 2FY were R8 on both 20ES and 40MX bands; also 2ZR.

2ZR getting out well on 40 ES. 20 QRI sounds much better on 20 than 40, Jack.

2JT getting bit DX on 20. A rumored serious contender in the VKZL test.

2HP on 20 MX, with wavery PDC signal. Rather hard to follow.

2SS on 20 MX, with PDC sig., R7/8, and nice copy.

2WP.—Probably his fourth op., judging by his fist on 20 MX.

2BN on 40 QRA. Hurstville. Key clicks. R max plus at five dock. How about a filter buddy?

The ICW power leak signing VIT still holds informal afternoon parties perched comfortably inside the 40-metre band of a night. For the love of Mike, lay off there during the test!

2VG.—Rex seems to spend more time with that sailing skiff than he does on DX. Perhaps it's reaction after the WAC!

2EL contemplates a speed launch for the summer. Did hear that his FB rig was for sale very cheap. There's a chance of a FB rig, with 852 in final, for some ambitious laddie.

2FD using 250 modulate, a 45 on 40 MX, with FB results. R0 from VK7, and sounds FB here. Also busy building condenser mikes. Sold his Sniggle Snooper and rebuilt TRF job.

2GR heard on 20 MX, working duplex fone with 2 MK on 80 MX. What oh, that feed back, Alec, old boy!

2MY.—QRT rebuilding for test.

2FO using some nice fone on 40. Wonder how it would go on 100?

2DW on fone on 40, but not up to the usual standard; carries plenty A.C. modulation; percentage appeared small.

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## ZONE B.

(By VK2OJ.)

2EU active again on 7 MC, but slight frequency shift noticeable.

2IG not so active as usual. Reg. had trouble with his antenna, but found meter defective.

2VK having first trip as marine op. to Solomon Island.

2QE erected doublet antenna and appears to have little more punch.

2QD studying for examination and QRT.

2YI has new SS Super, which rolls in the DX.

First morning of VK-ZL here spoilt by heavy QRN on 7 MC. 14 MC was lively.

Congratulations to 2LZ and 2HZ for their fine efforts on 28 MC, both working W. and Europe. Second week-end much improved on 7 and 14 MC, and 3EG was rewarded with 35 countries.

Loudest DX sigs. heard thus far in contest are W6KRI, R9 plus on 7 MC, and HB9AT, R9 on 14 MC.

## Victorian Division

### KEY SECTION NOTES.

(By C. Woodward, VK8YO.)

A poor attendance at the October Key meeting was attributed to the nearness of the DX Contest, as well as the stifling weather.

Mr. Were (VK3DP) kindly donated a pair of special lead-in tubes as a trophy for the contest, and was warmly thanked for his action.

Much merriment was caused by the account of the various stations partaking in the 56 MC field day during September. Despite the rain and wind, everyone had a good time, even the Spartans on the top of "Pretty Sally."

Prior to the contest, the report of the doings of the different members was:—

3OC getting more or less indifferent results on 14 MC.

3DP was WAC in three hours on 14 m.c. (What a difference!)

3UH has had his first DX contact on 56 m.c.—500 yards!

3JJ is off the air at present, but is hearing the W's on 28 m.c.

3UW has built a new three-stage C.C. transmitter, and is getting out well.

3WQ wants a sked on 56 m.c. for Sunday, 24th November.

3RJ is recuperating on 28 m.c. after the Fisk contest. He would like some information on how to get a T9 note on this band when using a single 46 OSC.

3JO hopes to be on 56 m.c. soon. He is building a PP unity-coupled rig, using 112A's.

3UK has the same report as 3RJ, apart from the note. Whoever heard of the B.A.A.F. with a bad note? (Who did?)

3CP now works South Americans like locals. This 14 m.c. beam antenna seems to be doing its work. It consists of two

vertical half-wave antennae, a half-wave length apart, with a quarter-wave matching stubb and matched impedance feeders. It also has a switching arrangement for changing the direction of the beam.

At the time of writing, the VK contest is half over, and by appearances 3KX, 3EG and 3MR are all in the running with large scores.

3RX had the bad luck to lose a tube on the first week-end, after having started by working a TI.

3YO fractured a crystal on the second week-end, just when things were starting to happen.

The conditions on 14 m.c. were peculiar on the first week-end, in that many European countries were heard at loud strength, but contacts were very hard to get.

On the second week-end conditions were extremely poor until, at nearly 3 a.m. on Monday morning, the ZS, ZT and ZU were R8, and could be worked easily. However, the contest is going with a swing, and many thanks are due to the large number of overseas stations that are making our contest worth while.

### WESTERN DISTRICT NOTES.

(3HG-3OW.)

3WE, of Birchip fame, is now in Hamilton, but has not been heard from there yet. 3JE is talking of selling out. 3JA is still working lots of DX. Has changed to 14 m.c., where conditions are so good at present. 3KX is very active in contest. 3NQ has given up ham radio in preference to growing gladioli! 3GQ operating mobile B.C. station, 3YB. 3GC wants only Africa for WAC. Recently worked HCIFG for an hour and a half. 3NK not very active; has ideas that never seem to eventuate. 3PG, 28 m.c., hearing quite a bit, but no QS yet. Still working swags of DX on 14 m.c. 3OW put up a beam pointing to South America, and at last gained bis WAC. Very FB. 3HG moderately active, mainly on 14 m.c., and getting a fair share of DX. 3HG and 3OW recently contacted several W's on 3.5 m.c., but it seemed to be only a patch, as after working them for three nights they faded out, and nothing has been heard since. 3HL not heard in the contest this year; guess he is having a spell after his efforts in the Centenary and Fisk contests.

### GOULBURN VALLEY NOTES.

(By 3DW.)

Shepparton notes conspicuous by their absence again last month. However, things have taken an active turn again. So here we are.

The writer and Mrs. Tacey spent last week-end (October 13-14) enjoying the hospitality of 3KR and family, plus that of 3TL, 3KI and 3OR.

Arriving at Kerang 10.30 a.m. on the 13th, a very sleepy Kenneth answered the hooter's CQ and immediately passed scathing remarks about Morris. Lazed around till lunch and then went over to 3TL, where we found Mr. Treb in the depths of a radio handbook, and after getting him clear of this we inspected the gear (and very nice, too) and set sail for Lake Boga per TL's car. Arrived there in due course, but it appears that Treb's

car is like a bad dog at times and treats sheep as such. No, I won't say any more; just ask 3TL about it next time you QSO. HI! A conference on speed reduction possibilities on arrival at KI's resulted in many and varied suggestions being put to Mr. Treb, including such as reducing the tyres from their usual inflated importance to tying logs on the back bumper, none of which were necessary, as our driver adopted a more leisurely speed from there on and received many congratulations. Continuing the trip, with 3KI now included, we moved on to Swan Hill, and an enquiry re inspecting 3SH resulted in a certain sweet young thing (QSA nil, R nil minus) informing us that "the kiddies' session is in progress, but if you would care to call back at 7.30 p.m. we will be glad to let you see through." Oh, yeah! The general opinion of 3SH is now very XHLZ!

Next call was 3 Zebra King's, and arriving just too late we found that "the voice of dynamic personality" had taken the YL out for the afternoon; so, after inspecting the noise factory through cracks in the door decided to inspect various places of interest, such as power house, swimming baths, etc., under the careful guidance of 3KI. A final call on Jimmy before returning to Lake Boga gained us little else but our own fun. No, we didn't do a thing, Jimmy; you must have been dreaming. HI!

One of the most interesting parts of the trip was at 3KI, where John explained the various phases of citrus fruit growing, but of particular interest was the application of nitrogen to various trees by the gang.

Tea adjournment arrived, and then we retired to the shack to view the RK20 and listen to KI's dope on same. Followed a QSO with 3SN by schedule with DW, and on learning of the RK20 Dud. sent orders to pinch it, but all efforts in this direction were futile. Time passed much too quickly, and we arrived back at Kerang at midnight, thoroughly tired out, but pleased. Monday morning found KR, TL, Mrs. Tacey and DW rattling along to Lake Meran in Ken's "Lizzie," where we arrived in due course.

Murray was found busy shearing, although was soon out to show us the hidden glories of the lake and 3OR. Murray has been troubled with swallows sitting on his supply lines and other things, and his simple but effective scheme to combat the nuisance is a revelation. Same may be said of the amplifier at OR's, with triple speakers and quite a lot of Bruce Mann's effort in it. Congratulations! Time waits for no man, so we returned to 3KR's for lunch, and after inspecting the local talkie's rig set our course for Shepparton, the arrival at said town completing one of the finest week-ends to date. Many thanks, gang, and hope to have you over here some time.

General topics to date are:—3SN only needed an African to WAC twice on 20 m.x. last week. Dud. has ordered an RK20 from U.S.A. Howzat? Bruce Mann and Roy Milledge sat at last examination. Best luck, fellows!

One of the best pieces of information to hand relates a story of Roy (3CF) doing battle with tractors, grease guns (sounds like Abyssinia to me) and snakes. Says

it makes his hair stand on end. And "How?" we'll say.

3FN in trouble with his rig; tells me the locals are drinking too much snake oil and he can't get time off. 3DR very quiet, canning season preparations keeping him going. 3CN contacted couple of G's on 20 m.x. 3EP hasn't been heard of for weeks. What's the matter, Ted? 3KI gave 3DW an FB xmtr rack, and this is now well on its way to hold a 20 m.x. rig, consisting of 50 Tritet, 46 doubler and 210 PA. 3KR using a 38 tube, with 400 volts on plate as CO, and getting splendid results. 3TL considering 210's in parallel for final amplifier. The antenna systems at this station are supported on an 80-foot stick, and consist of a full-wave 40 m.x. Zepp flat top, a 40 m.x. half-wave vertical, and two half-wavers at different angles. Well, so long; see you next month, 73.

## South Australian Division

(By Leith Cotton, VK5LG.)

A well-attended general discussion meeting was held at the club rooms on 16th ultimo, and among the items were:—The Division has challenged a leading motor firm to a cricket match; code practice over the air from 5WI; demonstrations with the aid of meters, etc., at student classes; social activities, and a five-metre field day to be held in the near future.

On Labor Day the Division staged one of the most successful field days that has been held in VK5, a hidden transmitter, sealed directions and rough scrubby country being the ingredients. The transmitter was found by 5WW, he being the first man in with an unopened direction sheet.

The DX contest is in full swing now, and several VK5 hams are making good scores. However, the points given with 28 m.c. QSO's have robbed the contest of a great interest, and I believe it is mainly a case of "see how many new countries" one can work. Certainly 10 metre work will benefit enormously through it, but in a DX contest of this nature I think all bands should carry the same score, irrespective of ease or difficulty.

As we go to press we hear that VK2LZ is now WAC on 10. This, I believe, is an Australian record—is it a world "first"? Heartiest congratulations to VK2LZ!

The traffic-handling contest held in VK5 recently resulted in a win for 5MR. 54 points: 5ZX, 39 points, and 5MZ, 30 points, filling second and third places. Mr. Lucas won the students' receiving contest, held in conjunction with the above test. One noticeable feature of these contests is the remarkable enthusiasm displayed before the start and the lack of it afterwards; i.e., if all contestants had forwarded logs, etc., the results would have been much different. 5MK would have scored 80 points and others would have boasted higher scores. Of 35 starters, only 15 furnished logs at the end of the day. This, besides being unsportsmanlike, is also very hard on the other contestants who follow the rules. The receiving contest was also a farce, only one log being returned in this section. The students

clamored for a share in the fun, but of nearly 20 starters only one survived the course. Very encouraging for the conveners of tests, chappies! And if next time you find yourselves out in the "cold, cold snow," you will know who to blame.

The last lecture evening of the Division was held on 25th September. Mr. A. Relman (VK5JO) gave a very instructive and interesting lecture on "Crystal Grinding for the Amateur."

## Western Australian Division

By 6LJ.

The gang have been a bit quiet lately; must be recuperating after the Flisk contest. 6SA seems to be the best over here, and 6MN next. Several others participated, but 6SA was the main one as he was on all bands, including 28 m.c. Some of the local lads, have been doing some research work on 56 m.c. and have made some good notes. All dope will be found in an article elsewhere. 6CA, 6HW, 6CY and 6GEH were the culprits. The classes of the Institute are going exceptionally well. 6BN and 6LS taking theory, and 6RC and 6AE morse, and all members are very progressive. The portable boys put in some good work in co-operation with the aero club, when they assisted with gear at the pylons during the heat events, and also at the motor cycle club's TT, at North Beach. All went off very well and the main event was the aero pageant on October 5. 6BB had his PA at the drome and his transmitter at a pylon. 6WI at another pylon, and 6MY and 6WP at our local cement works, and JS with a few commercial receivers of his dotted around at the aerodrome. All work was done on 40 and 80, and JS had a separate receiver for each pylon trans. Quite a gathering. Hi! The International dx contest is the next main item and will be in full swing by the time these notes arrive in V.I.M., and will be over when the mags get in VK6. 6MN, 6JW, 6LJ and others, are all set and keyed up for the occasion. 7 and 14 will be the calls with, praphs, a few on 28, but dx will be scarce. I think on that 3.5 is hopeless for anything, but ZL one is VK6, and ZL's combined with VK, so still no go!

Conditions generally have been real good, tons of dx rolling in from 1,000 to 1,700 GMT, on 14 m.c., and from 0800 to 2,200 GMT on 7 m.c. 6MN, 6FO, 6JW, 6LJ, only VK6's keeping the former band warm, and numerous others on 7 and 3.5 m.c. Yanks on 7 keep buzzing on and off, and Europeans piping there on 14 m.c. Heard a VK3 call HC2MO the other night, but no sign was heard of the South American. Hi! If he was heard a local mutiny may have started. Hi!

6AE burns quite a lot of oil—must be working O.K. now, Jack. 6AC, a man of leisure!

6BR qrl aero pageant! Takes Jack a month to get ready and a month to pull things to bits! Hi! 6BC not heard cept from 6SR on Sundays. 6BN keeps classes going and the chickens running! Hi! 6BO heard on 7 m.c., too—qrl man-made

static for Hamdon! 6CA. on 56 m.c., with pair 45's and E406 Heising mod. Tears around in a car listening to sweet "moosic". Hi! 6CB, shus, boys—creep past the sleeping beauty! Hi! BEAUTY? 6CP using the Yanks as a playground! Clarrie's gear going O.K. in conjunction with a doublet Aunt Enna! 6CY, on with RANR and qrl, too. Making hay while the sun shines. Hi! 6DA—where, oh, where, is Fred.? Not on at all. 6DH has his bi tri annual spells off the air. Dave (6DH) has an Austin now, so may be along to field days in future. 6DJ on key at 6FO all the time. Fb, Bill!

6FL on again with xtal. 59 Tritet. 46 FD is F704 PA. 6FM transferred to Goomalling; will be on again before long. 6GM still up on 3.5 with supp. grid mod. on a 59 buffer. 6GW, another up on 3.5 with fone. George is qrl. 6ML B station, too. 6HF, as mad as 3CN and the VK6 Divisional, Bank of Australasia. The only difference is that 3CN comes on the air. Hi! 6HW—'ole Harry, has been ill for some time, when a nag tried to break Harry's ankle by merely treading on him. Hi! Better go where you are looking. Hi! 6JE doing fb where the brass-coloured nuggets are! 6JG still punches the brass occasionally. 6JK advises his return to the ether busters club. Hi! 6JH at V.I.I.' observatory plays around with types. O.K.'s in sure grab with modulation termed Heising! The sez "Hello!" and the boys follow him up and down the band! 6JS qrl on 200 metre band entertaining BCL's and good quality at that. Quite a change when a Ham gets good quality fone. Hi! 6JW qsoed on 14 m.c., but things not so hot with Jaok. Antenna trouble worrying him! 6KC—the Katanning club gone quiet of late. Why ours? 6KO, another one never heard lately. Once again we query—why? Oh, I forgot QYL! 6KZ with xtal and a grid qrl on 7 m.c. 6LJ has separate aerials for 7 and 14, and uses windows only.

6LK putting up reflector system on top of 6AM's 180 feet stick—shud be O.K., minor! 6LR seldom heard, 'cept the Sabbath PM, when he churns a concert over on 3.5. 6LY—Oh, where, oh, where, has the Tiger Boy gone?—but he has YLitis. R9 plus qsa 10. Hi! Ralph was finishing off his 59 Tritet, when he saw this YL and that stage still wants completing. Hi! 6MN settled on 1.75, 3.5, 7, 14 and 28. The all band expert. Also qrl RAAFR work 6MS up at VIN doing some work on 7 m.c., with CW. 6MW still has no antenna. The breezes sway the tree that Bill intends to play Tarzan with so that he doesn't like to start just yet. 6PK may be on again shortly. 6NJ, on 7 m.c., with some fone, keeps the dual wave bel's amused. Hi! 6RD no further uses the clothes line. Hi! 6RJ, on 3.5 with xtal rig. 6RK—ole Roger at north of Kalgoorlie is heard quite regularly. 6RI.—Publicity Officer—doing relief work on relays at 6AM. 6RW came to town the other day and looks well! Has just qsyed new qra and sez all O.K. again. 6SA still qsoes dozens yanx and uses 28 m.c. still—uses 6 stage xtal for 28 m.c.—and all 46's. Must have been good for the business. Hi! 6WI returns, but still qrp for present. 6Z5S—"Ole Bill" on 3.5 qsoing ZL's, VK2's and 3's as the

locals. Fb, Bill! 6WM out with more portable gear and makes things buzz. Yes! He has vibrator power supply! Hi! 6WL at Brookton very qrp. Uses A409 mod. with A409 PA and 135 volts B batteries. Gets about two watts, but sounds O.K. 6WP, another bel'er on 200 m.x. 6WR now! now! Bill has not been seen, heard, worked or even spoked about for—must be a long time. Hi! And last, but not least, 6ZZ, at 6KC club. Not quite jake for qso, but will be O.K. before long.

## Tasmanian Division

(By 7PA.)

(Address all correspondence to Box 547E, G.P.O., Hobart.)

A special general meeting of this Division was held on 24th September to discuss the matter of altering Item 8 of the Articles of Association. The item relates to the personnel of the Council, which is limited to seven members, one being a country member.

The Secretary brought this matter before a previous meeting, on the grounds that, out of the six local members constituting the regular Council, some were not able to attend at most meetings, thus leaving the voting on matters of material importance to the Institute to some three or four members. The proposal was to increase the Council to 10 members, with still only one country member, and thus have nine, instead of six, available, so that it should be possible to have these meetings better attended.

After hearing the Secretary's views on this matter, it was put to the meeting, and after a lengthy discussion was carried unanimously. The three vacancies thus created were filled by Messrs. N. Gillham, J. Brown (7BJ) and K. Valentine (7KV), who were elected unopposed.

This seems to be a good move, as the membership of the Division has increased remarkably in the last 12 or 18 months, leaving more business to be handled, and thus more responsibility for the officers entrusted with the work of carrying it out. It is also pleasing to see the younger members, in the persons of 7BJ and 7KV, showing sufficient interest as to be prepared to take office.

The special meeting was closed immediately the business was completed, and a general meeting was then declared to discuss any general business that might be desired.

The outcome of this section of the meeting was the arranging for a field day for 27th October, to take the form of a more or less social outing with YL's, YF's, etc. accompanying, the area to be within a 10 miles' radius of Brown's River.

While speaking of field days, it is pleasing to note the special reference made to VK7 field days at a meeting recently in VK5 by their Convention delegate (5WP), who had the opportunity of attending one when here this year. Cheers, Bill! we're pleased that it impressed you so much.

The October general meeting was held in the club room, Elizabeth-street, on the 1st, it so happening that it was the first Tuesday. Attendance was fair.

General business and accounts were handled, and the VK7 per capita payment was at last included. A legal interpretation of the Articles concerning outstanding subscriptions and the matter of control of membership grading was read, and, on the ruling given to the grading question, it was decided to call another special meeting to discuss and, if necessary, alter the Articles governing this matter, to define more fully and to introduce controlling limits to the grades. After discussion, it was decided to give notice that this special meeting would be held on the night of the next general meeting, and save the necessity of two meeting nights.

At the completion of the lecture, the lecture for the evening followed. This was given by Mr. Brettingham-Moore, a student member, and took the form of an outline of a series of experiments with Neon Tube Oscillators, conducted by the lecturer. The lecture was well arranged and illustrated with graphs, after which a practical demonstration was given with an audio oscillator constructed by Mr. Brettingham-Moore.

At the conclusion of the lecture, the President, in thanking the lecturer for the trouble he had gone to in arranging the details, expressed appreciation of the action of Mr. Brettingham-Moore, and asked that more of the younger members might take this as an incentive to brush up on their favourite subject and let us hear about it in the near future. A hearty round of applause was extended to the lecturer, and the meeting closed.

On the bands, 7JB is working contest at express speed, and is giving the BCL's a rest.

7KV is taking a passing interest, too, and I hear that he has broken the VK7's 10-metre record by working a Yank recently on that band.

7CW still does his stouge on 200-metre phone, and 7PA is again operating on this band with a new rig, and is busy rebuilding the SW rig into the rack and panel outfit now, and hopes to be on the air on CW again soon.

7JH is busy with an instruction class at present, and not much time for QSO's.

7BJ is learning to call "Fares, please!" at the moment. How do you like the early rising, Joe?

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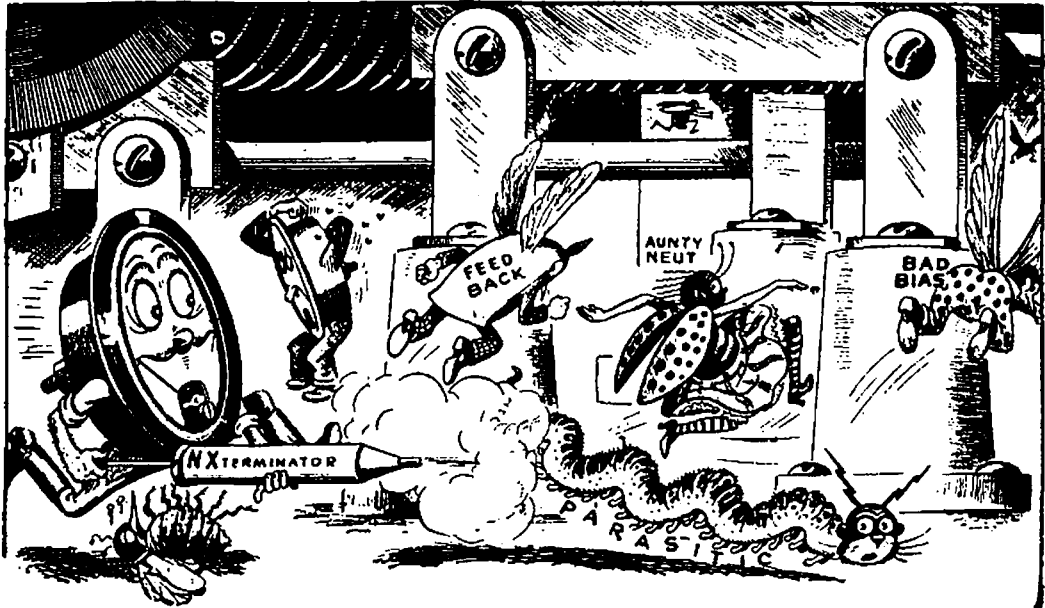
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(Continued from page 13)

the greatest forward step will have been made since we received our call signs as official Reserve stations. The work of both District and Section Commanders will be immeasurably easier, as traffic should be able to slip through in very much shorter periods. It will take some little time, no doubt, before we can settle into the changed conditions, but I'm sure, when we do, we will wonder how we ever kept going efficiently under the old system.

As there have been no regular schedules this month, traffic totals are too small to be included.

### SIXTH DISTRICT NOTES 6Z1—6MN.)

The recent flight of Demons and Bulldogs to Perth did not arouse much interest or enthusiasm owing to lack of traffic and little incentive was given to daily watches, which were looked upon by reservists as more or less a moral obligation. The channel between 6B1 and 5A2 proved erratic owing to adverse conditions, but all members concerned kept daily watches in case of emergency. Recent Sunday watches were startled when 6Z2 put in an appearance on 3.5 m.c. after an absence of several months. 6A2 still keeps watches like clock work and is scratching to get a 28 m.c. signal up the antenna. Stan. Hogg is waiting his call sign allocation, and is not installing a rotary convertor, as previously announced, but will use the 220 DC mains except on Sundays, when the power is off until 1600 hours. 6A5 can be heard experimenting with mikes. We had a short visit from 6A3, who maintains consistent enthusiasm. 6Z1 is closed down for three weeks whilst away in the bush on business. 6B1 now boasts a FBXA receiver.

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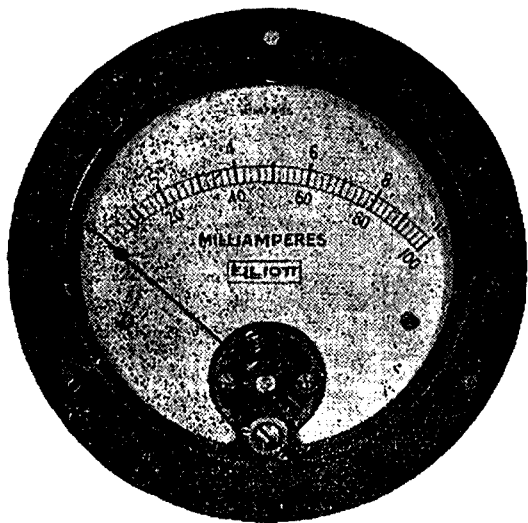


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## Amateur Radio

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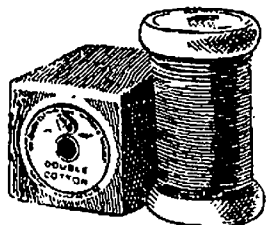
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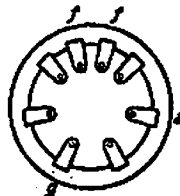
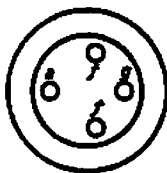
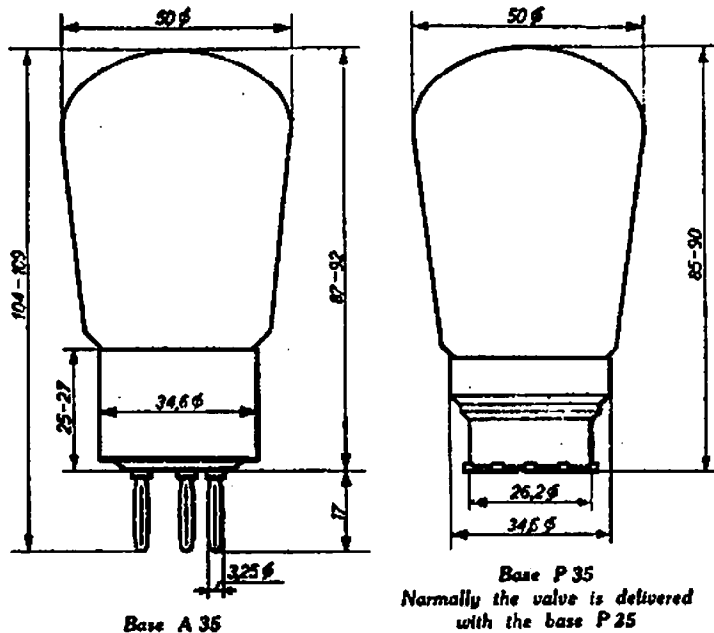
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ANODE	....	....	....	Voltage	300 at 10 m
				"	200 at 2.5 m
				Dissipation	Continuous 6 W
					Key down 10 W
AMPLIFICATION FACTOR					6
SLOPE	....	....	(1) Normal		1.5 mA/V
			Maximum		2.3 m/AV
RESISTANCE					4000 ohms
ANODE FILAMENT CAPACITY					3 appr.)
GRID-FILAMENT CAPACITY					3 appr.) (2)
ANODE-GRID CAPACITY					3 appr.)
DIAMETER					d — 50 mm
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(1) when  $V_a = 300$   
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## EDITORIAL

What a grand hobby Amateur Radio is! Unlike nine out of every ten hobbies, co-operation is the basis of any successful work. An outstanding DX QSO, an hour-long chat with an interstate Ham, or even a rubber stamp QSO of the "ur sigs R6 pse QSL, QRU" variety all require co-operation to some extent at least. The sense of co-operation that exists is assuredly part of the foundation of our amateur spirit, that elusive, indefinable something of which we are all so proud. At various times we hear remarks that the Ham Spirit is not what it used to be, but we can be certain that the person making the remark is himself at fault, the lack of spirit of which he complains is a figment of his own mind, caused through a wrong attitude to his hobby. We have had this fact very forcibly driven home to us during the last month in many ways. One of our Hams has just returned from a long trip abroad, and the description he has given us of the welcome, of the help, of the hospitality that he received wherever he went—well, to anyone who does not know what the amateur spirit is and what it stands for, the story of that trip would sound like a novel written by a person of somewhat Utopian ideals. Again, coming much nearer home, we have had some outstanding examples of the extremes of amateurs in connection with the misunderstanding that has occurred over one of the rules of the recent DX contest. It is always so easy to be wise after the event, no one in their wildest dreams could have imagined that what did happen would happen, and those of us who have had experience in running contests heartily sympathise with the Contest Committee. As Hams they sincerely endeavoured to make the contest as perfect as possible, but to read some of the letters that have come to hand one would imagine that they were deliberately trying to wreck contests for all time. How significant is the fact that the writers of that type of letter are the very men who are always complaining that amateur radio is not what it was! And how significant it is also that the persons who are admittedly the crack DX men of the country, men who's every action is a credit to their hobby, are the very men who have written sincere letters of constructive criticism, letters that are at the same time helpful and encouraging. The former type is living his radio life in the wrong way, and the sad part is that he can neither appreciate that nor the fact that he is missing the best in his hobby.

The little radio world in which we live, our shack, plus our Institute, is very similar to the great world of life. The more we put into life the more we get out of it. How true is this of our hobby, but how many realise the fact? Consideration for others in life leads towards happiness and contentment, and consideration for and co-operation with others in amateur radio leads to its fullest enjoyment. Again, a sense of proportion and fairplay in life earns one the reputation of being "a sport" and "playing cricket". In our hobby these virtues typify practically all the word "HAM" stands for. If a man keeps his radio in its correct perspective to his ordinary life, if he doesn't let it interfere with his work or his home, and equally as important, with his health, and if he brings the spirit of fair play into all his dealings with his fellow enthusiasts, then he has gone a long way towards earning for himself the name of a HAM, whatever his technical qualifications.

Life itself we must live intensely unless, of course, we are going to be content to merely drift. "Few recognise opportunity in this life because it is usually disguised as hard work", someone said, and hard work needs relaxation in order to sustain itself. If we look at our hobby in the right way it provides the greatest and best relaxation imaginable. Our attitude must not only be a personal one, but it must embrace our fellow amateurs, too, for a spirit of co-operation, of consideration and of fair play is the spirit of amateur radio.

Amateur radio is perfect if we make it so, we, individually, are the variable factor.

**As this is our Christmas number we would like to wish all our readers a very Merry Christmas and a Happy, Prosperous New Year. May 1936 be the biggest, brightest and best year that "Amateur Radio" and Amateur Radio has ever known.**

# Transmitting Aerials for the Ultra High Frequencies

By VK3ML Technical Editor.

## 1. Need for Arrays or Beam Aerials.

In the short space of time at my disposal to-night it will not be possible to deal, at any great length, with the need for beam aerials on the ultra high frequencies. However, practical tests have shown us that these frequencies suffer from both light absorption and non-reflection from the Heaviside layers. Thus, to get any decent effect we must concentrate the rays in the desired direction; to keep them where they belong, so to speak. Definite proof of the need for beam arrays has been published of late in QST showing practical results obtained with and without arrays. As you are aware, ranges up to 200 miles are an everyday event in the U.S.A. now, and this is only possible with beam aerials. In Australia we have many active stations, particularly on 56mc, establishing contacts of 50-100 miles without any difficulty, and using very low power. In the May issue of "Amateur Radio" you will see for yourselves what VK2BP has to say about the ultra high frequencies, and the results he has obtained. Thus, we have sufficient proof to state that to do good on the 56 and 112mc bands the aerial employed must definitely be of the beam type.

### Types Available.

There are two major types of arrays available—the horizontal and vertical. Unfortunately, I have been able to find no definite data as to the efficiency of either, but, on one hand, we have something definite and assuring from the American results with their more popular vertical arrays; yet, on the other hand, the British Post Office has stated that a horizontal array will show a gain of about 15 Db over the vertical type. Thus, the choice of the horizontal or vertical plane is a matter for the ham to find out for himself by carrying out experiments. This is one of the many fields that the amateur

can find amusement in when dabbling on the ultra-highs.

### Space Required for Erection.

It will become apparent as we go further into this discussion that a large number of array designs are within reach of the amateur. In the past we have been prevented from erecting 7 and 14 mc beam aerials owing to the rather large area required. However, we now have something that is within reach of us all; not only for home construction, but for portable work also.

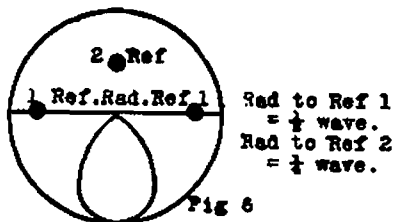
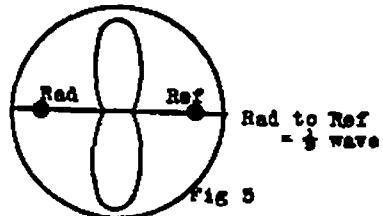
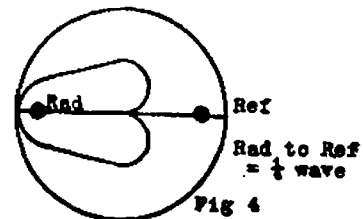
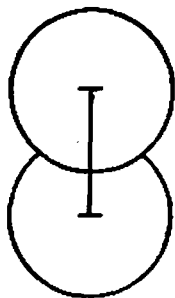
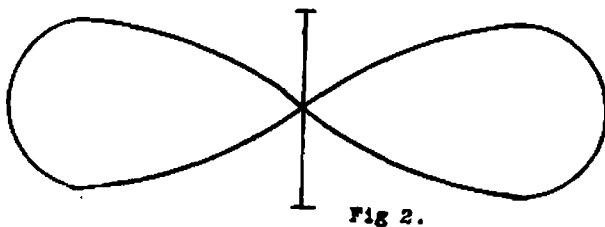
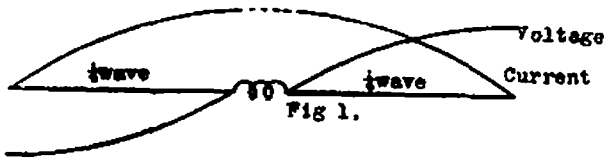
### Theory of Aerials and Reflectors.

Just before going into details of the practical construction of a beam array let us see how they operate theoretically first. A half wave element fed in the centre is commonly known in America as a "Doublet," and in England a "Dipole." The voltage and current distribution in a half wave dipole is like this:

If such an element be erected in clear space where no surrounding objects can possibly influence it, it has a definite field, both with reference to its axis and a plane perpendicular to its axis. In a plane perpendicular to its axis it radiates equally well in all directions. In other words, a vertical dipole will radiate equally well in all directions. In a plane through its axis, the field is strongest at points at right angles to the axis and weakest off the ends of the axis. In other words, if field strength tests were taken from an aeroplane above a vertical dipole, the signals would be very much weaker than when flying on any side of the dipole. The introduction of any object near the dipole will cause the impedance of the dipole to be lowered, and such objects absorb part of the energy radiated. But if the object is capable of re-radiating the energy absorbed it will naturally cause a change in the field pattern. Such a change is commonly known as "interference," and the resulting field called the "interference pattern." If the interfering

object be another dipole, it will absorb and re-radiate the energy with little or no loss. Upon these facts are based the systems to be discussed. It should be borne in mind that although most of this discussion refers to the dipole type of half wave aerial the same principle of interference, etc., applies to any half wave aerial, voltage fed or otherwise.

radiate at right angles to the line of the array. Secondly, by feeding out of phase the direction of radiation is changed and the result will be a beam along the line of the array. Directly fed arrays are generally referred to as being in phase, and those indirectly fed as being out of phase. The latter meaning more the type employing reflectors. The whole function of beam



Now, if we operate two dipoles spaced half a wavelength apart, and feed them both directly from the transmitter, in phase, we obtain an array that is directional at right angles to the line of the array. This is termed a "broadside system," since the main beam is broadside to the line of the array. The field pattern produced by two dipoles so fed would take this form (Fig. 2).

If the currents in each wire were out of phase the system is termed an "edgewise" system, since the main beam is in the line of the aerial array. Thus from the same two dipoles as we had in the broadside system we can change the field pattern a complete right angle by simply making the currents in one out of phase with those in the other. Thus we get a pattern like this (Fig. 3).

We now have two very important features of arrays—firstly, that two or more dipoles separated by one half wave length and fed in phase will

arrays depends upon these two characteristics.

As stated just now, if a dipole be placed near a similar one that is being excited, absorption and re-radiation will take place. The unexcited aerial will be called a reflector. The phase relationship between these two aeri- als will depend upon the distance between them (still assuming that only one is excited). If the separation be equivalent to half a wavelength, then the currents will be in phase, the results being a broadside array. When the interval is one quarter wavelength the currents will be out of phase and the array will be an "edgewise" one.

A brief explanation of the function of reflectors will not be out of place here. When current flows in the aerial, a magnetic field is set up around the wire which travels outwards in all directions with the speed of light. This field thus arrives at the reflector wire after it leaves the aerial by a



time interval corresponding to a lag of 90 deg. If the current is an alternating one, the magnetic field also varies and is cut by the conductor forming the reflector. By Lenz's law, this causes a current to flow which tends to reduce the magnetic flux producing it, i.e., a current lagging behind by 180 deg. (opposite in phase). Since the magnetic field has already a lag of 90 deg. owing to its time to travel from aerial to reflector, the current flowing in the reflector lags 270 deg. in phase behind that flowing in the aerial. The magnetic field from this, therefore, is travelling forward in the direction of the aerial, and arrives in phase with the originating magnetic field, while the field travelling in the direction aerial to reflector is, as has already been mentioned, cancelled out. Thus the wave travelling in the forward direction is increased and that travelling backwards diminishes in intensity.

Thus a combination of two arrangements, namely, a series of aerials spaced half a wavelength apart, with a further series of reflectors spaced behind at a distance of a quarter of a wavelength, constitute a very effective beam or directive system. The greater the number of aerials and reflectors, the stronger the resultant beam.

### Types of Arrays Available.

Having got the necessary theoretical material for beam aerial construction in our minds, we can now play with bits of wire and slide rules, and construct arrays of many shapes and designs. However, let us only deal with the simpler and easier to erect varieties.

### The Parabolic Beam.

As we have observed before, when two dipoles are spaced quarter wavelength apart, the phase difference is 90 deg. Thus if we place a dipole a quarter wavelength behind a radiator the field pattern would assume this form (Fig. 4).

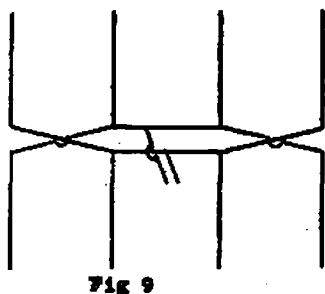
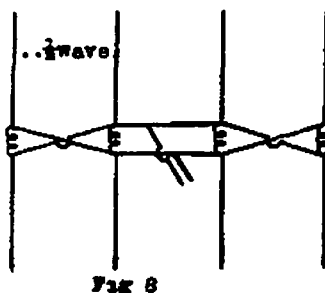
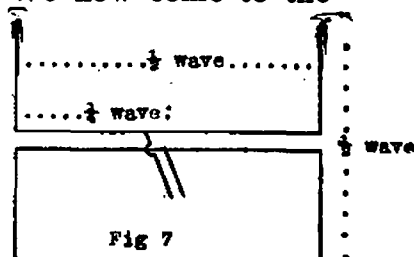
But if the separation was increased to half a wavelength the picture would appear (Fig. 5).

Since the phase difference is 0 deg. at half a wavelength separation and the radiation is broadside. Now a combination of these two patterns using a reflector a quarter wave behind the radiator and two more erected half wave to either side of the existing radiator, the array would assume the

shape of a parabola, with the existing aerial at the focal point. The combined effect would produce a pattern like this (Fig. 6).

The results obtained from such a parabolic beam array will often cause a signal increase of 5-7 Db in the direction of the transmitted beam. I have had many communications with chaps using this system in Queensland and New South Wales, and although they find this type very effective, it does not compare with the multi-element type to be discussed in a moment.

This, of course, can be understood, because the number of elements is limited, and, as we have found, the greater the number of elements used the more concentrated the beam produced. We now come to the



### H Type Aerial.

This type of aerial has found favour in the British Post Office, I believe. It is capable of being rotated easily, and then again it is directional in two ways. In this case we have two dipoles directly excited and spaced half a wavelength apart. Drawn on paper it would appear thus (Fig 7)

Very little support is required if the aerials are made of, say, 1/2-inch

copper tubing. All that is necessary is sufficient support to prevent whipping of the tubing in the wind. The H type may be further developed by the addition of a driven element either side of the existing elements. Here again, we may expect greater concentration of the beam. The array would now take the form of four elements spaced half a wavelength apart in a plane at right angles to the desired direction. There are two methods available of coupling the elements to the feed lines. Firstly, with the aid of coils in their centres, and secondly, by reversal of the feed line wires to obtain the same phase relationship in each of the radiators (Fig. 8).

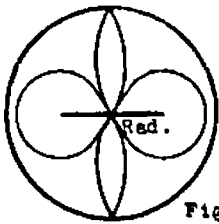


Fig 10

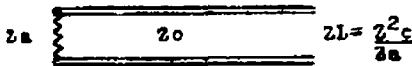


Fig 11.

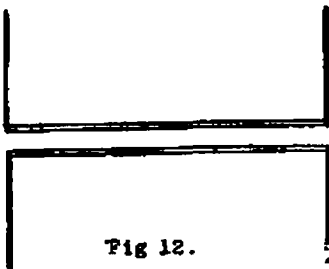


Fig 12.

It is possible to keep adding elements at half wave intervals, thus strengthening the resultant beam more and more. The two arrays just described have the advantage of being workable on two frequencies, one twice that of the other. Of course the efficiency is not as great on the frequency, for which the array is NOT designed. However, there is a marked improvement over an ordinary non-directional aerial. When an array is worked at twice its frequency, we may expect the field pattern to assume this shape: Fig. 9 And we notice that it is directional in four ways, but the beam passing

through the line of the array is spread out over a wider angle, and not as strong as the beam at right angles to the array (Fig. 10). The effect of the change to the higher frequency on the feed system will be discussed when we come to transmission lines.

For those who desire to lay a beam in some definite direction, and gain signal strength in that direction, it is only necessary to add reflectors behind each of the radiators of the array. The spacing will be roughly one quarter wave length from the radiator. An array of this type using four reflectors and four radiators, should have a gain of about 10 Db, which is around the 50 per cent. mark. This is really the most suitable type for the serious-minded ham. Results have shown that it is capable of long ranges with low power, and requires a very small space in the backyard for erection. However, it is unidirectional, and one must consider the location of fixture and direction of working. Ross Hull's beam array is on exactly the same principle as ours, except that he has favoured end or voltage feed of the radiators. In his more recent experiments he has adopted the dipole-coil-in-centre combinations. When it comes to multiple arrays one must pay close attention to impedance matching and correct phasing, and the centre-fed type lends itself more readily in this direction. For full details on the matching of aeriels with the coil in the centre, you should refer to "Amateur Radio" for October, 1934, under the heading "Two Wire Untuned Transmission Lines."

As said before, the designs of the arrays in use to-day are innumerable, and with a sound knowledge of the principle of the things, the ham certainly can find many avenues for experimenting. Having discussed the fundamentals of the array part of the beam, let us now consider how we can best get the power from the transmitter to the array—in other words, methods of feeding.

In dealing with the subject of transmission lines, you will notice that use is made, to a very great extent, of the transformer effect of a quarter wave section of transmission line. It is used to match impedances. In the H type aerial use is made of the fact that a standing wave has a pure resistance component at both its

maxima and minima. By construction the sections of the feed lines that connect the radiating elements to the feed line from the transmitter each a quarter wavelength long, they be made to function like a transformer, and be used to match the load impedance of the aerial to the main transmission line impedance. The theory involved is very brief.

The impedance  $Z_L$ , looking into a quarter-wave section of characteristic impedance  $Z_0$  when terminated by impedance  $Z_a$  is

Similarly, the impedance at the other end when terminated by  $Z_L$  is

Thus to match two impedances  $Z_a$  and  $Z_L$  it is only necessary to insert a quarter-wave section of characteristic impedance.

Now the impedance  $Z_a$  can be the aerial impedance, which is approximately 75 ohms for a dipole, and  $Z_L$  can be the characteristic impedance of a transmission line connecting the quarter-wave length sections to the transmitter. The success of the idea depends on the building of quarter-wave sections of the required characteristic impedance. For example, if we desire to match an H aerial to a transmission line of characteristic impedance 440 ohms, the impedance necessary for the quarter wire section to be is:

Therefore, we would only have to design this section.

so that it would have a characteristic impedance of 182 ohms to connect to our 440 ohm transmission line, and if you refer to your "Amateur Radio" for October, 1934, you will find tables giving the necessary diameter and spacing of two conductors to give this figure. The whole arrangement can be got from these tables, and the erection of an array is no heavy task that involves mathematical calculations. The article referred to is called "Two Wire Untuned Transmission Lines." As a matter of fact, this quarter-wave section principle could be well adopted for dipole operation on 3, 5, 7 and 14 mc as well, to decided advantage.

### High Frequencies.

Mention some time ago was made that an array could be designed to operate at a harmonic or higher frequency, and explained the resulting field patterns. Now, when it comes to feeding the array, we find ourselves

fortunate in that there is no need to alter feed line lengths or aerial tuning condensers. It is necessary to design the array to work on the lower frequency. When operated at the higher frequency we find that the impedance matching transformer effect is not limited to quarter-waves, but may be applied to any line that is an odd number of quarter wavelengths long. All we have to do is to place the 440 ohm feed line at such a distance from the aerial that its length is some odd quarter wavelength long at the higher frequency. This can be done if the array is designed for, say, 28mc, and operated also on 56mc. The change of the aerial which would normally take place when changing frequency will look after the impedance match of the transmission line at the transmitter end. Sufficient data for the construction of arrays is found in the article "Directional Antennae for Higher Frequencies," published by "A.R." for November, 1934.

### Practical Considerations.

After all this rather heavy theory you probably want some concrete practical figures for beam array manufacture. As a matter of fact, I have been saved a lot of trouble in digging this up for you, because you will find in the May issue of "A.R." full details of the required aerial and reflector lengths and separation distances. These figures appear to be accurate, and can be used in the design of almost any type of array. It is well to bear in mind that the length of the aerial is NOT exactly half a wavelength, but 5 per cent. less than the theoretical figure. Then again the length of the reflector is given as 3.5 per cent. longer than the radiator. The separation between aerial and reflector is not quite so important and as sensitive as the radiator and reflector lengths. Care should be taken when erecting these arrays to adhere to the tables very closely, otherwise they are no more efficient than a straight dipole.

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## Electric Condensers

By D. N. LINNETT.

These are the most efficient pieces of apparatus contained in the radio receiver, and have many duties to perform for the radio to function.

One of the most common components to be found in every radio receiver is the electric condenser; in fact it plays a most important part in all transmission and reception of radio signals. Yet it is one of the oldest pieces of electrical apparatus, although even now none other is more efficient because less losses occur when current passes through a condenser than in any other single piece of gear. With careful design and manufacture, moreover, these losses are almost negligible.

The condenser may appear only as several plates separated one from the other, or a small cardboard tube having sealing wax ends and a short of copper wire coming from each.

But it is the condenser that separates the radio frequency from the audio frequency currents, and either of these from the direct current. In the reflex circuit, the condenser is its very life, since it guides the different currents to and from the valve, allowing each to follow its respective path giving a free passage to the audio frequencies while sending the higher ones along another path, or perhaps the capacities will be changed and the opposite effect will result.

The variable type permits the tuning to the frequency of a desired transmitting station from which audible signals originate, and its purpose allows us to change from one station to another. For detecting these radio waves, it is the condenser in grid leak detection that permits the valve to function; while across the rectified power supply, the condenser by-passes the radio energy, preventing it from going through the complicated system of filters.

The condenser is really the heart of the power supply, for upon its properties depend the whole smoothing action of the filter. Without the large capacity, it would be impossible for us to obtain the direct current

free of ripple.

This marvellous condenser, however, was a scientific plaything for centuries, having many peculiar properties that engaged the attention of every investigator of electrical phenomena in every generation. Dean Von Kleist, of the Cathedral Camin, discovered the Leyden Jar in 1745; although it was independently discovered by Peter van Musschenbroech, Professor at the University of Leyden.

In these days, it became a toy that amazed and delighted social gatherings, finding its only use in the discharge killing beetles and birds, merely for the entertainment of the guests. Abbe Nolet sent a discharge through a chain of hundreds of soldiers as a pleasing diversion for the French King, as the shock that they felt made them all jump at the same time.

It was Benjamin Franklin in 1748 who demonstrated the importance of the dielectric in determining the properties of this Leyden Jar, from which has evolved the condenser that we know to-day. This happened only after much research and experiment.

The condenser consists of two or more conducting surfaces approximately parallel, separated each from the other by a dielectric. In its simplest form it is made up of two plates of metal having as large a surface as possible, placed close together and separated either by air or some other dielectric. To reduce it to workable dimensions, each plate is divided up into a number of units; that is cut in two, four, eight, or some other multiple, and all joined together electrically. At the same time, one set of plates is interlaced with the other set similarly sub-divided and coupled up.

Its action can best be explained by comparing electricity to air which is compressible—and so is an electrical charge, both actions under pressure being practically the same.

If we force too much air into a tank, the pressure inside will become so great as to burst the walls of the



tank; and if we force too large a current into a condenser, the voltage or pressure between the plates will build up to such a value as to break down the insulation between the plates.

Assume two containers connected together, one larger than the other with a valve in between. With the valve closed, container A is exhausted of all air, while container B is pumped up to a pressure of a hundred pounds per square inch. A certain number of cubic feet of air have to be pumped into this container to raise the pressure to the required value.

If the pump is supplying a pressure exactly equal to 100 pounds per square inch, as soon as sufficient air has been forced into the tank to cause the internal pressure to exactly equal the pressure of the pump—even though the pump is left running—no more air will be forced into the tank. There is now sufficient air stored in tank B to cause a pressure of 100 pounds, while the air in A is at zero.

With the valve opened suddenly, there will be a condition of one container holding air at high pressure connected directly to a container at zero pressure. The air will then rush through the valve into tank A until the pressure of A equals that of B. If the pump is still running, it will supply the deficiency of A, and the pressure of both would be kept up to 100 pounds.

But when the valve was first opened, the difference of pressure between A and B was equal to 100 pounds. Assuming no friction, etc., there was no opposition to the instantaneous rush of air and a flow meter in the path would register a high reading.

As the air flows into A, however, a pressure is built up, this pressure increasing as the number of cubic feet of air in A increases. As this back pressure builds up, it offers more and more opposition to the flow of air from B, until when the pressure of A and B are equal, no air will flow through the connecting pipe. The air flow meter will then deflect to maximum the instant the valve is opened, and would gradually drop to zero as the pressure became equal.

This is exactly the action that takes

place if we connect a condenser across a battery.

In this case, the battery acts as container B, and the chemical action of the battery causing a pressure of 100 volts is analagous to the pump. When the deficiency of electrons on the positive terminal and the excess on the negative terminal is such as to cause a difference of potential of 100 volts, the chemical action causes no further movement of electrons. If, however, some of the pressure was neutralised, the chemical action would again get busy.

The condenser has taken the place of container A, and in its normal state has no difference of potential between its plates. A switch replaces the valve and an ammeter, which measures electrons per second moving past a given point, is analagous to the air flow meter which measured cubic feet of air per second flowing through it.

The moving element has changed from air to electrons. The air pressure changed to pressure or difference of potential caused by the excess of electrons on the negative terminal trying to reach the deficiency of electrons on the positive terminal.

As the switch is closed, the positive terminal of the battery will attract electrons to it from the condenser plate, and the negative terminal will repel electrons towards the other plate of the condenser. As the electrons move from the first plate, that plate assumes a positive charge; and as an excess of electrons is forced on to the second plate, that plate assumes a negative charge with this movement continuing until the difference of potential between the plates equals the applied voltage of the battery, 100 volts.

With a perfect condenser, once it has become charged, no voltage will flow, and in practice it will be found that any current flow is practically negligible. The break-down only takes place when the applied voltage is too strong for the dielectric to withstand. Those manufactured to-day, however, have to go through a most searching test before they leave the factory, so under normal working conditions should stand up to all voltages because their safety factor is quite large.

## Power Supplies for the Countryman

By H. W. UNGER, VK2UJ.

It is remarkable the number of different types of power supplies that are pressed into service by hams; especially by those living in the country districts where no power mains are available. And one has to be charged with an abundance of enthusiasm to become a ham under these conditions.

The larger type of dynamotors seem to have come into their own during the last few years, and are ideal, except for qvo work. But these were not procurable when many country hams first began operating. Among the various types known to have been used Ford coils are about the most primitive; others include a telephone magneto driven by a hand-grinder, vibrator type eliminators, "B" batteries, wet and dry, H.T. D.C. generators driven by various means of motive power, hand-driven, pedalled, or driven by an engine or electric motor, etc.

There is yet another type which, as far as the writer knows, has never been used by any other experimenter for a radio transmitter power supply. It is a Ford model "T" fly-wheel magneto, and has been in use at VK2UJ for the last twelve months. It is certainly not the ideal by any means, but is a simple arrangement, and very good results can be obtained from it. Ford magnetos can be picked up quite cheaply these days, and may be handy to country hams for a temporary supply until a better type can be installed. It is also useful as an emergency supply. It may interest other hams as a novelty. So a description of the arrangement at VK2UJ will be given.

Two Ford transmission shafts are bolted to the fly-wheel, which carries the magnets. These shafts each have a flange at one end, and are bolted to the fly-wheel with four bolts, so that there is now a shaft each side, and bearings are fitted and mounted on a heavy wooden base, well stayed to keep it square. The coil ring is bolted to the base, so that the air gap between the magnets and coils is about 1/32 in. A three-inch pulley is fitted to one shaft, and is belt driven from the fly-wheel of a 2 h.p. engine.

## Challenge!

The Queensland Division issues a challenge for a Portable Week-end Contest. Conditions are as follow:—

The contest will run from 4 p.m. on Saturday until 4 p.m. on Sunday.

The station must be located independently of its fixed QRA, and must not use pre-erected masts to support the aerial. Trees, etc., are allowable. The primary source of power must be portable by one man, which rules out municipal supplies, heavy m.g. sets, and also using a motor car to drive the generator, etc. Maximum voltage of 200 volts is allowed.

Scoring.—No points will be awarded for working a station in the home State. One (1) point will be awarded for each station worked outside of the State on c.w.; three (3) points for each station outside of the State on 'phone. A bonus of fifty (50) points can be added to the final score for each Australian State or New Zealand district, regardless of the number of contacts. One hundred (100) points may be added for each country worked—do not include New Zealand as a separate country. A further bonus of 50 points may be added for each band worked. For example, a VK4 station works one VK2, two VK3's, a ZL2 and a ZL4, together with two Yanks and an Englishman; his score would be 8 points for the eight contacts, plus 200 for the Australian and New Zealand districts, plus 300 for three countries (Australasia, America and England)—total, 508 points. Should he work on three bands during the contest, he would be entitled to another 150 points, and if the contacts were on phone, the eight stations would count for 24 points—making a total of 674 points.

.....

The output of the magneto running at 2000 r.p.m. is 15v. A.C., at about 2 amps. But much more should be obtained if the coils and magnets are in perfect order, as the rating is up to 25 volts at 9 amps. The frequency is 260 cycles per second at the above speed, and so is very easy to filter. With this frequency the transformer is slightly more efficient than with 50 cycles, and has less turns per volt. The voltage is stepped up to 250 at 100 ma.

## We're in the Navy Now!

By VK3RX.

For some years we have had hams operating in the Army, and, thanks to VK3DC, the Signals, in Victoria at least, are equipped with up-to-date sets, and are successfully co-operating in Army manoeuvres.

The R.A.A.F. Wireless Reserve is doing great work with their traffic handling for the Air Force, and is, we believe, due to the enthusiasm of the men, a permanent fixture in Australia.

Now, from Adelaide comes news of ham radio in naval circles. During the last few months VHE has been heard on the 7mc band, and in a qso the other night I learned the following details:—

VHE is operated by the R.A.N.R. club at Port Adelaide, and has VK5EM and VK5MH on the job as operators. Whenever the boys have a spare half hour or so, VHE comes on the air, and they always welcome a qso with the gang.

The transmitter at present is a TNT 210 with about 15 watts input to a full wave zepp, and the receiver one of those imposing naval jobs, battery operated and plentifully be-sprinkled with knobs and switches, but just a detector and two audio inside.

Telegraphist Kelly (VK5) lives near the Naval Depot, and is regularly on the air from the Club when his duties allow. He has been to sea on H.M.A.S. "Voyager," and lets off his surplus energy, when ashore, in the good old ham way, by calling C.Q. on 7 M.C.

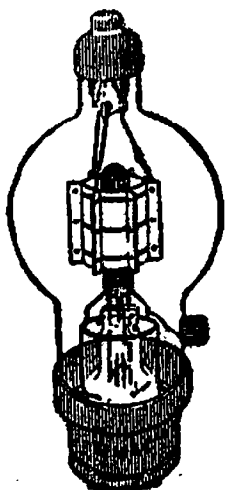
Of course VHE has other transmitters that are in regular operation, and the qrm is sometimes pretty fierce, though to hams used to D contests and unrestricted phone on 7 mc, it is not as bad as one might expect! The QRA of VHE is Naval Depot, Port Adelaide, and they always qsl on receipt of a card. Give them a shout sometime!

## TRAVEL/TONE RADIO.

Members of the Institute and readers generally, note with advantage the advertisement in this issue from Traveltone Radio, comprising practical men, who know their job. The new shop is in Bourke Street, in Savings Bank Buildings. It is interesting to learn that three members of the factory staff are members of the W.I.A. More about them in next issue.

In this issue appears some interesting advice to Hams regarding aerial wire and similar accessories, for which the new firm is experiencing an active demand.

BOB HURLEY, 3JH, is now at the helm of COBURG RADIO, specialising in service to "hams." Bob has seen 4 years' experience with Veall's and 1 year with Homecrafts, during which time he has met most types of hams and learned how to give them service and satisfaction. "Call round and see me some-time," he says, "and don't forget to read our ads. in the Ham-Ads. Section of "Amateur Radio."



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## Federal Headquarters Notes

The half-yearly report of the Federal Executive has been compiled and distributed. It shows a very satisfactory state of affairs generally and covers the activity of the Federal Executive since taking over in March.

**CW and 'Phone Channels.**—The suggestion that the bands be divided into CW and 'Phone channels has been referred to each division of the W.I.A., and on the result of this ballot will rest the fate of this question.

**Agenda Items.**—Agenda items for the next Federal Convention are due in the very near future and Divisions are asked to forward theirs immediately.

**International DX Contest.**—The International DX contest went off with a bang and activity was very high throughout Australia and New Zealand. In Australia VK2 and VK4 had it all their own way as far as 28 m.c. work was concerned. This contest, following so close on the R.S.G.B. 28 m.c. test, was directly responsible for the European-Australian contacts on this frequency.

**W.A.C.**—The applications accepted lately include VK4YL and VK5GW. The day does not appear too far distant when we will be accepting applications for 28 m.c. W.A.C. At the moment there are about five all level and each needs a South American. These include VK4BB, VK4AP, VK4GK, VK2HY, and VK2LZ.

The R.S.G.B. advises that a special 3.5 m.c. test will be conducted during December in an endeavour to achieve some real d.x.

The results of these tests should be of great interest to amateurs throughout the world and Australian amateurs are specially asked to give their support, as they should be in one of the best positions in the world for giving d.x. reports on the contest.

These tests, using the 3,500 to 4,000 kc band of frequencies, have been arranged for December, 1935. The R.S.G.B. is making the preliminary arrangements and the A.R.R.L. have given their support to the tests and promised them publicity through QST.

It is hoped that great possibilities of d.x. will be realised and that greater use of this band will result, to the benefit of all interested in amateur radio work. Many of the pioneer transmissions, trans-oceanic contacts were made on neighbouring frequencies and after ten years experience, we should be able to show some improvement in amateur working.

To obtain satisfactory results during the test period it is asked that all stations be urged strongly to fall in with the arrangements set out in the following rules. Although this may mean some inconvenience to a few, without something of the sort QRM will weigh heavily against low power working and d.x. generally. If the low frequency end of the band is kept for work only, this will give a better chance and avoid QRM from fone on weak signals.

The silent periods should give a chance of locating and logging d.x. signals, impossible otherwise, and the observance of these periods is very important. The two different times should allow many who could not use one to join in the tests.

Reports of results should be sent direct to H. J. Powditch, G5VL, Porth, St. Columb Minor, Cornwall, England, who is arranging the tests on behalf of the R.S.G.B.

## Station Description

Radio VK2XQ commenced operating in Quirindi during September, 1933, having obtained the necessary licence a month earlier. It may be of interest to state that none other than Ivan of VK2EG, and now VK3EG, received his ticket at the same examination, and naturally there was much rejoicing in the home town when the good news arrived. At this time Quirindi boasted of six "ham" stations—2HC, 2JF, 2KN, 2BE, 2EG and 2XQ—and all except 2HC were within a radius of one mile. 2HC is situated about 30 miles air line from Quirindi, and this fact was rather lucky for the town gang, as he was using rather high power, and the QRM question was much relieved.

The outfit at 2XQ consisted of a three-stage crystal controlled job, with a type 47 CO and Buffer and a 210 in the final, with an input of up to 40 watts. A full-wave 40-metre Zepp was used, suspended by 50ft. poles and fed by 60ft. feeders. The station was situated on a hill, and was an ideal location for a "ham" station, and very good reports were received from D.X. stations. The first 20 metre QSO was with OI13N1 and the second with G2ZQ. 'Phone was used on 80 metres, and all States of VK and ZL were contacted on this band on 'phone and a W9 on CW.

In May, 1934, 2XQ shifted its headquarters to West Maitland, and here a new outfit was built, consisting of a three-stage crystal job with a type 59 as a Tri-Tet in the oscillator, followed by a 46 in the buffer stage, and this stage is coupled to two type 46's working in push pull in the final. Inputs of up to 120 watts are used, and these tubes function very well. The whole outfit is of conventional design, and a separate supply is used for each stage. Keying is done in the grid circuit of the PA. The transmitter is mounted in a rack and panel cabinet built by 2WU.

Several months later the headquarters were again shifted to the back blocks of New South Wales. As the town supply at Walgett is 240 D.C., a converter had to be obtained.

The receiver at 2XQ is a three-tube battery job with a detector, followed by two stages of audio amplification. During the time this station has been on the air 40 countries have been contacted in six continents, and hundreds of lasting friendships have been built up.

## Correspondence

Bulletin Buildings, 252 George St.,  
Sydney, November 15, 1935.

The Editor, "Amateur Radio,"  
Box 2611W, G.P.O.,  
Melbourne, Victoria.

Sir,

In your November, 1935, issue, VK6LJ discourses at length on a few of the vagaries of 56 m.c., all of which are well known.

He states, "Better still, don't use dipoles, they are NBG. Use an array of some kind and get efficiency."

Whilst I agree with VK6LJ that for all practical purposes involving concentrated directional propagation between fixed and/or moving points, a directive array is worth its weight in gold at the fixed point, I cannot agree with him that "Dipoles are NBG."

Just to show him how useful dipoles can be, it may interest him to learn that here in N.S.W., no trouble was found in getting over 60 miles direct contact between two cars, operated by 2NO and 2JU respectively, with mobile equipment and dipole antennae. In my own case, I have been able to work two-way conversation with a fixed station 20 miles distant, whilst driving along a highway at 50 m.p.h. A great deal of careful adjustment is necessary to get the best out of a dipole. It must be radiating at the frequency of the oscillator, in unison, and if this is not the case, it is more or less shock excited. It is because people appear to have trouble in making antennae do what they should, that a man named Collins created a gadget to help them along. If one is using a vertical dipole on a car it must not be overlooked that there will be considerable capacity to the mass of car in the lower half, and this half should be cut carefully to bring the system to resonance at the particular chosen frequency.

Yours, etc.,

Don. B. Knock, VK2NO,  
Radio Editor.

"The Bulletin,"

Bulletin Buildings, 252 George Street,  
Sydney, November 14, 1935.

The Editor, "Amateur Radio,"

Box 2611W, G.P.O.,  
Melbourne, Victoria.

Sir,

In the October, 1935, issue Mr. Phillips, of VK3CD, expresses everything about the unpleasant type of 'phone hound that every right thinking amateur feels.

The situation is intolerable. Apart from the fact that, as in 3CD's case, feminine ears are likely to be assailed by the low bred type of wit, emanating from some irresponsible youth armed with a tin microphone and gubbins masquerading under the title of a telephony transmitter, there is, in addition to the presence of the visiting YL friend of the amateur, the general public to consider.

Three years ago, it wasn't so serious. Now the amateur 80, 40 and 20 metre

bands are no longer the amateurs sacrosanct. Nine out of ten of the public are buying and using dual-wave receivers, and these receivers are often the medium for introducing the Australian amateur to the public. And what an introduction it is with the deprecations of these alleged "experimenters" offending the ears of all and sundry. After hearing the opinions of several correspondents in my daily business, regarding their idea of the average Australian radio experimenter, I am more than seriously concerned at the position. If ever the time should come when the usefulness of the Australian amateur should be in dispute officially, we are likely to get little public sympathy, just because of this bad impression. The innocent majority will suffer because of a few unsuppressed half-wits, allowed to render the air noxious, and these few continue unchecked.

The question for Australian amateurs who have the sense to take this cinematic slang type of 'phone seriously, is, what is going to be done about it? It is no good talking and not acting. I suggest that a special and ruthless vigilance committee be appointed forthwith to tabulate, observe, and report without delay to the regulating authorities, these people who overstep the bounds of experimental operation vocally. The fact is the Australian amateur is now faced with the business of policing himself. In so doing, he would be rendering a genuine service to the department, to say nothing of himself. Failure to do something about it will certainly rebound on the heads of the innocent majority in the end.

One thing is certain. Investigation will show that many of these offending 'phone transmissions originate from somebody who is not in the first place entitled to be on the air at all. I refer to the second operator farce. The second (or third for that matter) operator business is being overdone. This is quite in order when supernumerary operators at any station actually are operators. That is, they hold the A.O.P.C. Too often is the presence of a so-called second operator (usually the one taking liberties with the air), an excuse for somebody to play around with apparatus whilst having no moral or legal right to do so. How many of these "operators" can answer a call, if the answering station replies on the key? A large number of them cannot, and for obvious reasons. Anybody can mistreat a defenceless microphone, but not everybody can handle a key. Station licensees should think twice, before permitting unlicensed youthful associates to use their apparatus. Such is contrary to regulations, and will, if brought into the limelight by an authorised vigilance committee, lead to suspension.

Our regulating authorities are probably the most tolerant in the world to-

(Continued on cover 3)

# Trans-Oceanic Tests, 3500 to 4000 K.C. December, 1935

Dates 1st series December 15, 16, 17, 18 (starting 2345 gmt, December 14). 2nd series December 19, 20, 21 and 22.

Listening Periods.—Times all G.M.T.—1st series, 23.45 to 24.00. Europe keeps silent; 00.00 to 00.15, others keep silent; transmitting all stations, 00.15 to 02.00. 2nd series, 05.00 to 05.15; 05.15 to 05.30; 05.30 to 08.00.

Frequencies.—To assist searching and minimise QRM it is hoped that all stations will fall in with the following frequency allocations:—3,900 to 4,000 kc, American and Canadian 'Phone; 3,850 to 3,900 kc, Canadian 'Phone 3,730 to 3,850 kc, Europe 'Phone and CW (except English stations); 3,630 to 3,730 kc, English 'Phone; 3,500 to 3,630 kc, Europe (including English) CW only. It is hoped that 'phone stations will leave these frequencies clear for low power and d.x. CW.

American and other CW stations (including VK and ZL) outside Europe have the choice of 3,730 to 3,850 kc and 3,500 to 3,630 kc channels.

Listening Periods.—All stations during the listening periods should call "test beru de . . ." giving their own call-signs very frequently. After the second listening period, that is, the European transmitting period, European stations should run through the dial for calls before going on the air themselves.

# Federal and Victorian Q.S.L. Bureau

(By VK3RJ, R. E. Jones; Federal Qsl Manager.)



It will be appreciated if the following stations will forward postage to the Bureau for cards on hand. The address of the Bureau is 23 Landale Street, Box Hill.:-

VK3—AI, AX, AY, BE, BJ, BK, BL, BS, BX, BZ, CA, CK, CW, DS, EM, FN, FL, FG, FC, GB, BM, GU, GV, GW, HE, HW, HH, IL, JC, HJ, JK, JL, JN, JR, JT, JW, JZ, KA, KB, KG, KI, KK, KO, KT, KV, KY, LE, LF, LM, LP, LY, LZ, NG, NR, OZ, PM, PK, PY, QL, QX, RE, RW, SK, TC, TO, TU, TV, TY, UJ, UY, WC, WE, WH, WN, MX, XK, XR, XU, YD, YF, YR, ZA, ZK, ZL, ZO, ZX.

"Buck" Bachelor, VK7JB, again complains that the power QRM, which Hobart hams are unfortunate enough to experience, excelled itself during the recent Fisk contest. The interference was of such dimensions that the local BCL's rebelled against it, with the result that official action taken has cleaned it up altogether. "Buck" concludes, "Even BCL's are useful sometimes."

QSL managers and others please note that the prefix for Mauritius has been changed from V8 to VQ8. Ascension Island which was formerly VQ8, is now ZD8.

Glorious success has crowned the efforts of the contest committee, which staged the recent VK-ZL d.x. contest, in its efforts to stimulate interest in 28 m.c. Not a little of the praise earned by VK and overseas stations by their achievements on 28 m.c., is due to the contest committee and easily overshadows other incidents connected with the contest. An announcement that should interest all competitors appears in another section of this issue.

As mentioned in these notes in the last issue of "Amateur Radio," VK3KO has taken up residence in New Zealand for an extended period. Advice to hand indicates that he is now on the air under the call sign ZL1LM.

The first 28 m.c. WBE ever issued will be claimed by VK4BB, who during the recent VK-ZL d.x. contest worked VU2LZ, ZS1H, VE4OB, G6LK and VK on that frequency. Congratulations, VK4BB. Success has rewarded your years of painstaking work on 10 metres.

## Avail yourself of . . . this Offer!

In keeping with a policy of offering service to all connected with the radio industry, Messrs. Phillips Lamps (Australasia) Ltd., of 69-73 Clarence Street, Sydney, are distributing free, valuable technical communications. These communications deal extensively with valve characteristics, technique, and the application of valve types to their various purposes.

Though the compilation of these booklets involves considerable expense, if the regular service is required all that it is necessary to do is to send your name and address to Messrs. Phillips Lamps, include 6d. in stamps to cover postage, and the communications will be mailed regularly.

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announce

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Wind. 1605, W 5160.

## British Notes

This report covers activities up to  
October 30.

(1) The ZL and VK contest was well supported here, but conditions during the first week-end were definitely poor. G6CJ, G2ZQ and G5YG were busy, but signals in most cases were down one or two points compared with reports received a few days previously.

(2) It is recommended that more use be made of the signals QHL and QLH. Many calls are missed because the stations searching cannot cover the band in time.

(3) The B.E.R.U. contest for 1936 will take place in February, the senior section being arranged for the first and second week-ends and the junior for the third and fourth week-ends. The receiving contest will take place during the first and third week-ends. The event will be announced in the November "Bulletin."

(4) ZL and VK amateurs are asked to co-operate with R.S.G.B. in the 3.5 m.x. tests being arranged to take place in December. Details have been sent to all overseas organisations.

(5) On 28 m.x., LU and ZS have been worked recently from England.

(6) For the information of readers, British stations are usually active between 07.00 and 08.30 G.M.T. Conditions during early October were such as to permit VK and ZL contacts being made on either 7 or 14 m.c. at this time. It was found, however, that very few stations were using the latter band, believing 7 m.x. to be the best for evening work. Instead QRM is worse on 7 m.c. than on 14 m.c.; therefore, better contact should be possible on the latter band, providing conditions hold.

On several occasions recently W5 and W6 stations have been worked from G on 7 m.c. as late as 08.00 G.M.T. Jack Scott, ex-VK2NR, and Gavin Samson, ex-ZL4AI, are both working for Standard Telephones, as is Ron. Hope (VK7RS). The last two named contemplate running a joint station in North London.



## Rola Co. Pty. Ltd.

Our representative called at the headquarters of Rola Co. (Aust.) Pty. Ltd., 81 City Road, South Melbourne, during the month. This firm of speaker manufacturers reports good and increasing business. The manager, Mr. Webb, is in America, and is expected to return on 1st January. In his absence Mr. Yeend is carrying on the good work.

## Divisional Notes

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### N.S.W. Division

#### ZONE 2 NOTES. (By ZO—VK2HV.)

40 Metres.—The best band for D.X. at this time of the year. W, XU, VE, K8, etc., can be raised with little difficulty, as can Europeans in the wee sma' hours.

20 Metres.—Not so hot, and although G, PK, PA, D4, etc., can be worked, their strength is far below that of even a few weeks back.

80 Metres.—Old Man Static seems to have taken complete control of this band, as the increasing number of night 'phone stations on 40 metres shows.

VK2ZX. — Ted Lumbewe has forsaken Sydney for Inverell, and finds D.X. conditions much better in the country; less QRM may be. The well-known prize-winning transmitter puts out an fb sig. on the 240 and 40 metre bands, whilst the receiving end is capably handled by an array of receivers, from two to six tubes. The present antenna is end fed; used on all bands.

VK2ZP.—Sticking to 20 and works all the D.X. he hears. Same old set up in use—Hartley 210—two tube receiver and full-wave Zepp antenna, Arthur is doing his best to make Inverell 100 per cent. crystal, and should soon have the new transmitter on the air, coupled to a twisted pair feeders antenna.

VK2HV. — Between rejoicing over the arrival of a junior second op. and getting a "B" Class linear amp. to do its stuff, time has been very limited. The five-year-old genny came good this summer, and has been responsible for 32 countries on 20 over the last month or two. Of the seven different line-ups in use here since last Christmas, the present one seems to be the ideal—47 CO, 46 FD, 46 FD, IO BFR, 10 modulated. PA. Receiver, 2 tube EC and antennae Zepp and matched impedance.

#### VK2—ZONE 3 NOTES. (By VK2IG.)

A new scribe on the job, as VK2OJ is now on holidays, after a busy time during the contest. As one who doesn't live far enough away from him, I hope that VK3's will persuade him to stay in VIM for about 12 months or so. Hi! Firstly, the contest. OJ did his share, though he had a deal of bad luck. His little daughter being ill kept him worried one week-end, and a more or less punk aerial another. When he got going QRN threatened to wipe him out on the third week-end. 3EG was fortunate to be able to work O.K. through QRM when it was so bad here that signals could not be heard. He should land with the leaders. ZL's appeared to be doing fb. OJ worked 25 countries and slipped on five more, including GI. With these latter he contacted O.K. at anything up to R6, but when he

went over to them could not get the cyphers, as their sigs. had dropped to R1—fb. Hi! We now wait with interest for the result, and here's hoping for VK2. Hi!

Now for the works. 2OJ's on applied sanctions, when he suggested a portable rig for the holidays; so take heed, hams, if ur single! Hi! Good trip, Noel, O.M.! Father Xmas been to OJ and YI and left SSS with both. Both working fb., though Noel is going to change the intermediates. 2YI (r.x.) is about 9 or 20 tubes, and complete with 42 knobs, stabilizers, neutralizers, crystalizers and fertilizers, and still some more lizers! Hi! Been getting some D.X., anyway. EU troubled by another EU, and both on pretty often fb. Hi! When any of the gang. QSO, have to use the fone to see if it is the genuine article! QE very busy business man these days and not on much. QSO'd VQ8 about midnight one time (home early, O.M.?) Now has mo'-bike, so if you want to check up on him read the accident columns. Hi! QD rebuilding the rig, but unlucky to be a guest of the local hospital committee with appendicitis. Hope you're soon well again, O.M., and the QRM box perking. IG not on so much lately. Been altering doublet to end fed; so far not so good either. When testing with aerial slung 4 feet high QSO'd 2DD, who reported QSA 5R7. Bad work, DD, O.M. Put up unt. to about 30 feet and sigs. only QSA 4R4 or so. What's the use of putting up an aerial? Hi! Guess length's a bit cuckoo. VK away fraternizing with the niggers at Solomon Island or somewhere. At present QRM pretty light here with everyone off the air. Hi! Come down and see us. Hi! Well, cheerio and 73's.

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### Victorian Division

#### KEY SECTION NOTES.

By C. Woodward (VK3YO).

Well, the VK/ZL international contest is over, but at the time of writing nothing definite is known about the scores of the participating stations. It was not until the last week-end that conditions came good in Melbourne, and then it was possible to work practically anywhere in the world on 14 m.c. On the 7 m.c. band, the W's came in like locals, and between 7 p.m. and 10 p.m. on the Sunday night it was reminiscent of a W/VE contest. 28 m.c. was the surprise packet of the test, conditions being such that many VK's were able to QSO scores of D.X. stations without difficulty. A more detailed account of work on this band is given in the U.H.F. notes. Outstanding points noticed during the month were the almost entire absence of bad notes, the keenness of the operators, and the goodfellowship extended by one amateur to another.

On more than one occasion a station which was causing QRM to another local would stand by until a rare D.X. contact



was completed; then into the fray again hammer and tongs. The contest was enjoyed by all, and, apart from a misunderstanding re the scoring for 28 m.c. contacts, everything went smoothly.

A letter has been received by VK3DP from VU2FY-VU7FY. There appears to be some doubt in VK re these two calls, and FY wishes to draw attention to the fact that he is the owner and operator of both call signs. VU2FY is used when he is in South India, but as he makes frequent trips to Mysore State he is required to use the call VU7FY when away from the home station. Although the location of these two stations is different, the address is the same for QSL, i.e., care of Coromandel P.O., S. India.

A visitor at the November meeting of the Key Section was VK6RA, who was in Melbourne on a holiday. He was accorded a warm welcome, and responded in his well known and characteristic manner, taking exactly 16 seconds to inform us that he was pleased to be in Melbourne to meet everybody and that our beer was as good as he had ever tasted.

Conditions on 14 m.c. and 28 m.c. are very good at present. On 14 m.c. FRSC has come back with that peculiar note of his, and VK3RX was heard working him with his famous "Biggetta" tube.

Another "getta" specialist, VK3OC, put over 'phone to G, whilst VK3YO managed to get a 'phone QSO with J. On 28 m.c., VK3MR and VK3YP were heard to call CQ at the same time. 3MR was answered by seven W's and 3YP by eight!

After lengthy discussion, the Section instructed the Secretary to direct the council's attention to the question of the scoring of the VK—ZL contest. Information on this matters appears elsewhere in this issue.

## 'PHONE SECTION NOTES FOR DECEMBER. (By VK3DH.)

The October meeting of the 'Phone Section was attended by the usual "loyal gang."

When the meeting had commenced and everyone had settled down we realised that one very important person was missing, namely, Mr. Jim Kerley, Chairman of the Allocations Committee. Nobody had seen or heard anything of him, and none of his worthy colleagues had in their possession the all-important "Order of Merit." There being no response to our telephone calls at his residence or place of toil, we merely had to wait developments. To cut a long story short, he had duly arrived, and all was then satisfactory.

3FW had something to say about his run of bad luck when he seemed to receive a series of unsatisfactory crystals from the "pool." This brought up the subject of how many of our crystals in circulation were really O.K. and how many were not. This subject was rather an involved one, as the pool crystals had been going around from station to station for a matter of years now, and some, no doubt, had become defective during that time, and there was the possibility of some never being quite up to standard. This question of up to standard was very aptly put by 3FW, who remarked on the positions in which one may find oneself on receipt of a crystal which had a low output. It may

have been O.K. in the original owner's transmitter, but in many cases, where insufficient amplification was available, the crystal in question may be entirely unsatisfactory.

However, after a fairly lengthy discussion on the subject, it was agreed to have those crystals which were reported to be "not so good" tested for output and frequency checked—the members to pay postage cost on the sending along of their crystals in time for the following Sunday.

This motion was put in order from 3EL: "That all defective crystals be replaced at cost of members, to be equally divided; if alterations, etc., are likely to cost too much, left to the discretion of our chairman (3TH)."

I should have mentioned this earlier, but we were very pleased to welcome back to Australia 3LN, who has been on a trip through U.S.A., etc. Len. responded in a most interesting manner by giving us a very colourful description of what he saw in his travels in the way of things and places interesting to the "ham."

3LN's first port of call on arrival in the "ham" world was a "W," who would be able to get a message through to Melbourne to say that LN had arrived safely, etc. The particular station he picked that night was only operating on low power for some reason or other—about 4KW. This particular station is set up in a house hired especially for the purpose.

To facilitate travelling around the States, Len. bought a 1930 Ford and covered about 6,000 miles altogether. He reported meeting a number of "hitch-hikers," who only require a "lift" for 500 miles or so—just to the next city. Roads there are apparently as near perfect as possible, but blow-outs still happen. To lessen this trouble they drag along the road a huge magnet, which collects the many scraps of metal that fall out of the autos. I don't think they have such antiquated things as horseshoes there.

One almost unpleasant incident occurred when Len. was passing through a city where a speed limit campaign was being conducted. Reason—18 fatal accidents in about a month. 3LN was hauled in for travelling at 52 m.p.h. where the limit was 20 m.p.h. He says that it seemed the police force were on piece work by the conscientious way they were holding up the motorists. To make things a little more cheerful (?), Len. heard later that a very short time before he arrived seven people had been treated to seven days each, "without the option," for doing a meagre 40 m.p.h.

As a result, the situation appeared rather black with 52 m.p.h. to his credit (?), but eventually good old radio came to his assistance. Somehow the subject was brought up between Len. and the Clerk of Courts. The latter, having apparently just bought an all-wave receiver, had been listening to 3ME only that morning, and when Len. said that he lived a couple of miles from that station in Australia—well, he got off with a promise to send the Clerk of Courts an autographed photograph of "the works."

I also believe that 3LN was introduced at Hollywood as being the "owner of a number of large theatres in Melbourne, Australia"—but ask Len. about that.

# Amateur Radio

## NORTH-EASTERN REPORT.

(By VK3EG.)

Everyone seems to be settling down to a quiet life again after the D.X. contest.

The 'phone interference problem was deplorable on the 7 m.c. band, but I daresay we must cast a broadminded outlook on this. If we all thought alike, I daresay life would be monotonous.

Conditions for local work are very fine at night now, and static is not very troublesome as yet. The early afternoons and evenings on 14 m.c. abound in D.X.

KA1CM says he has never heard so many VK's before as on 14 m.c. at the present and mostly everybody seems to be in on it. He asks requests that Australian stations kindly note that he is not the KA1CM of past years, and he does QSL. He has been heaped with abuse by numerous amateurs reviling him for the sins of the previous holder of the call.

VK2OJ has been holidaying at Frankston, and consequently little has been heard of him.

VK3JK called over to see the outfit here last week-end. Jim liked the location, especially after hearing the Yanks roll in on the speaker from a detector and two, audio, and wished he had brought his HRO super along.

VK3FN puts out a beautiful signal here, T9 R9, and breaks in.

VK2QV will be leaving for New Guinea shortly, and will be missed by all who like a rag with an old timer.

VK2LZ, 4EL, 4BB and the rest of the 28 m.c. gang are to be commended on their fine efforts.

G6WY is now coming through each day on 7150 k.c. from 0715 G.M.T.

Didn't the boys rush OA4J in the contest? Still it is a matter of just wait your turn.

D4ARR had 100 contacts with VKZL the first week-end.

VQ2RS, on 7003 k.c., is on each week-end, and wants more VK contacts round 1680 G.M.T.

FH8ST, F. Yarra, Lake Schad, Africa, also on during the test; looks for VK each Saturday—2100 G.M.T.

Yanks come through well on 14 m.c. early Sunday and Monday mornings. The long way round and signals from as far west as VE3, W7, W9 and W5 have been worked.

VK2ML obtained WAC by landing ZS2X on 40 m.x.

VK2XQ is fairly active with rotary converter to A.C., stepped up to 240 v., A.C. Quite a power house there, John, now!

VK5LD has forsaken 40 m.x. for 20 m.x. now, and with VK5WJ and VK5FM work plenty of D.X. I guess you got a fright, Pete, about 5WJ's score. Hi! I was eavesdropping.

The Abyssinians seemed to have purloined part of the "ham" territory, ETV and ETV being heard at great strength.

VK2OC standard frequency transmissions and those of VK5WI come through very well and are a highly commendable service.

VK2HC has QRT for change of his residence and taking up domestic life and its attendant worries. Congrats. and best of luck, Ray, O.M.!

VK3HG has not been heard for some time.

VK3PG still working plenty of D.X., with ultra QRP.

Well, O.M's., cheerio and 73.

—Ivan V. Miller (VK3EG).

## SHORT WAVE NOTES.

By G. W. Manning (VK3XJ).

Since last writing these notes, our Investigation Officer (Mr. W. G. Sones) has been transferred to Wycheproof, and has installed a new receiver, on account of the area there being supplied with D.C. No details are available as to the type of set in use, but, if we know our "Bill," it will not be long before we get details and also reports on the overseas stations as they are received at his new QRA. Let's know how the noise from the mains and other sources of QRM is at Wycheproof, so as to be forewarned should it ever fall to our lot to take up location there.

This group is at the present time making preliminary arrangements as to a five-metre field day during November, and all other sections will be advised of the date on which it is to take place.

A noticeable improvement on the 16 m. and 19 m. bands during the very early evenings has been reason for such good reception on these bands. GSF, GSG, French and German stations have been received excellently here in VIM. Judging from notes published in other States, this improvement seems to be just as marked as it is here.

The next general meeting will be held very shortly, and it is the duty of this group to provide the lecturer for the evening. So, gang, come along to our next meeting full of bright ideas, etc. Don't let it be said that the S.W. Group let their so-called bright ideas become tarnished. What say, gang?

The visit of inspection to the Railways Train Control Room, which was to have been held on October 23, has been postponed indefinitely on account of our last meeting taking the form of an experimental night with five-metre receivers and transceivers; therefore no business was transacted.

The continued absence of one or two members of the gang indicates that the YL has gained precedence over radio. Boys, remember the old saying: "If the YL causes interference to your radio experiments, give up the YL." Please yourselves, but take the choice of the lesser of two evils. Hi!

All the licensed "hams" who are members of the group are at the present time undergoing instruction in the operation of the Institute's alternator, so that during a meeting night when A.C. is required for experimental purposes no difficulty will be experienced as in the past.

VK3JH is still threatening to make a determined effort to be on the air with this outfit next week-end for sure. All reports will be acknowledged, etc. What are you actually doing, Bob? Very little news at all from you.

VK3RQ (Maurie Quick) and VK3XJ have been heard working duplex on 80-metre fone in the wee small hours of the morning. Eighty metres has been full of Old Man QRN during the last few weeks, and, judging from this, it seems that the D.X. season on 80 metres is about finished for the year 1935.

# Amateur Radio

EXTRA! EXTRA!

## KERANG STORMED BY SHEPPARTON HAMS.

### AMATEUR RADIO STATIONS DISORGANISED.

In the early morning (0630 hours) of Sunday, November 10, 3CN, 3SN, Roy Milledge, Alec McBride and the writer left Shepparton in Roy's car and set out for the city of Kerang (106 miles), arriving at 0845 hours, in time to hurl spicy remarks at 3TL, 3CE and 3HL, via Ken's Reisz and associated gear. Mr. Treb's arrival at the shack later was the cue for a run to Lake Meran. Everyone disappointed not seeing 3OR (too bad you were away, Murray). However, 3CN, 3SN and Alec disported themselves amongst the Lake Meran fishes before returning to TL's for lunch. The only set-back on the trip occurred on the return trip to Kerang. Alec became ill and missed all the good time from then on, as we were forced to leave him under the excellent care of Mrs. Rankin until tea time. As most VK3 "hams" know, Ken's sisters are FB girls, and methinks Alec was the smartest one amongst us. Hi! After FB lunch at Treb's we made off to Lake Boga, where Dud and John discussed the pros and cons of RK20's and almost monopolised the conversation. So, while the other boys were content to listen, the restless spirit of KR and DW took them off to the orange trees, where a systematic raid ensued and a grim struggle to get the spoils to the car without being seen ended in tragedy, because arrival at the cars disclosed the gang in ambush. Raid No. 2 resulted in the original raiders being almost deprived of their spoils. Hi! Next move was to Swan Hill, where Jimmy, of 3ZK, had arranged inspections of the Town Hall and picture theatre, 3SII, power house and swimming baths, and last, but not least, 3ZK. 3SH was the eye-opener! The transmitter consists of a 42 oscillating crystal, 6A6 buffer and pair of 210's in parallel for PA. Modulator is an 843, and they put approximately 1.5 amps. into the antenna. Studio and station are under same roof. Antenna system consists of two wires (common), diverging to the top of a 100ft. stick; each wire then feeds three other portions of the radiating system, and the whole affair works out umbrella fashion. Usual counterpoise runs north and south.

Returning to Kerang (we have 3KI and 3ZK with us, and, by the way, my apologies, gang, we had the pleasure of meeting Bruce Mann at 3KR's, and he's with us all the time), Bruce, Jimmy, Mrs. Trebilcock, Treb., junr., Mr. Treb. and myself were in TL's car, and the rest of the boys in Ken's "Lizzie." So far, so good; and a little later so far, no farther, for the simple reason that we have concluded Mr. Treb's car is self controlled, and at about 50 m.p.h. it QSY'd from the crown of the road and side-slipped into a beautiful spongy-mud table drain, where we promptly QSK for a time. Yep, I don't know how the rest of the party felt, but I had visions of silent key insertions in the mag., with black borders for all of us. Hi! I don't like mud as a rule, although I've a nice piece of that particular

mud hung up in the shack, with a nice blue ribbon on it, keeping it for luck. Hi! To be brief, with the help of the gang we extricated the car, put her back on the road, and arrived at Kerang without further mishap. (Suggest you put crystal control on that car, Mr. Treb.) Hi!

The boys then treated us to an excellent tea and then took us on to the local picture theatre, where we witnessed, for our especial benefit, a screening of "Twenty Million Sweethearts," und FB, too. (KR is the op.)

An inspection of the works and final drinks at the proprietor's shop concluded a trip which everyone voted T9X, Q5, R max. Thanks, fellows, and we extend a hearty welcome to you any time you care to pay us a visit.

I regret the following omission from notes last month. When telling 3OR of Roy Milledge, I remarked that he was the Borough Engineer at Shepparton. Murray calmly answered that he had five of them at Lake Meran. As you would imagine, the boys were taken aback by the answer until Murray pointed to his pack of greyhounds. Hi!

Seems that's all this time, so in conclusion the Shepparton gang wish the amateur fraternity generally a very Merry Christmas and a bright and prosperous New Year. May skeds in the coming year be as enjoyable as in the past.

73 and we'll be seeing you again in 1936.

### GOULBURN VALLEY NOTES.

(By 3DW.)

General Topics.—Some months ago 3SN built up the TRF receiver a la QST January, 1933. The rest of us plugged along with our two tubers, but after continual probing by said 3SN we went into the thing thoroughly, and within a month we have all changed over to the TRF, and glad of it, as QRM locally has now been reduced considerably and we can work very close to each other's frequency without trouble. Antennas have also received some slight consideration. 3SN and the writer have adopted 33ft. flat-top single-wire feed for 14 m.c., and Dud has retained his half-wave 7 m.c. Zepp for that band. Excepting for the new 33-footer, DW has scrapped all other systems at present, as with Collins' tuning this arrangement works very satisfactorily on 7 m.c. and 3.5 m.c. also. 3CN has also adopted Collins' tuning on his 7 m.c. Zepp. 3EP has been off for some time now, and is now back with crystal and reports plenty Yank and PK contacts on 7 m.c. 3FN also has plenty of punch on 7 m.c.

Roy Milledge and Bruce Mann both disappointed at not passing last exam. However, it's "Dogged as does it," so better luck next time, O.M's.

### WESTERN DISTRICT NOTES.

(By 3OW—3HG.)

Conditions on 80 m.x. have been rather peculiar here during the last few weeks. 3OW and 3PG—nine miles apart—run regular skeds on this band, and signals, usually R9 both ways, have been fading down to R6, and on one occasion both sigs. went down to R3 for a time.

3PG has contacted ZL on 28 m.c., but so far this band has not been tried here.

The most pleasing part of the big D.X. contest, as far as 3OW was concerned, was the working of CX2AK and OA4J on 14 m.c., with a beam aerial erected specially for the job.

Good D.X. reports have also been obtained from stations due north of here, with the beam aimed at South America.

3GC is also WAC, having worked the required African.

3NQ is playing round with a 230 on 80 m.x., as a prelude to conversion to C.C.

3HG and 3PG have just finished a private D.X. contest, lasting a week, the honors going to the latter station.

3JE still in Coleraine, but has moved to another job; he is still off the air.

With contests over for the time being, there has been very little activity here, so very little to report this month, 73.

## Queensland Division

Now that all the feverish activity relating to the D.X. test has vanished one can have a QSO in peace.

Conditions during the test were fb all over Queensland on all bands, particularly 28 m.c., and our lads certainly showed the other States how to work D.X. on 10.

4AP and 4BB were averaging 12 Americans a morning on 10, and half a dozen Europeans a night. 4EI was the first Australian contact with Europe, and 4BB the first East Coast contact with Africa. It only remains for either 4AP, 4EI or 4BB to work a South American, and Queensland holds all the records. Hi! You southern boys want to wake up!

At the last general meeting Mr. J. Bates (VK4UR) resigned from the secretaryship owing to its interfering with business, and Mr. F. O'Loughlin (VK4OL) took over the job.

The address of the Institute has been changed to Celtic Chambers, George-street, Brisbane, and much better accommodation has been secured. All communications will be, per usual, addressed to Box 1524V, G.P.O., Brisbane.

### PERSONAL NOTES.

VK4BB did some fine work on 28 m.c. during the D.X. test. He was first east State QSO with Africa, and worked all continents except South America on 10. Should walk off with contest with over 30,000 points. Fb, Bob!

VK4AP is another lad who showed the southern States the how and why of 28 m.c. Alf. was the first VK contact with Ireland, and also needs South America for WAC on that band. With 26,000 points, Alf. will take some beating for second place.

VK4WH was heard quite a lot during the test, but had to work hard for his D.X.

VK4RC.—On once again with three stage crystal. 2A5 Tritet, 46 buffer and parallel, 46's P.A. With 50 watts input is getting swell reports from D.X. Good work, laddie!

VK4EI, from way up north, is to be congratulated on being the first VK to contact Europe on 28 m.c. Fb, Roy, and hope you get that South American for us. WAC on 10.

VK4UW was not heard during the test, but his E.C.M.O.P.A. is making a noise once more. Bernie uses 2A5 E.C. OSE and 46 PA.

VK4UU.—QRL after topping the VK4 scores in the A.R.R.L. test. Bill came on to the last Sunday of the test and worked LU1CH and OA4J, which now makes him WAC, after five years. Congrats., Bill!

VK41'R.—Still getting fb D.X. with his "Shove Grab" 46's, but is thinking of going E.C., M.O., P.A., which should prevent his creeping on 20 m.x. Get to it, Jack!

VK4US.—Strange to relate, had a T9 note throughout the test, and his four-stage rig, with pair of 211's, made itself felt during the test. 14,500 points were piled up on 40 and 20.

VK4JB.—Heard now and then between trips to Roma. "Ock" works hard for D.X., but his three-stage crystal gets out well, and he is now anxiously awaiting the arrival of his WAC certificate.

VK4WT has actually put his rig in working order, after 12 months of messing around. Bill puts a nice signal into South America on 40 m.x. Fb, Bill! He uses 59-46, pair 46's, and is thinking of an 801 for his PA.

VK4ES. of Bundaberg, puts a solid sig. into U.S.A. with his lowly 10 watts. Fb, Herb.!

VK4KA still getting plenty of D.X. on 40 and 20 m.x. I guess the north coast is the place for D.X., Syd. Hi!

VK4LB.—QRL. What's up, Joe? Have you blown those 46's already?

VK4MC puts a nice sig. into the States with his crystal rig, which ends up with a pair of 46's with 500 watts.

## South Aust. Division

By Leith Cotton (VK5LG).

The November general meeting was held on the 13th. There was a fair gathering of "hams." Plans were discussed for the cricket match against the Weymouth Motor Co. The day promises to be one of the best, and the cricket match already looks as if it will be a typical W.I.A. game. There will be 15 aside—to save chasing so many balls. Hi!

The meeting was conducted by Bill Walker (5WW), who spoke for an hour without recourse to notes on suppressed grid modulation. Looks as if a lot of VK5 "hams" will soon have this system going, if enthusiasm has anything to do with it.

VK5's big night will be on Wednesday, December 18, when the Christmas meeting, complete with supper, refreshments, etc., will be held. The night is looked forward to all the year by the boys, and there is usually an attendance of about 100 "hams." Just what goes on after the "amber lemonade" flows is only VK5's business. Roll up, chaps, and make this a night of nights.

And now for the scandal!

5WI is heard on 'phone in ZL, and claims it is the only VK5 'phone heard in VK4.

R.I.P. 5WR suffers a bereavement. He lost his pet 210, aged 10 years.

5FM and the W.I.A. Secretary (Marshall Hider) were overheard talking re-

frigerators. Pete must be thinking of cooling down that 800 of his.

5KL shifts from D.X., hunting to B.C.L. entertaining. Oh, Ciarric!

A new call sign. 5LB told me he worked W3 Something-or-other.

5GC says he is just mucking about. QYL?

5LY is a serious contender for the D.X. stakes. He is having a race with 5XA for countries worked.

Have heard nothing of the Granites crew—5EK, 5DT, VKZ and Co.

5ML (Geofe Coombe), now being a sailor, his brother Jack is swotting to keep the famous 5ML call alive.

5WW sold his super. Bill must be going to try a crystal set.

5GP has got two 21E's. He wants to know if a 201A will drive them.

5DK, Tom Robins, objects to being called a policeman. The gentleman with police aspirations is Ken. Davies (5KD).

5MK has been learning electric arc welding. Jack must be going to make some thermo couples.

5GW and 5GK are posted among the missing. Much RF has flown since Freddie last punched a key, and George likewise.

One of VK5's kid better "hams" (5AL) was heard on again with a QRP rig from a country location. Rig was a 201A, with a 90-volt "B" battery.

5FR is building an audio amplifier, using a 50-watt tube as final. Don't wear headphones when you listen to it. Colin. It will be cheaper—and, incidentally, more comfortable—to buy a speaker.

Great news! 5LP walks again, after eight years in bed. Congrats., Laurie!

5FW has a nice shack, the wiring of which will give any spider a headache.

5DC is the only VK5 "ham" to boast of a studio and "Hi—Fidelity"!

5LG recently married his second op. That's one way to keep "ham" radio alive, even though in double harness. Said YF having designs on amateur ticket.

5HR, of Bute, is heard in the city with a nice T9 signal from a Tritet, using a 42. Power supply is a Ford coil.

5FB (Frank Brandon) is still rushing around the country and pumps out a nice sig. from his portable, 5FBX.

In these days of crystal control and sniggle-sniggle snoopers, how is it that some "hams" still tolerate prehistoric A.C. notes? Sometimes I even feel inclined to agree with the famous "QRZ."

5TX is trying to paint the town various colours. He is a house decorator.

Ex-5GO (George Gurr), now stationed in New Guinea, asked the Technical Development Section if the output of one glow-worm would drive two fireflies in push-pull. Could the TDS supply him with a frequency meter for this rig?

5RD is too busy with the law of the land to worry about the radio band.

5MY is afflicted by that horrible disease. YL-itis.

Rumour has it that 5SU is in the same condition.

5LD told me I cause clicks in his receiver. At 400 yards air line, who can blame me?

Heard 5LC on again. Bet he had a busy time getting through the cobwebs to the perk.

Who was the sad-faced person behind the bride in the recent scoop picture in

"A.R."? Was it 3CX's tailor or father-in-law? Hi!

5DA has turned himself into a radio personality. Was heard the other night giving a talk over a local broadcasting station.—73.

## West Aust. Division

(By Jack Mead, VK6LJ.)

"Calling all cars! Calling all cars!!" I beg your pardon, I mean—

"Calling all hams! Calling all hams!! Daddy Christmas calling you from the land of Arr. Heff!! "And once again he pays us a visit. I don't know what he's bringing you, but he's dropping me a 250 watta and a 45 volt battery for H.T.! Ill!

Well, gang, now to get serious. The latest lecture was by 6MN on 28 m.c., which reminds me that that band was extremely active during the contest. 6SA was the only occupant and qsoed E1, G, ON and numerous other European countries. 6FO was another who did rather well. Thanks to 6DJ, who, as usual, did the qsoing part! Among other starters were 6KZ, 6MN, 6FL and 6LJ. 6MN had to make a trip to the mulga during the test, and missed the latter part.

Quite a few alterations have been made at Headquarters—numerous petitions have been erected and the general layout considerably improved. We must express our thanks to Mr. G. Wignell and confederates, who caused this sensation!

Our latest field day was held on November 24, and consisted of a transmitter efficiency field test. Members brought gear and antenna system along to a common point and were hooked up alternately to a power supply. Field strength measurements were taken from a point some distance away, and a percentage of efficiency obtained. An article on this will be supplied later! The classes continue to swell each night and they are under 6BN and 6JS for theory and 6RL and 6AE for Morse. The social committee keeps going exceptionally well, and are busy arranging more outings and Field Days, especially now summer is here. It actually has arrived, Hi!

6AE must be too busy with the classes. I haven't heard him, and his chirps. Hi!

6AC gone to the bush on a service job and wonders when the service is coming!

Smile please, now watch for the "Dicky Bird"—that must be 6BB!

Hello! Hello! Our mechanic on the telephone—6BN.

Our super-salesman, 6CB, and general boss, still mucks around but not on the air.

6CX nearly dropped dead when a copy of the constitution arrived from F.H.Q.

6CY not heard of much.

6DA also as before.

6DH, another as above—but Dave is qrl service work, Fb.

6FG using a new antenna. I don't know when he uses it but can see it up!! We still live in hopes of hearing him.

6FL, on 14 m.c., gets a bit of dx!

6GW away on holidays, but will be on again for Christmas.

6GM will have a special Christmas programme, too—46's seem O.K. still, George.

6JE has got his FBXA at last, and gets fb results. Yanx by the dozen!

6JK chops up the local bodies and generally plays at butchers.

6KZ heard on 7 m.c. very often and has totalled a good score in the test.

6LK, up Northern, and 6LR must be confederates, as neither of them is heard at all.

6MN, on 7 m.c., after his holidays and glad to get back to work. Oh, yeah!

6WI on during the field days, but otherwise only students and tutors use it.

6KO reckons he is on 5. Nobody can prove he is wrong!

"Oi, aye!" Say, who is the blooming Pommy? Oh, sorry I didn't notice it was 'ole Bill of 6WS.

And, finally, the VK6 gang, one and all, wish all divisions and all hams a very Merry Christmas and a Bright and Prosperous New Year. May "Amateur Radio" reign forever.

## Tasmanian Division

### TASMANIAN NOTES.

(By 7PA.)

The general meeting was a week late this month, having been held on the 12th, in place of the 5th, as would have been normal. The delay was made to provide for including a special meeting called for same date. A fair muster of the gang was witnessed. General business consisted of the usual bunch of accounts and correspondence. The meeting had the pleasure of welcoming a northern member-visitor in L. Clark (Poly). 7CK, who was heartily received.

At the conclusion of the general meeting the special general meeting was opened, and the matter for consideration was introduced by the chairman. This constituted the consideration of additions necessary to Article 27 of the Articles of Association, governing the membership status, there being no definite stipulations whatever apart from nominating the grades and defining their magnitude. A lively discussion ensued before the matter was settled. The final decision (majority) was to set out that a member, irrespective of previous grade or age, must become a full member on attaining a A.O.P. Certificate, whether taking out a station licence or not. All other details to remain as at present. This was an amendment defeating the motion.

The VK-ZL contest has occupied at least one member solidly, and one or two others more or less so.

7JB has been very busy with this contest, and has run up somewhere in the vicinity of 6,000 points. He was successful in making several 10-metre contacts on Sunday, October 27, into the bargain, which gave momentum to his points.

The 10-metre band here seems to have shown the same improvement as it has elsewhere of late. 7KV has made a number of contacts on this band also. While speaking of 7KV, it might interest the gang to hear that he has contracted YLitis, and is suffering pretty badly at the moment; so if his key is silent for a while

don't worry. It's a very nice attack, I understand, Keith!

Quite an amount of five-metre work is going on here at present I believe, but no details are available at present. 7BJ, 7KV, 7CW, and I believe 7JB and 7NC, are doing their bit on this band. Some, I hear, are working early evening schedules, although nothing has been heard of them here at 7PA, where a couple of transceivers are built up and seem to be working O.K.

The 200-metre band has been almost deserted of late, 7CW being the most heard (not too sure of 7LJ's activity at present). 7CS had a spell while moving his quarters to the city side of the Derwent. 7PA had a spell also, and 7JB was too QRL with contest, but was testing on Sunday, 10th. So all are on again to keep the B.C.L. occupied for the present.

Another field day was conducted on Sunday, October 27, and took the form of a social run, YL's, YF's, etc., being included, and Jack Morris even took Napoleon. Hi! But who took Jack's car? Brown's River was selected, and the 80-metre band used for transmission, with a ten-mile radius stipulated. The country in this area being rather hilly makes hunting interesting, and some got well away as usual, signal strength varying a lot in some places and thus causing some confusion. 7CW was first to locate the hide-out, which proved to be overlooking Brown's River from the Hobart side, under the slope of the hill via the old road that leads to the beach. Some had to open their envelopes, always provided at the start, time beating them to it. The transmitter was powered from a small generator, a half-wave 80-metre single-wire matched impedance aerial was used, and a hefty signal was radiated. At the conclusion of the hunt all went over to Blackman's Bay beach for the remainder of the day, and in all a very enjoyable outing was had.

Since this event a meeting has discussed another field day, which, most likely, will be the State Field Day again. It is suggested to make use of the five-metre band if sufficient interest can be raised, and I have little doubt about the question of interest, five metres being talked in all quarters. It is to be hoped they pick some open country for a start though. Hi! Hope to detail this event, possibly with a short article, after its conclusion.

5LG found this cutting in a paper, and reckons it applies to 99 per cent. of the "hams" of to-day:—

### HAVE YOU NOTICED?

When the other fellow is set in his ways, he's obstinate; when you are, it's just firmness.

When the other fellow doesn't like your friends, he's prejudiced; when you don't like his, you are simply showing that you are a good judge of human nature.

When the other fellow tries to treat someone especially well, he's toadying; when you try the same game, you are using tact.

When the other fellow picks flaws in things, he's cranky; when you do, you are discriminating.

When the other fellow says what he thinks, he's spiteful; when you do, you're frank.

—"Reynolds' News" (Eng.).

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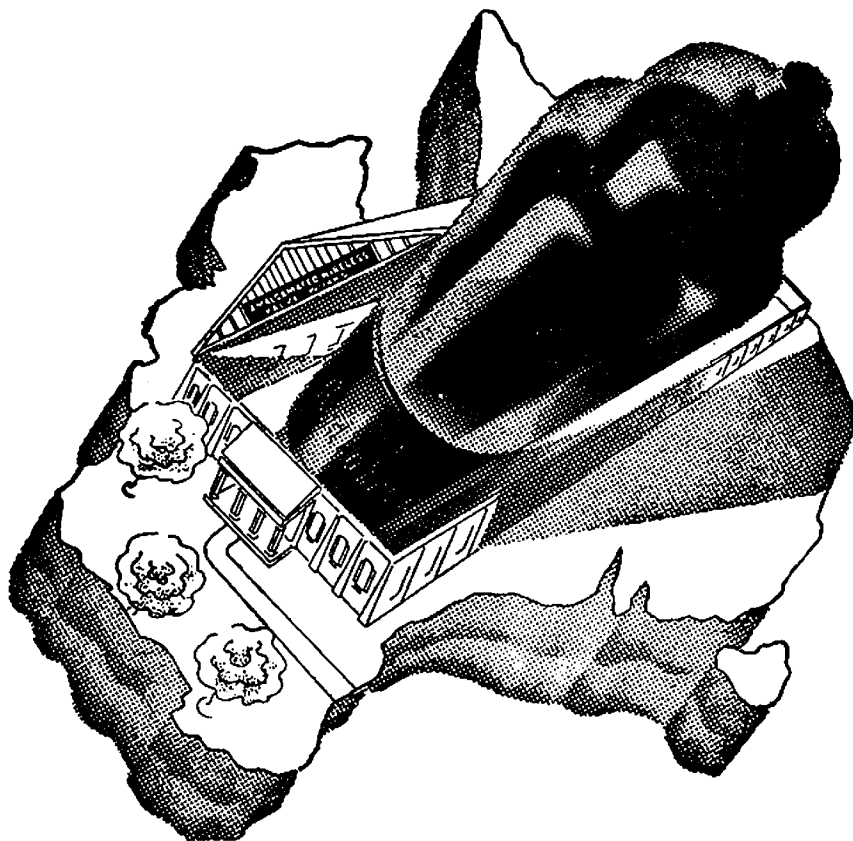
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# R.A.A.F. Wireless Reserve Notes

## FEDERAL NOTES.

(By the O/C., 1A1-3ML.)

There are possibilities of an improved training programme early in the new year as soon as the R.A.A.F. has settled down after the expansion of recent date. It is unfortunate from our point of view that all personnel and equipment available in nearly every direction are being used to the utmost to train the new members of the service.

The position might be hard for country members to understand, especially in view of the newspaper statements that several million pounds have been made available to the R.A.A.F., but, it should be realised that this has been owing for some years and the expenditure is really only bringing the service up to date. However, with the advent of the two new squadrons, one at Perth and the other at Richmond, the prospects of much closer co-operation are brighter. The employment of Reserve stations has not been forgotten and within the next 12 months our ambitious hopes will be fully realised. In the meantime, the issue of crystals, which should take place by the time this magazine is printed, will, undoubtedly, aid the organisation. Half of the ordered number are ready for distribution, complete with holders.

## SECTION—2nd DISTRICT NOTES.

(By 2A1.)

In this district the untiring energy of 2Z1 is beginning to bear the fruit it richly deserves and enquiries are arriving from all quarters regarding the underlying principles of this organisation.

This month also saw the beginning of a new feature in our Sunday night watches, namely the practice message which is passed round all those stations on watch at the time.

Notwithstanding the fact that I am spending the day-time in a smelly laboratory and the night in an even more odorous place, trying to absorb chemical principles, I have managed to rig up the old gear in the garage and can shock—excite a half-wave 40 metre aerial on 3,550 Kcs for Reserve work. Suddenly returning after being so long off the air, has brought very forcibly to my notice the great improvement in the N.S.W. Branch of the W.T. Reserve, and I feel sure that given a reasonably fair break, we will yet make the VK3's sit up and take a lot of notice.

It may be interesting for some of the boys to know that 2D1 at Telegraph Point, up the North Coast, uses only two watts and puts a T9 R8 signal all night into VIS. Another fine operator, 2A2, uses a hand wound generator for his high tension. This interesting piece of apparatus is worthy of more than just a passing word, and hence you have the following description of what can be done by a resourceful Reservist. However, this description is as I received it one night when the QRN was only R8 on the 80

metre band. It would seem that the transmitter uses a wecovalve CO, with a fine slab of galena reluctance, coupled to a pair of 100's in cascade. The high tension is supplied by a hand turned generator delivering some 6T watts, while a simple system of belts, chains and worm drives from the generator shaft simultaneously works the chaff-cutter and the cream separator. The steam from the cascade cooling the 100's is used to sterilise the milk cans while the unsilvered spots on the valve envelopes are good for examining eggs for fertility. Apart from this he has a very economical rig, and his first leaves little to be desired except a water-cooled pen to copy it.

The Reserve in this district has been dogged by more than a fair percentage of bad luck. 2A2 has been kept worried lately by a sick wife and family, yet hardly missed a watch. Mrs. 2A5 has also been unwell, and 2Z1 has made himself sick reading Reservists' reasons for inactivity, while the only bright spot has been that 2A1 has kept off the air and given them a fair break.

We now have quite a good network of stations in N.S.W. with Reservists operating from Leeton and Canberra, in the South, Broken Hill and Cowra, in the West, Telegraph Point and Wyong in the North, and a group around the Metropolitan area. 2Z1 tells me that the response to his circulars to non-members is very satisfying and seems to be pulling in the right type for the Reserve.

It has occurred to me that 2A2's transmitter (not as previously described) would be ideal as a standard R.A.A.F.R. job. A single tube Hartly, using crystal lock, and I hope shortly to have some detached notes on it for publication, because I think that a separate Reserve transmitter is desirable for consistent working of schedules.

"A" Section.—October traffic returns: 2A1 transmitted 3/42, received 3/36; 2A2 transmitted 24/664, received 32/329; 2A3 transmitted 7/145; received 12/504; 2A5 transmitted 9/104; received 7/124; 2A6 transmitted 2/101; received 3/107.

"B" Section.—No report received, but stations active were:—2B1, 2B2, 2B4.

Mr. Woodman is absent in Melbourne on holidays for two weeks.

## 3rd District.

(By 3Z1—VK8UK.)

VMC have been marking time this month awaiting the arrival of our new section crystals. All the preliminary organisation is complete and the change-over should be made without any difficulty. It certainly will enable section traffic to be gone through with an ease never before possible, and also will give all stations much needed practice in channel and group working. There are so many ramifications of the normal work that will be possible that we shouldn't have a dull moment for months to come.

3B3 has been the recipient of showers of congratulations this month on two counts and we would like to add ours on

the arrival of a son and heir and also on winning the Reserve Section of the last Fisk contest. Allan has been right in the running for our annual trophy each year and it seems only right that he has won it for 1935-36.

3B1 has left on another country tour with a portable transmitter-receiver. The former consists of a single 46 C.O. keyed in the aerial. All schedules will be kept while he is away and he is hoping to contact most of the boys, especially over week-ends. Listen for him, fellows, on his Reserve frequency.

3A5 has our congratulations as well as those of all VMC members on at last gaining that coveted W.A.C. Gordon contacted a South American late last month. We had a flying visit from 3A6 a week or so ago, but owing to pressure of work at both ends we were only able to manage half an hour's chat. It was none the less enjoyable for its brevity though. We hear from him that 3RS seems to be so snowed up with work at 3WR that it is unlikely he will have any time to devote to 5 metres for some time to come. We are looking to Ray to help the Shepparton boys onto the band as a preliminary to a big effort to effect a Melbourne-Shepparton contact.

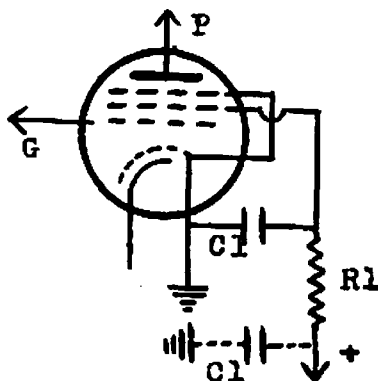
We hope to have four new men in VK3BS, VK3VW, VK3FN and VK3OD at work in an active section before the end of the month and in extending them a welcome we want to assure them that all old members will be only too pleased to help them in any way so that they can settle in quickly. 3C4 spent the four weeks spell from schedules during the DX contest in completely rebuilding his transmitter. From all accounts it is a great job. 3C5 is taking on yachting again this coming season, so VMC3 is going to be without his services on Sunday schedules during the next five months. There are two vacancies at the moment for country stations. Any ham who is desiring to join up with the Reserve get in touch with me as soon as possible as these vacancies will soon be filled.

### 5th DISTRICT NOTES. (By 5ZI-5SU.)

Watches are being held on 7317 Kcs each Sunday and members are being instructed in the use of the more uncommon procedure signals. 5ZI would like to continue schedules with VMF and suggests that Monday night, after Federal watches, be employed for this purpose. 5A2 listened last Sunday morning for the VME watch and discovered that his battery was flat at about 1,000 hours. 5ZI would like to hear from 5A5 and 5A6, 5A2, 5A3, 5A5, 5B1, and 5ZI are all active and watches are being maintained on Mondays on 4155 Kcs.

## A Correction

VK5ZR wishes to point out that the position of the screen grid by pass condenser, as shown in the circuit last month in the article "A single stage 3-band exciter unit," is incorrect, and that shown in Fig. 1 is correct. He says that this condenser **MUST** be on the tube side of the screen dropping



**C1 = S.G. by pass condenser not connected as shown by dotted line.**  
**R1 = S.G. Dropping resistor.**

resistor R1. (To leave the C1 in the dotted line position as well as another C1 in the correct position would be rather an advantage in that it would form a decoupling arrangement and perhaps improve the operation. However, this is only a suggestion for experimentation.—(Tech. Ed., A.R.)

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(Continued from page 15)

day, but if complaints are increased, as they are likely to be with a surfeit of these hideous transmissions, they cannot be expected to regard the present day Australian amateur as an asset to the community, as he was once regarded. Australian amateurs have quite enough to do to keep equilibrium with the public and the authorities. There is always the question of interference with broadcast listeners, and experience shows that the amateur is too often blamed for interference totally dis-associated with his activities. If on top of this, the public forms the opinion that amateurs are just a lot of "movie slang HI HI merchants," the amateur's stock is going to fall rapidly. Let us check that fall drastically before it is too late.

Yours, etc., Don. B. Knock, VK2NO. Radio Editor.

"The Bulletin."

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