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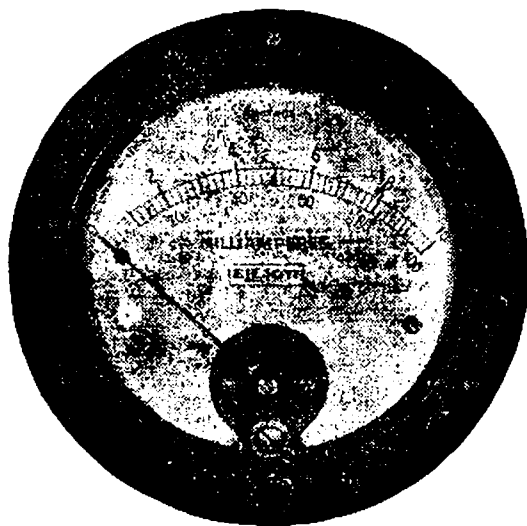
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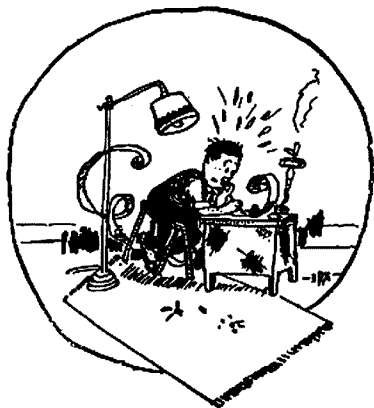
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EDITORIAL

Wireless Institute of Australia 1937 Convention.

As is the custom each year, a Federal Convention of our Institute will be held in 1937.

This time Sydney is the location and the date is January 30th, 31st and February 1st.

The greatest drawback to the successful organization of Amateur Radio in this country, is a factor that "Hams" normally laugh at — "Distance.

For the proper functioning of the Institute throughout the Commonwealth, it seems necessary to have a Division (in each State), and the financial upkeep of these Divisions, is really out of all proportion to the number of amateurs in the various States.

The W.I.A. throughout the Commonwealth must expend yearly between £400 and £500 in rents alone. If we were not so widely scattered one Central Office would satisfy, and we could employ one full time representative to look after our interests. However this is not to be; to some other phase must we turn our activities to counteract this unbalance of "Ham to financial upkeep."

Let us take America; how much weaker would the A.R.R.L. be, if it was organized in every State. Happily over there the interstate boundaries don't count as ours, and they are successful in working from one Central Headquarters.

It seems we must turn to the previously mentioned convention as a means of overcoming the Distance Factor; and to obtain some relief from the millstone which deals so hardly with effective Amateur representation.

At least once a year Amateurs voice their approval or for that matter disapproval of suggestions that originate throughout Australia.

Unfortunately finance as well as distance, is again the Bugbear.

Representation from the outlying States involves considerable expense and often a Division must demur against such a costly outlay; however proxies to a degree solve the problem and the Convention proceeds to a satisfactory conclusion.

Glancing at the agenda paper for the 1937 Convention the outcome must be to the advantage of the Amateur. The majority of the items concern the Amateurs' relations with the Department. —The opening of the 112 and 224 Mc. bands—A request for 50 watts minimum power — A reduction in license fees.

Others concerning the Institute:— Issue of Worked all States' certificates, organization of a National Field Day, and many other items concerning the Politics of Amateur Radio, precisely 44 in all.

The Convention will soon be over and it should and it must be of interest to every Amateur to see the outcome of the one chief foil to that factor "Space" which affects so harshly our organization.

Wm. MOORE,
Federal President.

With this issue "Amateur Radio" is entering its fifth year of existence. As we stand on the brink of the New Year we look back over the Old. Through the co-operation of the other Divisions of the Institute through the past year the magazine has reached the standard of today. In wishing our contributors and readers throughout Australia a Happy, Bright, and Prosperous New Year, may we hope for a continuance of your co-operation in making a bigger and still better "Amateur Radio."

A Four Band Exciter and Buffer-Amplifier Unit

By VK3ML, Technical Editor.

No claims for originality are made in the construction of this exciter unit as an effort was made to duplicate the very same unit that appeared in QST for July 1935. There are however many reasons why an exact copy cannot be made, and the inability to duplicate the components used is one, therefore a description of the Australian model is likely to be of use to those who either missed reading the QST article or would prefer to construct a local equivalent.

modulation because of the high anode voltage which is so desirable when the controlling electrode is to be modulated. After correctly tuning the outfit for fone by means of grid drive reduction, bias adjustment, and aerial load matching a very highly efficient 25-30 watt 100% modulated transmitter results. Screen grid tubes are favoured by the writer over three element ones for grid modulation. However, the purpose of this article is to describe the exciter unit in detail and leave

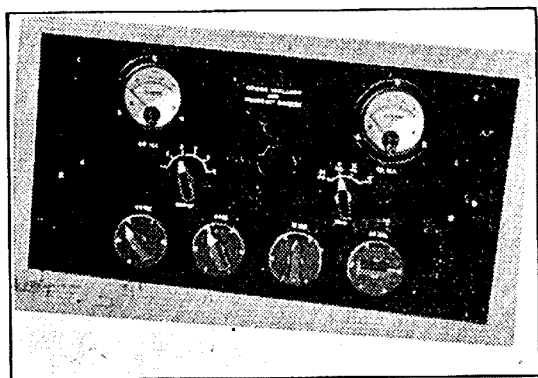


Fig. 1.

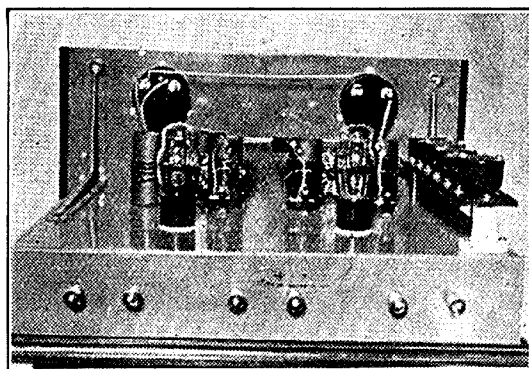


Fig. 2.

This description is the first of a series which will, in two or three parts, cover constructional details of a 100 watt CW and a 25 watt phone transmitter. The finished rig consists of a 53-53 exciter driving the new 837 penthode which in turn supplies power to the QB2/75 or the 860 RCA equivalent. Relay rack mounting was chosen for simplicity and conservation of space. The rack is filled with six panels all told, comprising an aerial tuning, power amplifier, buffer, exciter and modulator panels; the lowest being a small switch board for the power supplies. Control grid modulation of the power amplifier tube was chosen after much thought and the main reason for favouring this system was the fact that little gear was to lie idle during CW operation. The rather large tube in the P.A. lends itself very well to efficiency

the rest of the "works" till later.

The primary consideration in the exciter stage was general flexibility. To be able to shift frequency to several parts of any one band and with the same amount of effort, from one band to another just by the flip of the switch or two, is an inexpensive luxury. The number of frequencies made available by the crystals are of course limited by the bank account. In this particular unit, six 80 metre crystals are used to cover from 75-85 metres; the six way crystal selector switch can be seen brought out to the panel in Fig 1. Fig 2 shows the rear view of the exciter stage and Fig 3 illustrates the layout of the components under the chassis. The wiring diagram of Fig 4 explains the general hook-up better than words. It will be seen that the connections for the 53-53 oscillator-doubler section are

quite conventional and the only innovation is the use of tuned tank coils in each of the four plate circuits. The input triode of the first 53 is tuned to the fundamental of the crystal, that is 3.5-4 mc, and

the front panel. One plate milliammeter is used in the cathode of each 53, but, just the one meter made plug-in would be just as effective but of course not as instantaneous in operation.

The four tanks once peaked will require no tuning with crystals having fundamentals between 3500 and 3575 Kcs. The tanks are permitted to run constantly and therefore provide excitation voltage on tap at all times for driving the 837 tube. Capacity feed is used to the buffer direct off the plates of the 53's through a four way switch, the arm of which is hooked to the 837 grid.

Careful attention should be paid to the construction of the coils as it will save a lot of time when searching for a resonance dip if one knows that the L and C are suitable for covering the range.

The coil details are as follows:—
 L1. 3.5mc oscillator coil: 35 turns No 22, diameter 1½ in, length of winding, 1½ in.

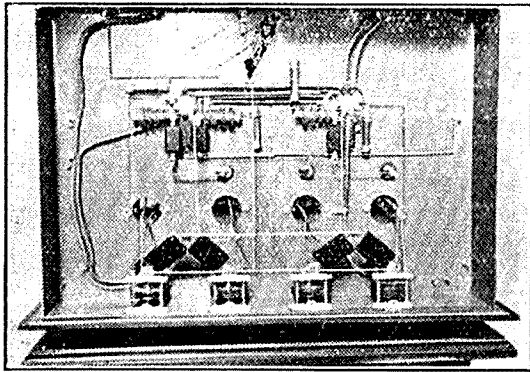
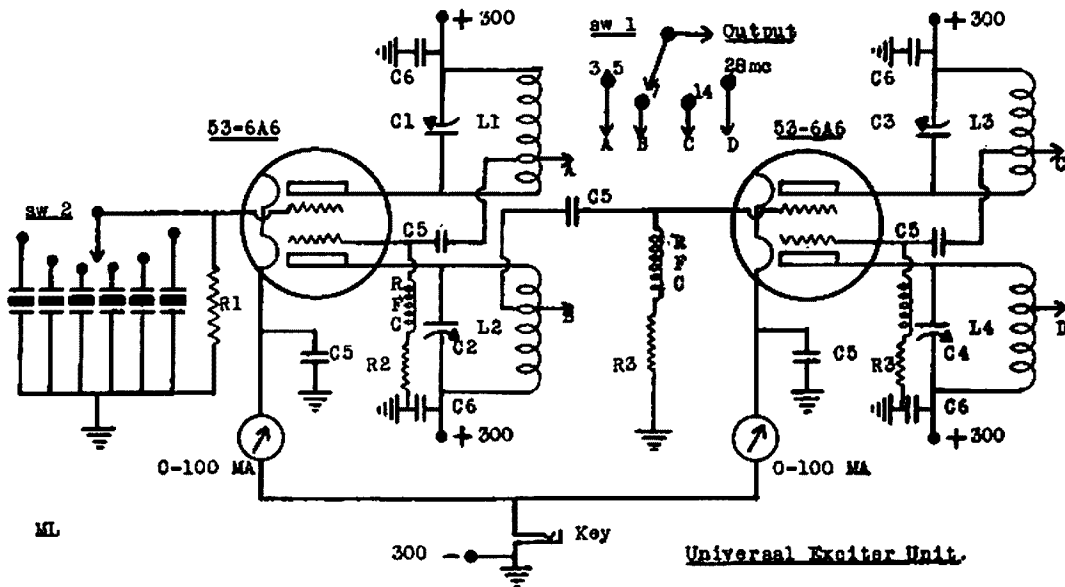


Fig. 2.

the output of the second section doubles to 7mc. 14 and 28mc. outputs are taken off to the buffer amplifier from the 1st and 2nd triodes of the second 53 respectively.



- SW 1 4 way band selector switch
 SW 2 6 way crystal selector switch
 R1 5000 ohm 2 watt
 R2 20.000 ohm 2 watt
 R3 10.000 ohm 2 watt

- L1 L2 L3 L4 See text for details
 C1 C2 C3 C4 See text for details.
 C5. 0.001 mfd.
 C6. 0.01 mfd.

Fig. 4.

Viewing the exciter from the rear in Fig 2 we have on the extreme right the strip on which are mounted the six plug in crystal holders. Next, along the rear of the chassis are the 35mc oscillator coil, the first 53, the 7mc doubler coil, the 14mc coil, the second 53 and finally, the 28mc doubler coil. The condensers for tuning each of the tank coils are mounted under the chassis and have control knobs brought out to

- L2. 7 mc doubler coil, 20 turns No 16, diameter 1½ in., length of winding 1½ in.
 L3. 14 mc doubler coil, 10 turns No 16, diameter 1½ in., length of winding 1½ in.
 L4. 28 mc doubler coil 3½ turns No 14, diameter 1½ in., length of winding ¾ in.

The tank condensers were pruned to give the following capacities:—
 C1. 100 mmfd midget.

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Ample size holes drilled under each coil permit sub panel wiring direct to the tube elements and bypass condensers. Fig 3 clearly shews the layout of the apparatus under the chassis.

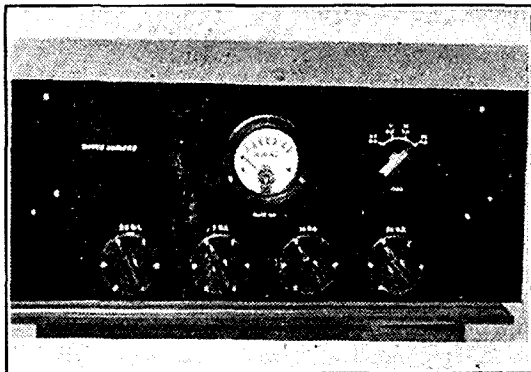


Fig. 5.

A continuous link is run from all tanks to the final amplifier, and once again, a flip of the switch selects the band. Shunt feed is used for simplicity and insulation purposes.

The coil specifications in this unit are:—

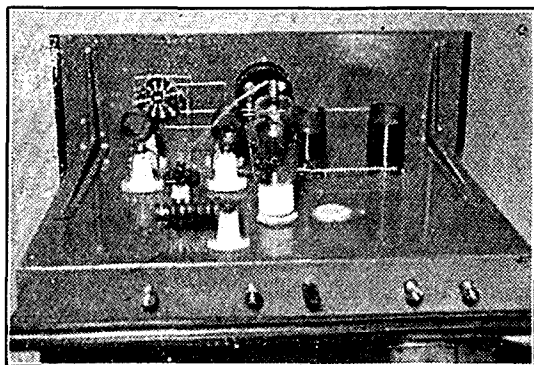


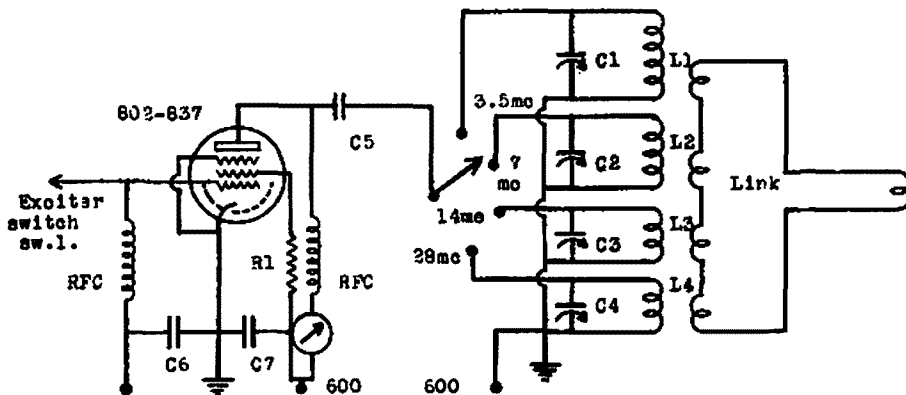
Fig. 6.

Before passing to the buffer amplifier stage, let it be said that the tank coils will seldom tune to resonance with the data given unless the load to the 837 is connected.

In the original article in QST the author preferred to mount the next

L1. 3.5 mc buffer coil, 30 turns
No 16, diameter 1½ in, length
of winding 1½ in.

L2. 7 mc buffer coil, 16 turns
No 14, diameter 1½ in, length
of winding 1½ in.



Buffer-amplifier unit.

- C1. 100 mmfd midgert.
- C2, C3, C4. 50 mmfd midgerts.
- C5 .001 mfd mica.
- C6, C7. .01 mfd.
- R1. 10,000 ohm 2 watt.

Each link is of two turns around the "cold" end of the tank coils.

Fig. 7.

tube following the 53's on the same chassis; however, opinions differed slightly here and it was decided to leave plenty of room and use up another piece of bakelite and aluminium. Figs 5 and 6 illustrate the front, rear and underneath appearance of the 837 stage; whilst Fig 7 shews the circuit design. Again, very little is unconventional, the only outstanding feature being the four tuned tank coils along the rear of the chassis and clearly seen in Fig 6.

L3. 14 mc buffer coil, 9 turns
No 10, diameter 1½ in, length
of winding 1½ in.

L4. 28 mc buffer coil, 3½ turns
No 10, diameter 1½ in, length
of winding ¾ in.

Originally, two 6P6's were used in this unit, but when connected in parallel gave too high an output capacity and required neutralizing, which was to complicate things a little and so the one 837 was decided

(Continued on page 10)

28 and 56 Megacycle Activity

By E. H. Conklin, W9FM.

The summer short skip did not bring the expected number of contacts during the past several months. Conditions were satisfactory, it appeared, but a sufficient number of stations was lacking. We admit that it is quite a "grind" to keep listening and calling on "five and ten" when we should be out in the sunshine. That long five-metre work was possible since the memorable night of May 9 is evident from short-skip conditions on ten metres. J. J. Michaels, W3FAR, reports from North Wales, Pa., that 28 MS signals from as close as Cleveland (on 16th June) have been heard in June and July; on other occasions Indianapolis, Chicago, and other stations were heard. Five metre work over a distance of 700 to 1000 miles was probably possible at the same time.

British Accomplishments.

From E. H. Swain, G2HG, we have received several very nice letters on the subject of five-metre DX reception. Table 1 shows how many signals—mainly commercial harmonics, but some amateurs—have been heard from four continents. The CW station calling "CQ dx" on 23rd May was outside of England, because G stations must use "test"; the signal had a bad flutter, and only a 9 and a Y were made out. The station was not W9NY. The CW station heard two days later was actually calling "CQ dx 56 mc." On the day between, fading phone carriers were heard by two different British stations.

We have often expressed question as to whether or not the received signal travelled on 56 mc, but later check-up usually has been successful in showing that the receiver was not also sensitive to a 28 mc. signal. The G stations reporting the above dx reception have been active on both 28 mc. and 56 mc.; we do not doubt the accuracy of the data. A few of the commercial harmonics may have been on a frequency several megacycles lower, such as LCP on 44 mc., but, like long-distance reception of U.S.A. police transmitters on

40.1 mc., this work is notable. G2HG makes these comments:—

"In addition to the stations listed in the schedule (see table 2), I know that G2AW, G2MV, G5CM, and G5OJ are using plain cw on 56 mc. There are, of course, plenty of chaps using the usual phones with self-excited oscillators. From the logs, it is apparent that there should be every chance of G-W work on this band. It is a great pity that most of your fellows are not keen on cw reception down on five, because I think you will agree that plain cw stands a better chance for working dx than phone, especially if a wobulated oscillator is used."

VK2LZ Reports TDC.

Not all of the 56 mc. dx reception has taken place in Europe. According to the May issue of Amateur Radio, published in Australia, VK2LZ has built a new super that goes down to 56 mc. He has heard TDC on it. The latter station, we understand, is in Manchukuo, or thereabouts.

South Africa Also Active.

A letter from O. W. Reid, Z32A, states that last season he heard police cars and dispatcher stations regularly, also a station broadcasting music well below them. Reid is using a 35T on exactly 56,000 and 57,600 kc. ZS1H and ZS2Y are also preparing to make a hole in the five-metre band.

Since our reports of long distance five-metre work carried out, in the June and July issues, we have received quite a number of confirmations from both the eastern and mid-western stations. John Videberg, W1TYX, of Waterbury, Conn., describes his work as follows:—

"I had the antenna pointed toward New York City. The W2's were coming through very poorly—it was not a "good" five-metre night. Then I heard a couple of ninth district stations. When I pointed the beam toward Chicago they came up to RS and R9. I heard W9LBP and another. Then I worked W9UAQ, who was R9. These signals were

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characterised by short and rapid, though severe, fading, always coming right up instantly. This was between 11.30 p.m. and 1 a.m. eastern daylight time."

Videlberg said that on 29th April and 1st May the band opened up for the first time this year for 100-200 mile dx. Again, from 6th-11th June, the W2 and W3 stations were coming through in Waterbury, Conn. This work is not, of course, K-H layer dx, and often carries through until sunrise or later. A very long list of W2 and W3 stations were worked, making use of an H type beam with a similar reflector. This type is simple to build, holds the beam down to useful low angles, and is not too highly directional.

Very little 100-200 mile work is reported from the mid-west. This might be due to the absence of high hills, the lower density of population, and the failure to use beams. W9PEI, in Chicago, we understand, occasionally hears a high-powered Kalamazoo, Michigan, station as loud as local 56 mc. phones. Apparently, Chicago stations have been unable to raise the Kalamazoo station, though. Because 28 mc. cw stations are often heard at 100-300 miles, we suggest that the gang on "five" arrange their receivers for straight cw reception and cover the band occasionally for weak carriers and code signals.

To increase the chance of hearing dx, we suggest improving the antenna input to the receiver by stacking the antenna and tuning the transmission line or feeder properly. A vertical double-zepp at least might be used, for good low-angle pickup without directivity.

28 Megacycles.

After hearing NY2AE pound in on ten-metre phone Sunday, 16th August, and old-time conditions during the evening of the 17th, we feel like broadcasting news of returning excellent conditions on "ten." In five minutes we heard W1DZE working VK4BB, W4EED working W8AGU, and talking about raising VK3BD, W4DSY discussing the same with W4BEB, XE1AY, calling CQ, then calling W3HC, a W3 calling a W6. Some of these were R9 phones, with chance of error in calls. A combination of short skip plus dx signals made for interesting work.

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The ten-metre band has been open with short skip a good share of the time this past summer, but the absence of consistently good dx conditions has taken its toll of stations. Throughout the summer there have been occasional contacts with all southern hemisphere continents, and once in a while a signal gets across the Atlantic—but generally much later than the time considered usual last winter.

Many logs show reports of 1000-mile contacts when neither station could hear another signal, while often there were numerous harmonics of 14 mc. stations to indicate wide-open ten-metre conditions. Several stations have reported calling CQ when the band appears dead, a fine QSO with someone resulting.

Southern Hemisphere Conditions.

Winter conditions in the southern hemisphere permit very fine east-west work on "ten," although the low number of active stations in South America and Africa makes conditions seem spotty to observers, particularly those in Australia. The VK's find that W signals are weaker and that those using beams are most successful, even though low power is used in some cases. Only a few Europeans are getting through to Australia.

The VK's claim that the equinox periods—roughly, March, April, September, and October—are the best. On the average for the world, we can agree, but mid-winter seems very satisfactory for east-west work, provided that the distance is not so large that the daylight path doesn't

extend to both stations, such as Japan and Eastern U.S.A.

Night Conditions.

During the late spring and summer there have been numerous reports of abnormally late reception. Just as last summer, two-way U.S.A. work was apparently at its best from dark to midnight. G2YL mentions that LU9BV, PY1AW, and the six eastern W districts were heard from 2100 G.c.t. until after midnight on 24th May. G6DH worked W2DTB after midnight, British daylight time. On 24th June a weak W3 phone was heard five minutes after midnight—the only W signal heard that month in England. Aussies have been working W stations evenings rather than mornings, just as during last summer.

(Continued from Page 7.)

upon. The 802 would work as well of course. A C bias unit is incorporated in the power pack and both the buffer and power amplifier stages draw grid voltage from this supply

The two units as they are will provide ample power to the aerial for a lean purse and the 837 offers excellent modulation possibilities in the suppressor grid lead. In conclusion, the panel and chassis dimensions are:—

- Exciter stage panel, 19 x 10 in;
- buffer, 19 x 8 in.
- Exciter chassis, 18 x 12 x 3 in;
- buffer, 18 x 2 x 2 in.
- The bakelite being $\frac{1}{4}$ in thick and the aluminium of 18 gauge.

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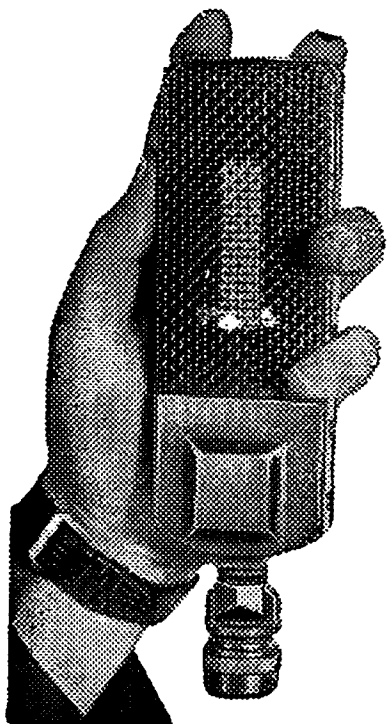
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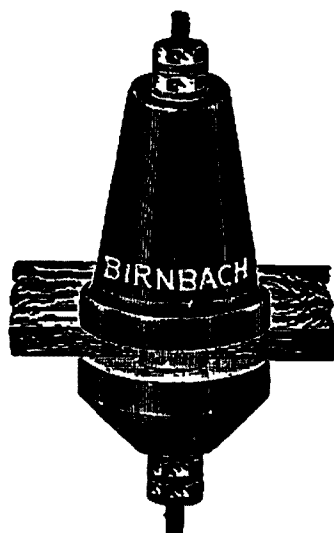


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S.A.R.R L's "Johannesburg Jubilee"

International DX Competition
January, 1937

The "Rand Daily Mail" presents handsome trophy for highest DX scorer. Johannesburg and British Empire Exhibition centre of attraction. All stations in the world vs. Southern Africa. "Africa" divided into 27 zones, viz., ZS1-6, ZT1-6, ZU1-6 (18 zones), ZE1, VQ2, FR8, FB8, CR7, CR6, VQ3, ON4, VQ8. All stations call "Test JB" or "CQ JB." Two points for complete exchange of six-figure group or serial number comprising RST report, followed by self-assigned serial number to be used throughout contest. Four points for

10 metre "exchange" to stimulate activity on 28 mc. U.S.A., Australia, New Zealand and Canada divided into their respective divisions. Highest scorer in each DX division or prefix zone will receive handsome Certificate. A special Certificate to the highest scorers in each division of South Africa, and the beautiful trophy presented by the "Rand Daily Mail" will be awarded to the highest scorer outside South Africa. Open to the world. No previous entry necessary.

By W. H. Browning (ZU6E).

The South African Radio Relay League staged its first DX competition in 1927. Known as the "Springbok Trophy Contest," it was a great success and succeeded in establishing a bond of friendship between American and South African Amateurs which has developed with the passing of time.

Jefferson Borden, WICMX, proved the winner, and was awarded the "Silver Springbok" kindly presented by South Africa's leading daily paper, "The Rand Daily Mail." This year marks the opening of the wonderful British Empire Exhibition in Johannesburg, and also the 50th or "Jubilee" year of the City of Johannesburg, that mining camp of 50 years ago which has grown to be one of the greatest cities South of the Equator. In honour of the double event the S.A. Radio Relay League have decided to organize an International DX contest on the same lines as the Melbourne Centenary contest staged two years ago by Australian amateurs, and thereby hope to provide amateurs the world over with the opportunity of contacting Southern African stations, and at the same time focus the attention of the whole world on our great exhibition in Johannesburg.

All amateurs throughout the world

are heartily invited to participate in Johannesburg's Jubilee.

General Plan.

"The Rand Daily Mail" have generously donated a handsome trophy for presentation to the world's highest scorer, i.e., the amateur outside the African zone who turns in the highest score. Certificates will be awarded to the winner in each country or prefix zone. In addition the following countries have been subdivided into their respective amateur districts. The United States of America W1 to W9, Canada VE 1-5, Australia VK 1 to 8, and the highest scorer in each of these 23 districts will receive a certificate.

Multiplier.

For the purposes of computing their sources, African amateurs will multiply the total points obtained by the number of countries or prefix zones worked. The three above-mentioned countries will provide a possible multiplier of 23 in addition to all other countries worked. DX countries (outside Africa) will multiply the points obtained for exchange of serial numbers by the number of African zones worked:— Angola CR6, Belgian Congo ON4,

Amateur Radio

Northern Rhodesia VQ2, Southern Rhodesia ZE1, Madagascar FB8, Reunion FR8, Mauritius VQ8, Tanganyika VQ3, and the Union of South Africa ZS1 to 6, ZT1 to 6, and ZU1 to 6, a total of 27 "zones" or total multiplier of 27.

Points.

Only one contact is permitted between stations on each band, but if an exchange of serials was not effected on the first contact, the two stations may contact each other later to complete exchange.

See the sample log below.

If the prophets are right, January will see a return of 10 metre activity. And to ensure that this band will carry a fair share of the "traffic," double points will be awarded for exchanges on this band. In this manner "10" is likely to prove one of the most productive point scoring bands.

The Contest Period.

To avoid misunderstanding and possible confusion Greenwich mean time has been adopted, and the con-

SAMPLE LOG.

Number. Contact	Date.	GMT.	Station Contacted	Frequency Megacycles.	Prefixes.	Serial Transmitted. Number	Serial Number Received.	Points Scored
1	7/11/36	0410	ZU6P	28 mc.	ZU6	459123	449375	4
2	7/11/36	0425	ZS1H	28	ZS1	479123	559216	4
3	7/11/36	0517	ZS2A	28 "	ZS2	589123	578737	4
4	7/11/36	0621	ZT6K	28 "	ZT6	458123	549877	4
5	8/11/36	0714	ZS6A	28 "	ZS6	559123	578641	4
6	14/11/36	0729	ZU5U	28 "	ZU5	579123	349145	4
7	21/11/36	0800	ZE1JJ	28 "	ZE1	469123	449804	4
8	21/11/36	1500	ZS6T	14 "		349123	559665	2
9	21/11/36	1542	ZU6M	14 "		339123	—	1
10	21/11/36	1554	ZT1Q	14 "	ZT1	—	394444	1
11	28/11/36	1425	ZT1B	14 "		459123	449141	2
12	28/11/36	1630	CR7ZS	14 "	CR7	557123	339888	2
13	29/11/36	1900	CR7AD	7 "		558123	459771	2
14	29/11/36	1935	ZS6AF	7 "		559123	559222	2
Points								40
Total Prefixes 9, multiplied by 40 = Grand Total								360

Amateurs in "South Africa" will endeavour to establish contact with DX stations and to prove satisfactory qso a serial number of six figures must be sent to and acknowledged by, the DX operator, who will transmit a six figure "serial number" to the S. African. This serial number will contain a report based on the RST system for the first three figures, and the balance of the number will comprise a self-assigned number of three figures to be used by the station throughout the contest.

When a complete exchange of serial numbers has been effected both operators claim two points. (Four points for 10 metre qso.)

If an operator sends a serial number successfully, but fails to get a serial reply, only one point is claimed by each operator. (Two points for 10 metre.)

test will run over four week-ends of January, 1937, commencing:—

Saturday, 2nd January, at 0400 GMT, through Sunday, 3rd January, to 2200 GMT, and thereafter over the three remaining week-ends at the same time, ending at 2200 GMT, 24th January, 1937.

"CQ JB."

It has been established that African amateurs achieve results by calling "CQ," and this procedure is to be recommended during the contest. Less qrm is likely to result in this manner, and all stations will call "CQ JB." DX stations are advised to call individual African stations in preference to sending out random CQ's.

The main competition each operator has to consider comes from
(Continued on Page 17.)

Gain of Beam Antennas

Some Comparisons on 28 MC.

By E. H. Cox, VK2GU (ex VK2EP,
VK3BD).

Experimental results which have been obtained with two beam antennas at present in use at VK2GU may be of some assistance to those who contemplate a change over from an all-purposes radiator to one cut for a particular band, and operating in a particular direction. The writer has been impressed recently with the evidence which is accumulating to show how widely directive antennae are being employed in the United States of America on the 28 MC band, but up to date, there has been a lack of evidence that Australian amateurs are employing this aid to high-frequency communication to the same extent.

The writer has reached the conclusion, after experiments extending over 18 months, that the ideal antennae system for the 28 MC band for the eastern States would be one consisting of two independent beam antennas, not backed by reflectors, and arranged so that one points on to North America, giving a back lobe which would embrace South Africa, and the second pointed on to Europe, giving a back lobe which would take in South America. Two such antennas have now been installed. They are arranged so that either can be used at will, and so that the change over, and consequential re-tuning of transmission lines, takes less than 30 seconds. Since they are set approximately to right angles to each other, and since, as a result, the line of the lobe of maximum radiation, or responsiveness of one corresponds with the "blind" area of the other, it is possible very easily to compare their effectiveness in communication in various directions.

The following tabulation summarises the results obtained with the two antennas on a number of typical stations when the antennas were used for receiving only:—

	North-West Beam.	North-East Beam.
JNJ (Harmonic)	R9	R3
JNB (Harmonic)	R8	Inaudible
W1TW	R2	R8
W2TP	R2	R7
W3AIR	Inaudible	R7
W4FT	Inaudible	R8
W5BEE	R1	R8
W6ITH	R4	*R9
W7FQK	R1	R9
W8ANO	Inaudible	R8
W9TTB	R2	R9
VS6AH	R9	Inaudible
G2PL	R8	Inaudible
G5GQ	R7	Inaudible
G6LK	R9	R2
OH3NP	R7	Inaudible
F8CT	R8	Inaudible
J2IS	R8	R4
J2LU	R7	R2
J3FK	R8	R3
Zs1H	Inaudible	R7

*This station so loud on the NE beam that the input to preselector is always detuned about 250 KC to prevent overloading and unintelligibility of signals. This accounts for the relatively strong signal received on the north-west antenna.

The signal strengths given are not intended to represent either average or peak values in any case. In general, it may be of interest to note that the values given for the American signals are about average values, while those given for the European stations are peak values, which in most cases are about two points above average level. When each of the comparisons tabulated was made, the observation was taken at a time of loud signals on the correct beam, so that there would be some chance of a response on the other one.

Although fewer observations have been made on the relative signal strength from the two antennas when used one after the other to transmit to any given point, the results indicate that the gain in signal level due to the directivity of the antennas for transmitting pur-

poses is strictly comparable with the gain in received signal level. The beam bearing on North America was first installed, and while it alone was in use, it was almost impossible either to hear or to be heard in Europe. K6MVV reports the signals from the European beam R3 when those from the American beam are R9. W2TP reports a level of R8 on the American beam corresponding with one of R3 on the European beam. When the signals from the American beam were being received by him at R7-R9 W6MDN was unable to hear those on the European beam.

The employment of the two-beam antennas simultaneously has provided interesting proof that in all normal circumstances signals adhere very closely to the great circle path round the earth. About midnight at the time of writing (mid-November) it is possible to communicate with both European and East Coast American stations, the signals to the latter almost certainly going round "the long way," and appearing before the fade-out of the Europeans. However, even at this time, American signals cannot in any circumstances be heard on the European antenna, but they appear in considerable numbers when a change over is made to the American antenna. In this case, it appears that the route of communication to America is south-westerly about half way down the Antarctic Ocean, then up over South and West Africa, and the North Atlantic into the United States.

LACQUERING ALUMINIUM PANELS.

VK3DP.

When building new aluminium chassis and panels spray them with lacquer instead of the usual caustic baths, etc. First clean the aluminium with fine emery cloth or steel wool to remove the greasy surface. Next obtain one tin clear lacquer, one tin of thinners, some aluminium bronze powder, and a hand pump fly spray. Mix the lacquer and thinners to a 50-50 mixture and add about two teaspoonsful of bronze. Mix well, and pour into the container of the pump. Hold

the spray about a foot away from the panels and commence pumping. Cover the job evenly, and then allow it to dry. Spray again until covered to your satisfaction. When using this aluminium lacquer it is best to do it out in the sun, so it will dry quickly, and not go streaky. Colour lacquers can be used in the same manner. They only require thinning in the same way. It is also ideal for coating tank coils, etc. The lacquer will cover any materials—steel, brass, copper, etc. When the job is finished clean the spray with a little of the thinners ready for the next job.

WAR IN PORTUGAL.

Amateurs Off the Air.

"Segundo determinaco superior, foi expressamente proibido o funcionamento das emissoras de amator!"

The Portugese Government in these words has forbidden amateur operation in that country during the present state of civil war and disorder.

The journal of the R.E.P., "QSL," in the last issue received by VK3RX, contained the information that all CT stations were off the air as far as transmission was concerned, but they were allowed and encouraged to listen to CT1RP, the official station at Lisbon, which has been taken over by the Director of Electric Services and which broadcasts news to families who are otherwise isolated. A special telephone line has been installed and the station is on telephony. Much of the news is for the benefit of their Spanish colleagues who are apparently in the dark as to the progress of the fighting.

The R.E.P. appeals to its members not to go on the air without authority, as it would prejudice their future existence and destroy the official confidence that they at present enjoy.

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Federal Headquarters Notes

FISK TROPHY 1936

We have pleasure in announcing that Queensland Division are the winners of the Fish Trophy for 1936 and are now entitled to hold the cup permanently. The contest enjoyed quite a fair amount of success this year, but, as is usual with contests, the number of logs submitted, does not nearly equal the number of stations which participated in the contest. As this contest has withdrawn the cup from circulation, in all probability a similar contest will be arranged for 1937.

Scores :—

States :—1st Queensland	3530
2nd Tasmania	2962
3rd N.S.W.	3515
4th South Australia	2330
5th Victoria	2235
6th W. Australia	2160

Individual Scores:—

6SA	1705
4BB	1260
2VN	1230
5KL	1175
4AP	1160
4AW	1110
7KV	1100
3ZC	1075
7JB	1024
7AB	838
2NY	800
3RJ	780
5LD	595
5RH	560
5FM	500
2YC	485
5JT	475
6MN	455
2PF	415
2IG	405
3HG	380
3YR	325
5LL	325
5JH	285
2HZ	275
3MK	275
5HR	205
3WQ	205
4NO	196
2TJ	180
2EL	168
3AT	155
3XB	102
5RD	87
2DA	22

FEDERAL CONVENTION.

The following tentative arrangements have been made for the 1937 Federal Convention.

Sat. 30th January. 2-5 p.m. Business Session.

8 p.m. Annual Dinner of the New South Wales Division and welcome to delegates and visitors, at the Dugowan Cafe, Martin Place.

Sunday, 31st January. Will be devoted to business sessions, and if business finished in time arrangements will be made for visiting shacks etc.

Monday, 1st Feb.—Visits have been arranged to Bunnerong Power House and the Radio centre at Pennant Hills followed by a tour of Sydney.

Any intending visitors to Sydney should get in touch with the Secretary who will endeavour to arrange accomodation.

Federal and Victorian QSL Bureau

R. E. Jones, VK3RJ, Qsl Manager.

VK5MZ, Jack Lawrence, passed through Melbourne en route to VK5 from Sydney. During his brief stay 3FB and 3WP did the honours.

Tommy Elliott, VK3ZW, is to leave for India for a six months' sojourn early in 1937. Have a good "snake bite" antidote on hand here for the asking.

Fred 3FB and Cliff 3WP are holidaying at Portsea during the forthcoming holidays, and expect to announce themselves through portable rigs.

The long-dreaded batch of German listener cards from the recent D.J.D.C. contest have arrived. Friend Jimmy Corbin, 2YC, had the "pleasant" task of primary distribution. He took courage in the fact that the total weight was only 7 lbs.!!

Jim. Hillhouse, VK4ZO, of Collinsville, Nth. Qld., who is enjoying good health again after a severe accident months ago, will be in Brisbane during Christmas, and may be found at 4EL's. Jim., who will be on Xtal on most bands shortly, reports wonderful DX heard on 28 MC.

Arthur Shields, VK3GP, had the misfortune to blow a tranny during the recent VKZL test when doing very well.

Amateur Radio

Bill Murphy, a well-known VK3 listener, who is now servicing for Messrs. Pike Brothers, of Townsville, still hears good DX when heat and static permit. Keep your elbow supple, Bill, and regard this as an acknowledgment of your letters.

To 2QH-2ABG.—Many thanks for appreciative remarks on 2YC's and my own services, and for the good wishes.

Best wishes to all hams for the Xmas season, and 100 per cent returns for the forthcoming year.

Cards are on hand at this Bureau, 23 Lansdale-st, Box Hill, for the following VK3's:—

AD, AP, AT, AX, BG, BL, BK, BS, CA, CD, CW, DD, DJ, DQ, DR, DT, DZ, EL, EQ, ET, EZ, FJ, FL, FM, FR, FZ, GA, GB, GD, GH, GJ, GO, GX, HB, HD, HE, HN, HX, IL, JA, JE, JZ, KA, KD, KG, KO, KY, LG, LP, LQ, LT, MX, NG, NU, OI, OJ, OL, OU, PG, QE, QZ, RQ, RW, RV, RZ, SA, SB, ST, TB, TE, TO, UD, UJ, UO, VK, WC, WM, WX, WZ, XA, XG, XJ, XR, XV, ZB, ZG, ZJ, ZU, ZW, Ballarat, Geelong, Sebiere.

(Continued from page 13)

operators in his immediate division or country in the case of South Africans using the same prefix, e.g., ZS1 stations will be in direct competition with stations using that prefix, and ZU6 stations will compete with each other for the highest score in their "prefix" group. In this manner there will be 18 certificates awarded to amateurs in the Union of South Africa, with the possibility that the

certificate for the highest "South African" score will be awarded to a Union station.

In all other localities amateurs will be in direct competition with those amateurs using the same prefix. There will be nine districts certificates for U.S.A. plus a national "highest score" certificate. Competition is likely to be keener as a result of this decision, particularly in the countries which have been subdivided into their respective districts.

World's Highest Scorer.

"The Rand Daily Mail" trophy will be presented to the DX operator (outside the South African zone) who, in the opinion of the judges, returns the highest score.

The Competition Committee of the S.A.R.R.L. will be responsible for the adjudication, and the decision of the President of the S.A.R.R.L. will be accepted as final in case of dispute.

Entries.

No prior entry need be made, but each competitor must submit a log at the conclusion of the contest, to reach Johannesburg not later than 31st March, 1937. The results of the contest will be published in "Q.T.C." as soon thereafter as possible.

Entries should be addressed to

THE SOUTH AFRICAN RADIO
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R.A.A.F. Wireless Reserve Notes

Officer Commanding: Flying Officer R. H. Cunningham, 397 High Street, Glen Iris, S.E.6, Victoria (VK3ML).

District Commanders—

Second District, N.S.W.—A. G. Henry, Clareville Avenue, Sandriugham (VK2ZK).
(VK6MN).

Seventh District, Tasmania—R. Cannon, Goldie Street, Wynyard (VK7RC).

Third District, Victoria—Pilot Officer V. E. Marshall, 3 Myrtle Avenue, Kew (VK3UK).

Fourth District, Queensland—A. E. Walz, Sandgate Road, Nundah (VK4AW).

Fifth District, South Australia—F. M. Gray, 52 Ormond Grove, Toorak Gardens (VK5SU).

Sixth District, West Australia—S. J. Madden, Dundas Road, Maylands

NOTES, 3rd DISTRICT. (3ZI-VK3UK).

Victoria is in the throes of another alteration to the existing state of things. Our old method of allocating sections, in which each section contained at least one Metropolitan station has outlived its usefulness and so we have reallocated all stations so that each section becomes geographically small. Under the old scheme with members becoming inactive for a period, and for other reasons, over a stretch of four years a section could contain men from the length and breadth of Victoria. It was alright when conditions were good but became hopeless on days when skip was bad. Now we have all metropolitan stations in the same sections and all the country men in sections that surround a large town. Thus any specialised training will be extremely simple, as a member will only have to go to the town around which his section is based. Like all changes, this one was a hard one to make as most members had held their calls since they were first given to us. Again, a move such as this has a danger in that the section spirit that has been built up over a period of years was broken by the move. However with such a wonderfully enthusiastic bunch of fellows as we have here, the danger is a small one and a new section spirit will be developing almost before the sections have settled down.

The recent "WAR" that was run here as an exercise has now been fully completed with all results

checked. The station winner was 3D6 and the section winner VMC4. 3D6 deserves hearty congratulations not only for winning the station Trophy but also for the section win, which was due in no small measure to the work and initiative of this station. Our congratulations to the other members of VMC4 for their great work. The result was very close as only a few points separated VMC4, VMC3 and VMC1. The results were arrived at from the Accuracy, Initiative, Procedure, and Message handling ability shown. All stations had to submit their Log Book and entries were cross checked for correctness of entry. The standard of the Logs was particularly high, especially as the test necessitated many pages of entries.

The present Training course that has been running in VMC6 has now finished and the members will take their places in the permanent sections. We start off immediately with the first schedule of the New Year with another full Training section and also have members awaiting the course after that. Ivan Hodder deserves all the credit of the wonderful success of the Training section. For the benefit of those who do not know the workings of this section, it might be of interest to say that it has two purposes. One, to train new members in Procedure so that they can enter the main sections after completing the course, fully trained. Two, to provide regular members with a refresher course on their return to activity after having been away from schedules for a period. Thus the standard of

efficiency of the main sections is not affected by alterations to personnel.

VK3MK who was one of our newer members has been transferred to N.S.W. and can assure VMB they are gaining a very enthusiastic member. We are very sorry to lose Lindsay, just when he had settled down to Reserve work so well.

All members and Hams generally will be very sorry to hear that 3D4 T. Powers had his transmitter and quite a lot of gear destroyed by fire during Saturday 12th. We sincerely hope that insurance will cover, at any rate, the majority of his loss and that he will be back on the air soon.

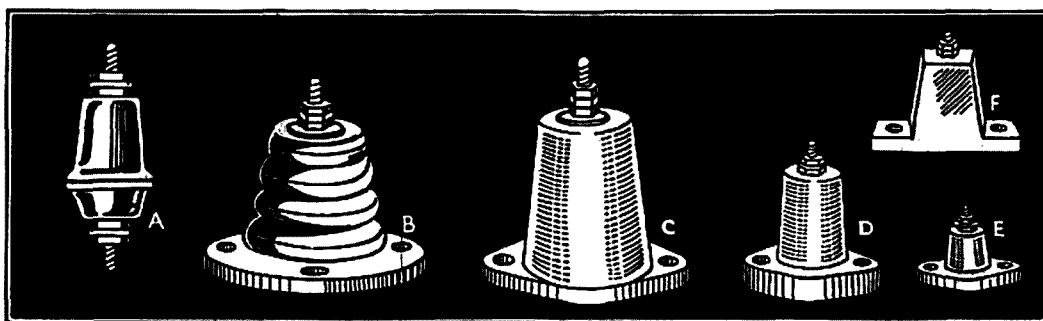
TECHNICAL ARTICLE CONTEST.

The two announcements made in the August issue of Amateur Radio in regard to the enterprising co-operation of the New South Wales Division in offering a prize of one

guinea for the most outstanding technical article up to October 31st, 1936, brought forth a number of contributions of high grade. Difficulty was experienced in making the award owing to the varying nature of the subjects and consequently the point of the "greatest appeal" had to be considered.

It is our pleasure to announce that Peter Adams, VK2JX, was awarded the prize by the judges who offer their heartiest congratulations to 2JX for submitting an article that was based on sound experimental knowledge, and illustrated pains taking care in the investigation of the subject and in its presentation for the contest.

It is hoped that the contributions of technical articles now that this contest is over will continue throughout the year in order that we may have an unlimited supply for forthcoming issues.



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(Type E not available)

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A Simple Keying Monitor

By R. Anderson VK3WY

After having spent a fair amount of time listening around the bands during the last couple of months one is forced to the conclusion that if a large number of hams could hear their own fists they would be in for quite a shock. In other words many of the fists to be heard on our bands at present are decidedly poor. One of the main troubles, I think, is that a ham very seldom indeed does hear his own fist. Fortunately this can be rectified by using a simple keying monitor.

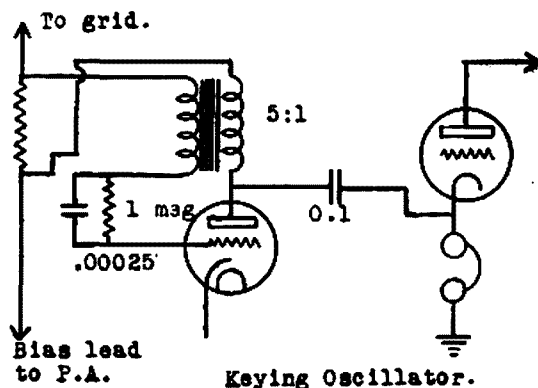
The desirable features for a keying monitor seemed to be:—

1. ability to follow keying perfectly.
2. should not materially interfere with the receiver.
3. should not require switching of phones from keying monitor to receiver and vice versa.
4. should not require any tuning when once installed.
5. should give a pleasant note.
6. should be simple in design and preferably cheap in cost.

These requirements are met in the simple keying monitor to be described.

The monitor actually consists of a simple audio oscillator for which the plate voltage is obtained by utilizing the voltage drop across a resistor inserted in series with the grid bias lead to the P.A. of the transmitter. When the transmitter is keyed grid current will flow through the resistor in the bias lead causing a voltage drop and hence oscillation in the audio oscillator but when no grid current is flowing the oscillator will be silent. The voltage necessary on the plate of the audio oscillator tube is very small and usually from 2 to 4 volts is sufficient. Knowing the value of grid current in the P.A. the value of the resistor required to give this voltage drop may be easily calculated. A good idea is to use one of the old 250 ohm potentiometers as a variable resistance and to vary the resistance until best results are obtained from the oscillator.

The values of the components shown in the circuit give a pleasing 1000 cycle note. The note may be varied to suit individual tastes, however, by changing the value of the grid condenser and resistance. It is interesting to note that should at any time the note from the transmitter become rough it can be immediately detected via the keying monitor as it will be found that the note from the monitor will roughen up as well.



To obviate the necessity for switching the phones from the receiver to the keying monitor, the phones were taken out of the plate circuit of the audio tube in the receiver and were put between the cathode and ground. The phones in this position give exactly similar results for the receiver and this position also has the advantage that there is no high voltage on the phones.

The plate circuit of the audio oscillator was then connected to the cathode side of the phones through a 0.1 mfd. condenser as shown in the circuit. The phones will then operate either from the keying monitor or the receiver without any change.

Regarding the cost of the keying monitor, this should be very low as practically every junk box will have all or nearly all the gear required. The small trouble of construction will be amply repaid by the results obtained.

Divisional Notes

N.S.W. Division

W. G. Ryan, Secretary, VK2TI, Box 1734JJ, G.P.O., Sydney.

COUNTRY ZONE OFFICERS.

ZONE 1 (Far West)—

J. Perooz, VK2PE, Hope Street, Bourke.

ZONE 2 (North-West)—

H. Hutton, VK2HV, Byron Street, Inverell.

ZONE 3 (North Coast)—

R. J. Berry, VK2NY, 54 Bacon Street, Carlton.

ZONE 4 (Hunter River and Coalfields)—

S. Grimmett, VK2ZW, 161 Tudor Street, Hamilton.

ZONE 5 (South Coast and South West)

N.S.W. STANDARD FREQUENCY TRANSMISSION MARKER STATION.

Early in the new year the N.S.W. Division of the Wireless Institute of Australia will commence a weekly series of Marker Station Transmissions on Amateur Bands from the 80mx band down.

The actual Frequencies on which these transmissions will be are as follows: 3500 KC, 4000 KC, 7000 KC, 14,000, 28,000 KC. These marker station transmissions will thus show the ends of each of the more important Amateur Bands.

The transmission will be under the W.I.A.'s call VK2WI; the actual times and length of each transmission have not yet been finally arranged.

The necessary apparatus is at present being manufactured but as soon as available schedules of transmission will be published in these columns.

This scheme should be of great benefit to all Amateurs and will clear up many more points as to just where these bands do end.

W.I.A. SPORTS DAY, WYONG, N.S.W.

Just on 50 YL's, YF's and OM's gathered at Wyong on December 6th in glorious weather for a W.I.A. Sports Day.

For the last couple of years there have been gatherings at Wyong for Field Days, and on this occasion it was decided to venture from this field and spend the Sunday in sport instead; 7 car loads travelled the 70 odd miles from Sydney and everybody thoroughly enjoyed themselves.

A pick of Golf, Tennis or Cricket satisfied most.

On arrival luncheon was served at the golf club, and then the parties separated for their various sports. The cricket match created the most interest and 2TI gave all his side a bowl with the result that leg and off theory was turned on with alternate balls —2OD seemed the star bat —While Bill 2IV gave exhibitions of a good chopper —12 attacked the local turf with golf clubs leaving it like Ermac's 500T with perforations —2HO caused all the excitement at tennis when his shorts cracked like that 40MX rock and 500 volts— Did the gang want another?—Yes, the next Sunday.

Many thanks to Mr. and Mrs. 2OC and 2TX of Wyong

ULTRA HIGH FREQUENCY SECTION.

VK2VN

During the past month, although nothing of particular mention has been done either on 5 or 10 mx, activities are increasing day by day and we are all hoping that there will be a "Great 5MX Panic" similar to that of May 5th, over in the States.

The lasting meeting, held on December 3rd, proved to be one of the best to date. This was due to the efforts of Mr. Don Knock, 2NO, in bringing along his new 5 mx superhet which possesses many new and novel ideas. Two stages of IF amplification are used with the intermediates link-coupled operating on

Amateur Radio

5000 KC. This has the effect of giving a fairly broad channel which is most desirable in copying s.e. signals. The sensitivity and gain are remarkable, changing instantaneously from a two tube super regen, an R2 signal becomes R8. Don, at the moment, is putting out one of the best signals in this division on 5 mx. The antennas used are a Reinartz Rotary beam and a bi-directional Bruce. Unfortunately during a recent storm there was a loud crash and that was the end of a beautiful lattice-lathe girder supporting a beam.

2LZ is still using the 800's and can be heard with excellent fone and cw every week end. An 8 tube super is used for receiving but Con has trouble in copying unsteady signals.

2HL at Chatswood is on quite frequently using a novel type of triangular antenna representing half a diamond. This antenna is bi-directional and is giving excellent results by being rotated.

With regard to 5 mx schedules, 2OD and 2DL will be on with either fone or ICW on December 25, 26 and 27 between 8 and 9 p.m. so all you interstate gang here's another chance.

2WN has not been heard of late but 2WJ's fone is just as good as ever and seems to be getting out well—he was recently heard at Blackheath about 60 miles up in the mountains at R8 to 9.

2HO and 2ZH at Roseville will both be on five very shortly but unfortunately Roy's gra is down in a hollow, — however, one never can tell.

The idea of quadrupling with 53's seems to be an excellent means of doing away with one stage and offers an easy way for crystal control on 5, although some of the gang have had difficulty in getting it going with any success.

2MQ on quite frequently with PP 46's as final.

Manly Radio Club, 2MR, still doing good work.

With regard to 10 mx, conditions of late have been poor, an occasional European being audible about 8 p.m. but the only consistent station is G6DH. The Yanks are still coming through at excellent strength on fone during the mornings, W6ITH, W9TTB and K6MVV being R9 at the peak hours.

Round about midday the J's come through the best of these being J2IN, J2IS, J2LU and J3FJ, while from 6 p.m. onwards VS6AH can be heard, and ZSIH has been heard at this time.

A newcomer to 10 is 2VA who is putting out a nice cc signal.

2UD had the misfortune to blow up one of his 46's in the final but now gets as much output from a single 45!

2VN experimenting with a beam for Europe, but so far have not heard any since putting it up.— Works fb for J and VS6 through.

2ZC at Newcastle is doing some good work with PP800's while 2GU ex 2EP, —3BD, spends a great deal of time working the Yanks.

At the moment, there are very few CW stations operating on 10 in the States, W6QG and W6JJU being the only consistent ones.

Old W6VQ of 10 mx fame, who has not been heard for the best part of a year, was contacted on 14 mc, and he asks VK's to listen for his 2KW fone on 10 early in the New Year. (Guess we won't have to listen hard.)

Sunday night is the time for 2JX —by the way Pete, how did you enjoy that 3 way qso the other night? A 35T doubling is used in the final and for fone Telefunken modulation is working excellently.

The next meeting is to be held on January 7 and some of the gang are bringing along their 5 mx transmitters, so it should be a great success.

In concluding may we extend our heartiest congrats to VK3 and VK5 in their endeavour to make a 2 way 5 mx contact. Best of luck for the next Field Day and we are waiting to hear from you re schedules.

NEWCASTLE CLUB NOTES.

(Affil. with W.I.A.)

By 2RF

All the local Dx hounds are keeping quiet, chiefly due to poor condx on 20 mx.

ZW, using 6P6's in the two exciter stages has good 10 mx output from the second, using regeneration on the oscillator.

RF is busy getting bugs out of his BCL band rig. The quality ZC gets from his Reiss mike has to be heard to be believed. SO has made

Amateur Radio

a comeback on 40 and 20 mx. His wife being on holidays may have something to do with it. UF QRT while new shack going up. ZC with 272 points won the Electronic Communications Cup from BZ, 263 and MT, 253. Jim's win was particularly meritorious in view of the almost incessant power QRM at his location.

A visitor to the club in 21C gave an interesting talk on "Xtals."

A new code and theory class has been formed and meets each Thursday night at 8 p.m.

NORTH SHORE ZONE.

2AE does a little fone on 20 and 10 occasionally. 2ACJ has a ten in the final. 2ACL has changed his call to 2GV and now has a 60 foot mast in the back yard. 2BJ has built rather a handy little 5 mx transmitter. 2FV has now finished his Super but still requires to switch it on. 2HA had RF rot in the shack floor which gave way beneath him and he finished up keying underneath. 2HG is still going on 40 mx and visited the Radio Exhibition at the Chatswood Town Hall recently. 2HL was heard on 5 mx at Blackheath at R8. 2JV is back on the air again after several years and is interested in 5 mx. 2LA is thinking of going QRO and is doing a bit of importing of high voltage tuning condensers. 2LD has now changed his QRA and is in amongst the boys around Chatswood, near 2JU, 2HG, etc. 2LZ worked about 50 countries in the recent VK/ZL Contest and scored something like 110,000 while 2HZ thought best to retire to Wollongong as the contest was getting too hot for him. 2YC made 20,000 odd with 27 countries. 2NN is now in the Wireless Reserve and pounds the brass some 25 W.P.M. 2OG is consistent on 20 mx fone at nights. 2QF had his 53 exciter unit rebuilt and it looks the berries. 2VE has built a Super. 2VL has a brand new rig with 53 exciter, 2A5 buffer and a ten. 2VP will also be on again soon with multi-crystals. 2YA wants to rebuild but has not enough time at present.

THE NORTH SUBURBAN RADIO CLUB, CHATSWOOD (Affiliated with the W.I.A.)

At a recent Radio and Electrical Exhibition held at the Chatswood Town Hall on 4th, 5th and 6th,

November, this Club figured among the exhibitors and held a stand which was of much attraction to the many people who attended the show. Visiting Hams were especially attracted, some being 2ACF, 2LD, 2HG. Exhibits of the Associate Members were in great number and some very fine apparatus was shown. Trophy Cups were contested for among the Associate Members and Mr. R. Wells won with a power supply, Mr. R. Taylor with a TRF receiver and Mr. R. Mitchell with a 5 mx receiver. The Ham members also had apparatus on exhibit but not for contest. 2HL's transmitter took up plenty of room but gave the stand a fine appearance.

Three members of the Lakemba Radio Club visited this Club on Tuesday, 17th November, and gave a most interesting lecture on vacuum tubes helped immensely with motion pictures and musical recordings from 2DL's Public Address System. The lecture was greatly appreciated by all present and it is hoped that this inter-club system of exchanging lectures will continue. It is certainly the goods.

ZONE 5 NOTES. VK2IG.

Condx on all bands fair and plenty W's on 40 and 10. Hard to raise on 20's now. New ones heard here include MX, AC4, SP, SU, SV, OE, VP2, HK, HC.

QE been adj., etc., rig es qrl much better. Qso'd VS8AA, es also nw has worked W.A.C. Fb on.

EU rather qrl work, but on fone on forty. Soon be heard on 20's.

OJ been on holidays. Not on much, as also qrl.

NG still gg strong, also trimmed rig. up, and much better all round. Qso'd HK, VP2, CR9 es SU for new countries.

New ham soon, as Angus Keir received good news from R.I. Good luck ob es; we all welcome u to the ranks.

LAKEMBA RADIO CLUB—VK2LR. (Affiliated with the W.I.A.) By 2DL.

The meeting of the above club on Tuesday 11th December, proved to be the most interesting one for

several years. The secretary, Mr. Geo. Brown delivered a lecture on "Direction Finding by Radio in Aircraft." The subject itself was a most interesting one, but it happened that several members at first disagreed with many of Mr. Brown's statements. The lecture developed into a very heated debate, and at times several members endeavoured to have a say at once. The lecturer issued a challenge for them to disprove his statements, which could be proved on expert authority. It became necessary for the President to close the meeting at 10.30 p.m., but in order to satisfy everybody Mr. Brown offered to answer any question or prove any statement the next meeting. Our Secretary must be complimented on his ability to deliver lectures on subjects of interest, as the success of such lectures is proved by the interest displayed and the questions asked. In any case Lakemba Club is noted for its talks and discussions which meet with general approval.

The 5 metre group report that there is nothing startling happening on 5 metres, although many members are using improved receivers and transmitters. However, hopes are high for the coming summer. From time to time, signals, which may have been interstate, have been heard, but identification appears to be very hard. It has been suggested that 5 metre stations give their call signs more frequently, as very often signals are audible for about half a minute, when they entirely disappear.

Victorian Division

SHORT WAVE GROUP NOTES.

By O. E. Davies.

November 25th was a poorly attended meeting of the Group. As it was not possible to arrange a visit in time for December 9th it was agreed that an ordinary meeting be held, and that the night be devoted to general discussion on Short Wave Work.

The meeting abovementioned was duly held on December 9th, and a fairly representative gathering resulted. A motion was placed on the books that January 27th be a Con-

vened Meeting. Business: Minutes, Correspondence, General. SPECIAL BUSINESS: A Discussion on the Future Destiny of the Group. Make a note of the date and make it your business to attend.

At the time of writing these notes the A.C. is being connected to the Institute rooms. (The wiring has been in quite a while). With this added convenience at our disposal we should now be able to carry out experiments of a definite progressive character. In fact, we now have all the facilities for planning out the ultimate Ham communication receiver.

The Instrument Library is in good trim and so also is the Technical Library. With these at your disposal, Gang, you are in the position to design gear which will be the envy of all who see it.

The day when one built a receiver merely for the purpose of listening to Overseas stations is past, insofar as this group is concerned; now the objective of the Group should be trained on the development of selective, sensitive and reliable receivers for amateur communications. Knowing the intense interest that once prevailed within the Group, the writer feels that all of these things can be accomplished. It only remains with the individual members to stir up their dormant interest and see just what can be done.

If in reading these notes the writer has awakened the latent enthusiasm of any one member, then all will not have been in vain.

Here's hoping to a record attendance at our next meeting on January 13th. Should you be unable to attend, don't forget the Extraordinary meeting of the Group on January 27th.

VICTORIAN KEY SECTION NOTES. VK3DP.

The December meeting was not very well attended, even though it was a demonstration night. Council representative spoke for some time on Gadsden Trophy. Several members suggested that a definite set of rules be made to prove who is the winner of this trophy. This suggestion was favoured by most, but it has been referred to council to be finalised. This trophy is open to all Victorian sections. He also reports

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that many "blue cards" have been handed around to fellows with punk QRI's. This is not so good, because it is up to this section to show them how to have good sigs. After the business was through the gear was brought to light. Jones exciters, tritet osc, super gainers were laying all over the room. 3BQ, 3YP & 3ML were all hot and bothered, trying to shuck more RF out of their units than the other fellow. 3ML exciter was a picture. Nicest piece of work seen for a long time. Funny thing about all this gear, it all worked.

The U.H.F. section staged another 56 MC field day on December 6th.

Conditions have not been very good lately. The 7 and 14 MC seem very dead. Dx sigs. on 14 MC sneak through after midnight, but should be showing through earlier very soon now. Well, chaps, I have been very busy lately, so there is not much to report on the doings of the members. However, it has been heard on good authority that

3UK has got a S.S. super perking .

3BQ—still building new rig.

3OC-3DP—Building super gainers.

3MR—Building big S.S. super (Coburg special). Bet he gets a headache.

3YO—Busy playing golf.

3CX—Allan has been heard lately with rather ruff note.

Well, gang, I hope to have better notes next issue. I'm not a mind reader, so what about letting me know what you are doing. Meanwhile, happy days, and all the best for the New Year.

28MC SECTION.

(By A. Pritchard, VK3CP).

Conditions were excellent until approximately the end of November, when a decided falling off was noticed with W and European sigs.—J stns. were not affected; G6DH, G2PL and G6ZU were fairly consistent. Before the change these extra Europeans were contacted by VK'S: F8EO PAoUN, G6VX, G2IO, G2PN, G6ZU, G6RB, G5FV, SM5VW, OH20B, ON4NC - G6QB, G6CJ, G2AO, F8SN, F8MG, OZ2UM, OKIAP, EI8B, PAOZK. Sunday, 22nd November, was ideal for 5 conts., and W7MB was hrd qso PY2HH at 1.30 p.m. local. LU9AX and LU6AX wkd J2iS, who asked them to look for us, but ng

both ends. Probably we should qso LU about 6-7 a.m., their time for it was this time some months back, that VK3YP hrd LUiEP and was hrd by him but no contact; also LU9AX hrd 3YP at 10 a.m. local. VK2GU has had wonderful results with his European beam, and has over 200 contacts. The VK3's are testing beams and 3XP has 2 half waves in phase with 2 reflectors. Reg. is getting very good results. 3YP has tried 2 half waves in phase also, but OH7ND gave Ingram r5 on the beam and r7 on big ant. 3BQ is using 2 half waves also for Europe, but Max gets better reports from Africa on the big ant., contacting ZT6Y, ZT2Q, ZE5U, XE1JJ, ZU6P, ZS1H. The ant. hr at 3CP has 2 full waves, 66ft. 8in. long, fed on end by $\frac{1}{4}$ wve sect. 8ft. 4in. long, fed by Johnson Q system, i.e., $\frac{1}{2}$ in. copper tubes, spaced 1-3/16in. between centres and $\frac{1}{4}$ wve long, all in series with 475 ohm line (12 SWG spaced 3in.), ant. is pointing E & W and is FB for all contin. There are several new stations, VK2AE has 830B doub. final and is getting fb results — VK5KL has 4 stages with '46 doub. final—VK3IW has just started on 10 and uses 2a5 Electron coup osc and paralleled 6P6 final; he is expecting an RK20 for final but is putting in Xtal first. VK3NB is firing up with 3 stages and 2a5 doub. final. The W stns have gone fone lately, the loudest being W6HX, W6CUU, W6GRX, W8ANO, who are usually r 8/9—K6MVV is also r 8 fone and K6NEK not so good. The ZL stns are good about 5.30 p.m. and ZLICD puts over phone—cw stns ZL1GX, ZL2BG, ZL4BQ are easy contacts.

WESTERN DISTRICT NOTES.

3HG.

Two further new licences in Hamilton are 3TW and 3TN, making a total in the town of five. 3DZ at Portland is another in this district. He has not been heard as yet.

3CK some time ago had quite a simple accident that left him completely blind for several days. However, he has made a complete recovery and has been active on 80 and 40.

3GQ on 20 metre phone and recently contacted an SU to obtain his W.A.C. phone. Mrs 3GQ is also heard at the microphone quite regularly.

3GC is temporarily inactive while rebuilding for better and bigger ideas!

3XU, of Castlemaine, has a great signal on 40, while 3RG was worked on this band recently. His activities for the past few years have been on the 240 phone band.

3OW is more interested in the commercial side of radio at present, but sticks to Reserve schedules very well.

3HG still blowing a tube or two, the last being the modulator, so no phone until a 6L6 is installed. Mainly due to pressure of work, QSO's are few and far between.

3PG is talking of selling out, which is indeed bad news. He has probably been VK's most consistent QRP DX man.

3OS is heard on 80 metre phnoe, at irregular intervals. His phone is quite good and gets out well.

3XG's phone is very patchy, sometimes good, sometimes very bad.

MALLEE & NORTHERN DISTRICT.

Old Man QRN has been making himself heard during the past month on 80 and 40 metres, but 20 metres has been proving worth while, as it is free of interference, except QRM and car ignition.

3CE has not been very active, as this is his busy season, harvesting the golden grain, but nevertheless found time to work a Yank.

3WN also not very active as Jack is very busy.

3KR is very active. Worked a new country on 20 metres VQ8AH located in the Solomons or some such place. Ken has now got his 6L6's operating and is driving them with a 6C5 resistance coupled to another 6C5, which is resistance-coupled to the 6L6's.

3TL is seriously thinking of 6L6's as his present modulating equipment is not sufficient to modulate watts on 20 metres.

3OR is very active as far as travelling goes. Visited Wagga, particularly 2YW.

3EP—Ted spends most of his time on 80 and 40 metres, but is considering a new rig so as he will be able to go to higher frequencies.

3FF is rather inactive owing to power difficulties. Jock is trying to get hold of an alternator.

3AI is heard occasionally on 40 metres.

3BG is on 40 metres. Roth is erecting a half wave 80 metre Zepp, and is going to build a new rig.

3IH, of Charlton, has not got on the air yet but will before long.

3EQ paid a flying visit to a few shacks in the north when he was passing through from Adelaide to Sydney.

3ZK is now an all band expert. His first DX contact on 20 metres was an XU, but hasn't worried 14 mc much yet.

3HX is having a lot of fun with a pair of 6P6's and hasn't yet got 'em working properly. Tom has an idea one tube is pushing while the other does all the pulling (mils).

South Australian Division

By VK5KL

The transmitters' section this year held a reunion meeting on November 25th. The object was to have present some of the oldest hams and members of the Institute in South Australia and so bring back memories or remake acquaintances of those old days of spark. And what a great success it was! Several chappies spoke, including Mr. M. Brown (5MB), Mr. Cook (5AC), 5AO and 5BY.

With items by a mouth organ band, ventriloquist, and recitation by Mr. Kennedy, and supper to follow, the evening soon passed happily away. December 6th saw the W.I.A. field day at Clare and the biggest gathering of hams and friends were present that has been seen in VK5. A new interest in the Institute's activities is the formation of an Ultra-High Frequency Section. This will meet with great success and help to swell the ranks of the meetings.

At present visiting hams in Adelaide are Miss Ruth Longley (VK6YL), from Perth, who is here with the VK6 Women's Cricket Team. I had the pleasure of meeting this charming young lady, also to see her play. VK3OP is, I believe, going to settle down here in VK5; he was present at the Reunion meeting but wasn't impressed with Adelaide.

A Happy New Year and heaps of DX and success from VK5 to our Sister States and brother Hams.

Tasmanian Division

By VK7JB

Arrangements for a field day were finalised at the December meeting of this Division, held on the 1st inst. The site chosen will be within a five-mile radius of Huonville, and prizes are to be awarded for the first three cars in. Five metre apparatus will also be carried for inter-car communication.

W.A.C. Cards from 7CK were received for approval by Council.

Several of the VKs are anxious to qso 7YL, but not so fast with QSL's. You will be sure of a QSL card from Joy, boys, so what sa?

The Council wish to extend Xmas greetings and compliments of the season to all members.

7YL—Trying hard to contact G, on 20 metres. Skywire blew down in recent gales. Has acquired a flash-looking Reiss mike.

7CL—Still rebuilding fone rig.

7KV—Busy with duties of assistant secretary. Has asked Father Xmas

for an Amperex H.F.200.

7CT—Burning up 20 metre band in race for W.A.C.

7JH—Added a few more new countries, including G, K5, CM, and K6.

7PA—Has velocity mike going satisfactorily and sounds very nice. Also acquired brand new car, and rumour has it is soon to take unto himself a wife.

7DH—Still active on 40 mx CW, and is anxiously awaiting end of 6 months' probationary period to try fone.

7AH—Sorry to relate that Pop is not in best of health of late. Hope to report favourably next month.

7AR—Has transmitter working o.k. on c.w., and is now installing fone with 2A3's as Heising modulators.

7MM—Making a comeback, I believe.

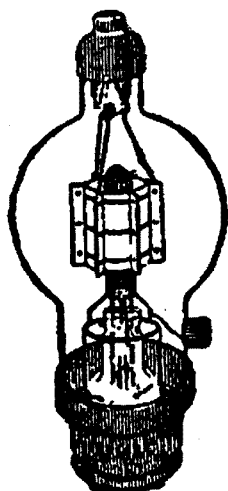
7SR—Held up owing to aerial blowing down in gale. Shattered the masts also.

7JB—Busy despatching QSL's from contest.

7AB—Very quiet since contest, believe 5 mx occupies your time now,

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Doug? Scored 29,000 points in contest.

7LZ—Convinced that the old det and one is no good in contests. Bad enough on a super, Col.

7RC—In V.I.H. at present, doing an exam for Broadcast Operator's certificate. Hope to hear more of you now, om.

Hamads

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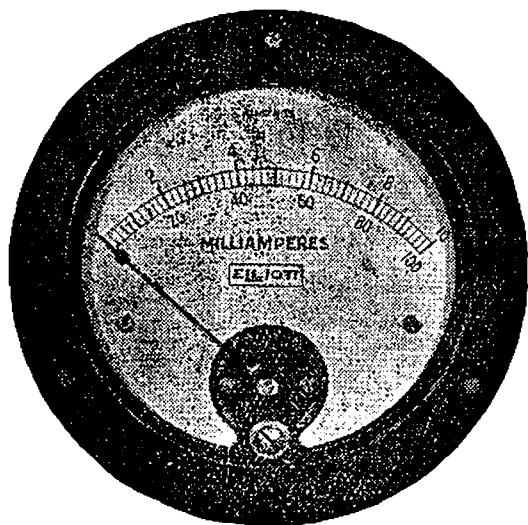
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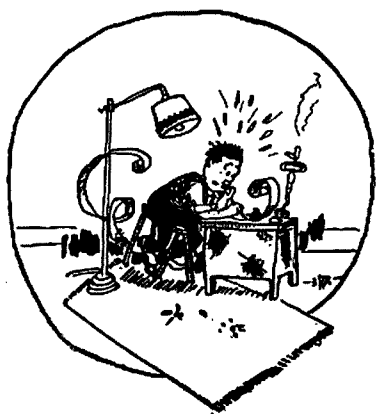
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EDITORIAL



"Why Not An Experimenters' Section?"

Many reams have been written over the last few years, in all the Ham Magazines of the world on the lack of experimental sense in the Amateur of to-day. (The proof of this contention is obvious to anyone who cares to make the observation. "Amateur Radio" has more than once appealed for a closer regard to a definite line of experiment rather than haphazard QSO's, and collections of "wallpaper." Ham Radio is so easy to break into now, DX is such easy prey with modern equipment that there SEEM no more fields left to conquer to the new Ham, after a few months' activity. In many cases he drifts out of the game entirely at that period, while the Old-timer continues with undiminished enthusiasm, year after year. The reason? Well — his outlook is different; he is not content to merely build a transmitter from an article in QST or Amateur Radio, he wants to know why it works and if there is anything new in the design; to him it is not "the ultimate" in transmitters, but merely a stepping-off place for still greater efficiency and still more radical design (equally important 99 times out of 100 he specialises in some branch of the game). Of course a number of the newer Hams can range themselves with the best of the Old-timers, but it is not of them that we are concerned; it is the majority, the rank and file of Amateurs to-day. Can THEY be stimulated to develop an Experimental Sense?

Our previous Editorial on the subject brought forward the suggestion from a number of sources, that a purely Experimental Section of the Institute be formed. The chances of increasing one's knowledge of Radio would be considerably easier, one of the biggest aims of our Institute would be fulfilled, and with such a section in existence, the chances

of encouraging newer Hams to delve deeper into the mysteries of their Hobby would be immeasurably greater. Imagine the close Inter-state liason on technical matters if all States started such a section in their Division. Imagine the co-ordinated effort that would be possible in tackling any problem. Finally imagine the elevation of the Institute in the eyes of the "people who know" and the consolidation of our position in respect to our Amateur frequencies. Perhaps we are dreaming a little — who knows! But it is grand to dream of something which, if realised in fact, would improve the present state of things out of all knowledge.

No definite lead as to the detailed lines along which such a section could function, are necessary, not only is it outside the scope of this page, but is also a matter purely for the Divisions concerned. However, lectures of a technical nature by men well versed in the subject to be discussed would, of course, be one obvious line. The section could perhaps cater for men who desired instruction in higher Maths and, the important matter mentioned above, "The co-ordinated effort that would be possible," current problems would stand a thousand times greater chance of getting results than the present haphazard methods used. In Victoria the Ultra High Frequency Section, newly formed, provides the first step by genuinely experimentally-minded members to bond themselves together. But this is a specialised section. Our aim discussed in this Editorial is a general experimental section, with, if necessary, sub-sections for specialised work.

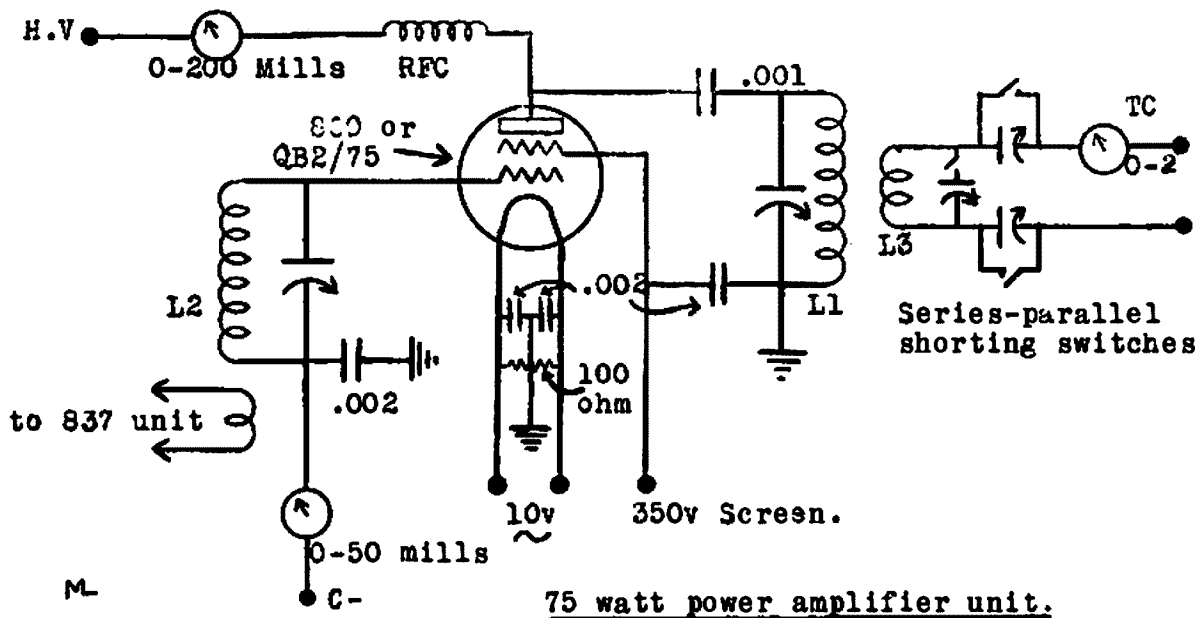
A section such as this should receive solid support from all Hams who have an interest in their Hobby for its own sake. Whilst providing entertainment, that aspect of our Hobby should be incidental, but not the sum total of our ambition. Let your Council or "Amateur Radio" have your personal views, and if the necessary support is forthcoming the formation of such a section would be simple and its potential possibilities beyond conjecture.

Adding a P.A. to the Exciter Unit

By VK3ML, Tech. Editor.

It will be remembered that the previous issue described in detail a universal exciter and buffer amplifier for 80-40-20-10 metre operation. Since then many improvements have been made to the former unit and for 80, 40 and 20 metre outputs it is ideal. However, the 10 metre section seemed to be temperamental in operation. Too much depended upon the line voltage and, as the fluctuation around Malvern is from 180 to 230 volts and more the harmonic output of the exciter varied accordingly. Consequently, as the unit was on the "nose" all the time, it did not provide a reliable supply of R.F. Then again, there is no shadow of doubt

on 28mc gave the writer no small amount of practical experience in exciter building. Without exaggeration, the output was nearly trebled when the simple act of installing decent series feed R.F. chokes was brought about. It must be added that every form of standard regeneration in the doublers was tried with varying successes. In the end, it was decided that, as there was ample output on all the lower three bands to drive the 837, it would be far better to install a separate 28mc exciter stage which could be switched into the grid of the 837 at will.



that coil switches take power, especially on 28mc. The loss at this frequency because of necessarily long leads is high. It does not follow, of course, that such a unit with plug in coils and well laid out components will not give sufficient output on 28mc from a 3.5mc crystal.

The improvements made to the exciter generally were derived from the plate circuits. Originally no R.F. chokes were used in the HT leads to each of the plates. Being series fed, it was not considered necessary that they be used. However, after many hours of trying to squeeze that extra output

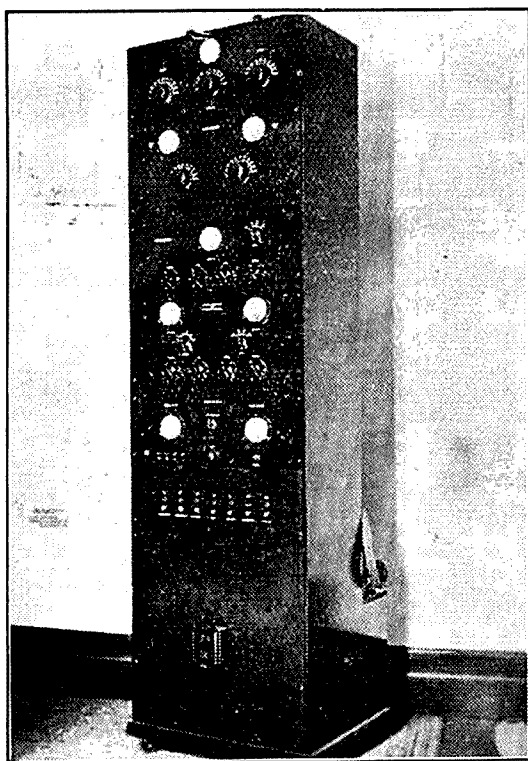
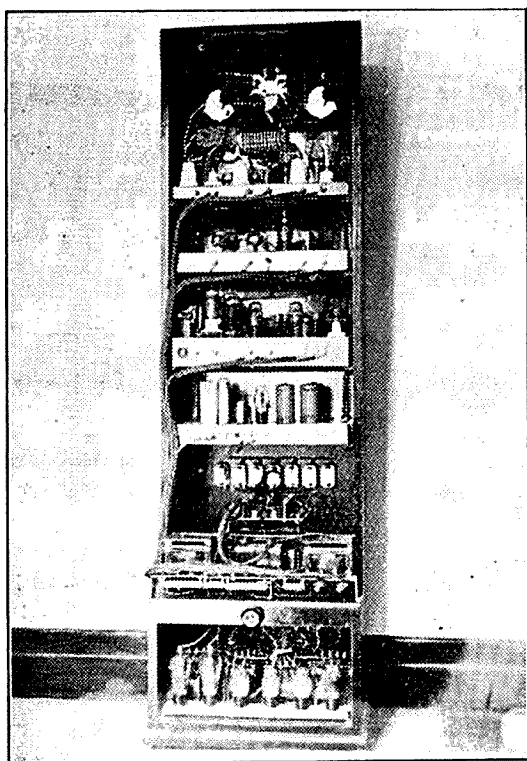
The idea demanded a little thought as to the type of circuit and tube would best fill the bill. The 6L6 tri-tet method had to be ruled out on account of the very high plate current that is necessary to run this harmonic oscillator. It was decided to try an 837 with suppressor grid regeneration in a tri-tet hook-up. Results obtained on the breadboard were highly satisfactory and the 28mc output from the 7mc crystal was ample to tickle the grid of the 837 buffer stage. The same circuit was tried using an 802 in place of the 837, and in comparison the 802 was a very poor performer. The special exciter was installed on the

original 53-53 chassis by simply altering the layout slightly to allow for the extra gear. Regeneration in the suppressor grid was obtained by means of a one-turn coil in series with the suppressor lead and coupled to the plate coil magnetically. The cold end was connected to earth in the usual way.

The power amplifier stage employs the screen grid QB2/75 tube, and is link-coupled to the buffer stage. Both the plate and grid coils are plug-in types and are far more serviceable than if switching had been used on account of the high-voltage-switch problem. To keep the P.A. stage in line

open" switches. This system also permits the use of the one aerial coil for all bands, when used in conjunction with a turns shorting arrangement for the 10 turn coil.

The power supplies are conventional and each has its own swinging choke in the input. This was decided upon for the sake of better regulation and increased life of the mercury vapour rectifiers. The filter condensers in the 550 and 350 volt units are of the electrolytic type and two of each are connected in series to avoid overloading. In order that the voltage across each will be evenly distributed a 100,000



with the coil-switched-driver stages a sufficiently large tank condenser was used so that any two neighbouring bands could be covered just by swinging the grid and plate condensers around. Fig. shows the general layout, the final amplifier, whilst Fig. is the circuit diagram. Care in design and construction is necessary in order to keep the high voltage where it belongs and all insulating values should be rated conservatively.

In order that the series-parallel change over in the aerial tuning coil may be simplified, three condensers were installed one .0005 mfd across the coil, and two .0001 mfd, in series with the feed line. Toggle switches are convenient to use as "short or

ohm resistor is shunted across each condenser. The use of two 83's in the 550 volt supply makes the use of 100 ohm resistors in the plate leads. This preserves the balance in the plate circuits and allows instant operation of the tubes on switching on the power. Although not shown in the diagram, pea lamp fuses are used in the centre tap of all the supplies. They are a cheap and highly efficient precaution against power supply blow-ups.

In regard to the arrangement of the transmitter in general, one can get a fairly good idea from the photos. The panels from the top are, firstly, the aerial tuning unit, next, the P.A. stage, followed by the buffer amplifier and the C.O. and FD panel, underneath

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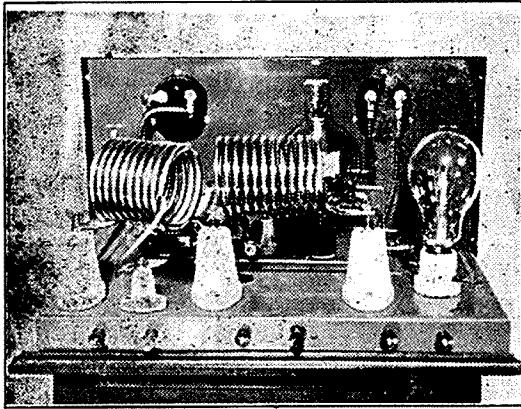
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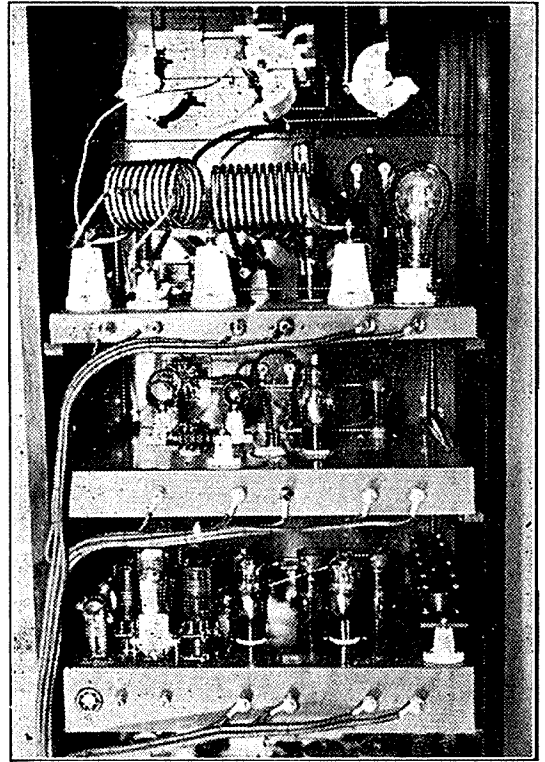
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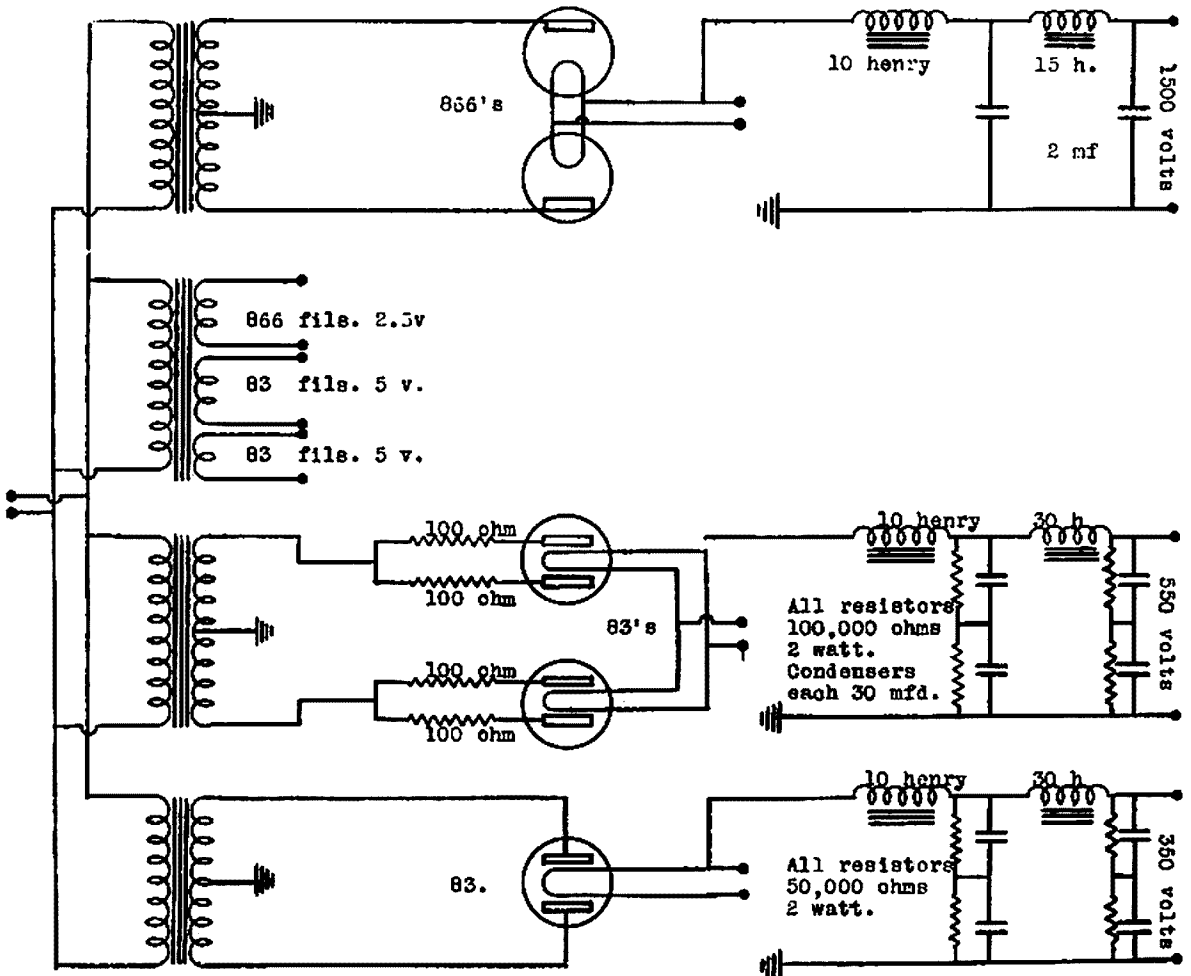


which is the modulator unit. The bottom panel constitutes the power supply switches and master mains control switch. Made of wood throughout, the frame stands 72 in. high with sides 12 in. across. The shelves are supported by wooden runners that take the weight off the frame and permit easy sliding of the chassis in and out for adjustment. All power cables are of the ignition cable type and run from the row of "Eddystone" midget stand off insulators at the rear of the shelf direct to the respective terminals on the chassis. In this way, there is



no chance of wrongly connecting a power wire up on returning any unit once it has been taken out.

(Continued on cover 3.)

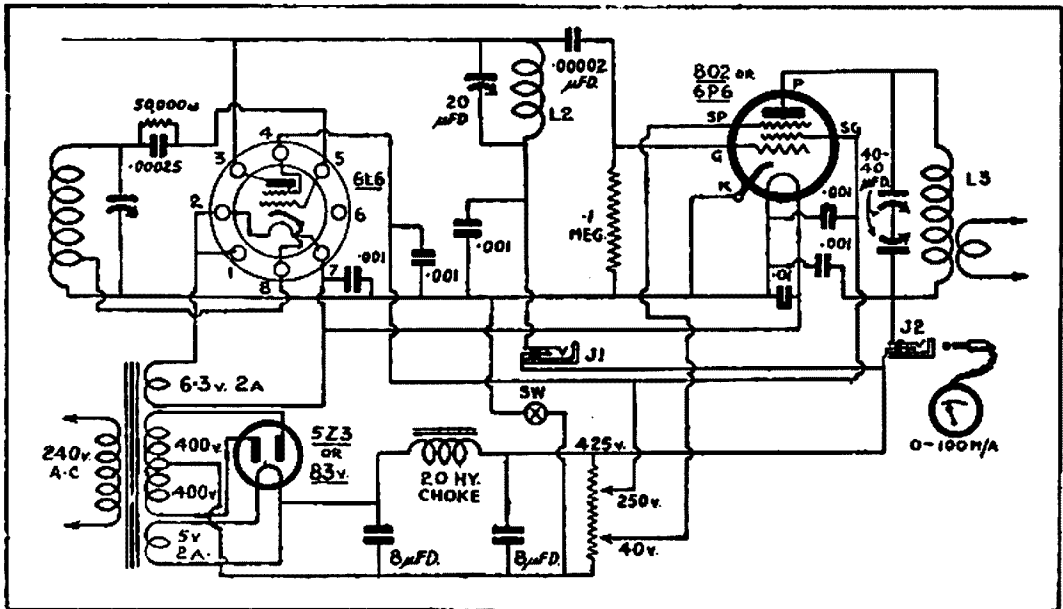


A Modern 5-metre Exciter-Transmitter

By D. B. Knock, VK2NO
(By courtesy of The "Bulletin")

Investigation of ultra-shorts is at a transitory stage, the chief aim being to design apparatus that will radiate stable signals. If a transmitter radiates an unsteady signal, even with high power, it is of little value for distant working compared with a much lower-powered steady signal. Amateurs with ideas beyond dabbling are "cleaning house" and putting the modulated oscillator and super-"squegger" on the scrapheap.

"drifts," the addition of an amplifier is of little value. Electron-coupled oscillators offer a solution, but normally there is little to be obtained in the way of R.F. output at 56mc. Then came the 6L6. This new metal valve, introduced by R.C.A. (and A.W.A. valve Co. in Australia), is much in the limelight as an exceptionally powerful audio type for little grid input. Naturally its R.F. capabilities are not overlooked in ama-



C.W. Morse transmission on ultra-shorts are favored.

Since obtaining relatively good results over a radius of 100 miles or so around Sydney, the writer has To-day, crystal control or M.O.P.A. and receivers capable of receiving worked toward the development of better apparatus. The first consideration was to design a transmitter using crystal stabilisation. This is not difficult theoretically, but quite formidable practically. To gain a reasonable 56mc. output from a crystal exciter calls for a succession of stages. This does not suit the average amateur pocket. The ordinary M.O.P.A. arrangement has not been popular either, because stability is not compatible with an over-loaded oscillator. If the oscillator

teur radio. Experiments were undertaken by the writer to test its possibilities as an ultra-high-frequency generator, and the results were particularly satisfying.

The diagram shows the initial stages of a new five-metre transmitter now in use at VK2NO. In itself it comprises a useful low-powered modern transmitter. The 6L6 is used as an e.c. oscillator, with grid at 10 metres and plate at five metres. The R.F. output at five with only 350 volts on the plate is astonishing. It is about equal to the output obtainable with a 53 at 14mc., with a 7mc. crystal. The 6L6 thus provides a fine solution to the five-metre problem. Another 6L6 can be used as buffer, but it must be neutralised. Two aluminium plates

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$\frac{1}{2}$ -in. square about $\frac{1}{4}$ -in. apart will do the trick. In order to avoid the neutralisation business, other valves were considered. The 802 offered itself. Actually the valve used by the writer is the Raytheon RK25, similar in characteristics and behavior to the 802. A buffer stage was made up as in the diagram, capacity-coupled, and the output from this at 56mc. is enough to satisfy the most rabid "ham."

Those who are partial to the excellent 6P6-type valve should note that one of these could be used here, and, better still, two in push-pull. It will be obvious that here is the nucleus of an excellent five-metre 'phone rig. Suppressor modulation can be used nicely. The complete station now in use by the writer follows this exciter by two Eimac 35Ts in push pull, with 800 volts on the plates. The output is very considerable, yet, listening to the keyed signal on a monitor it is T8 and rock-steady. R.C.A. 801's would give excellent results in place of the 3STs, which are not now obtainable under the tariff rulings. Note that in the 802 stage the rotors of the split stator 40-40mmfd. plate tuning condensers are not grounded. The condensers are used as a series-gap tuner.

Coil data are:—

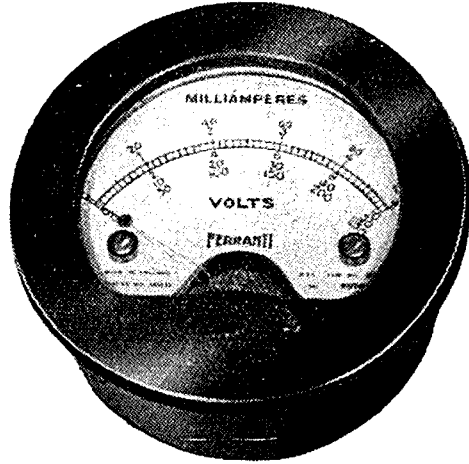
- L1.—Eight turns of 12-gauge copper wire, 1-in. inside diameter, spaced slightly (tap at $1\frac{1}{2}$ turns from ground).
- L2.—Three turns of 12-gauge copper wire, $\frac{3}{4}$ -in. inside diameter, spaced 3-16th inch between turns.
- L3.—Five turns of 12-gauge copper wire, $\frac{3}{4}$ -in. inside diameter, spaced 3-8th in. between turns.

All other values are indicated. The high-power final in the writer's case is link-coupled to this exciter by a single turn loop at each end. The only difficult adjustment in the whole outfit is the cathode tap on the 6L6 oscillator coil. This will need to be juggled about until the oscillator works smoothly over the condenser range at around 60ma. At 350 volts on the plate of the 6L6 the oscillator screen should not exceed 250 volts.

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Does the Meter Move?

By Gil Miles, VK3KQ.

Some time ago the following question was asked at a key section meeting by one of the members:—

“Assuming that a simple field strength meter had been set up and adjusted so that the steady unmodulated carrier was indicated at a convenient value on the meter, should the meter move under modulation?”

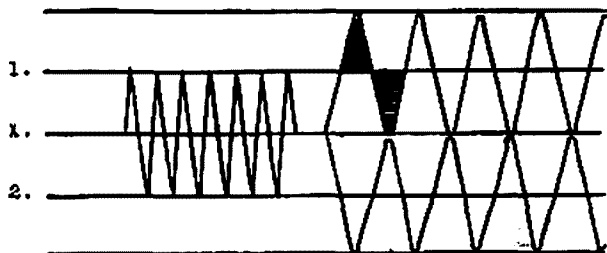
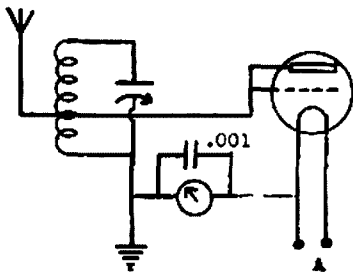


Fig 2.

Judging by the various answers I have heard from local as well as interstate hams. I think that the correct explanation might help to clear things. First of all, the answer to that question is—

NO! The meter should not move!

Fig. 1 is a diagram of a simple field strength meter and, if used properly, its linearity is all that can be desired.

Looking at the left-hand part of Fig. 2, with line X, Y representing the base line, the area between lines 1 and 2 represents the steady carrier. The meter will, of course, read the **AVERAGE VALUE** of this carrier.

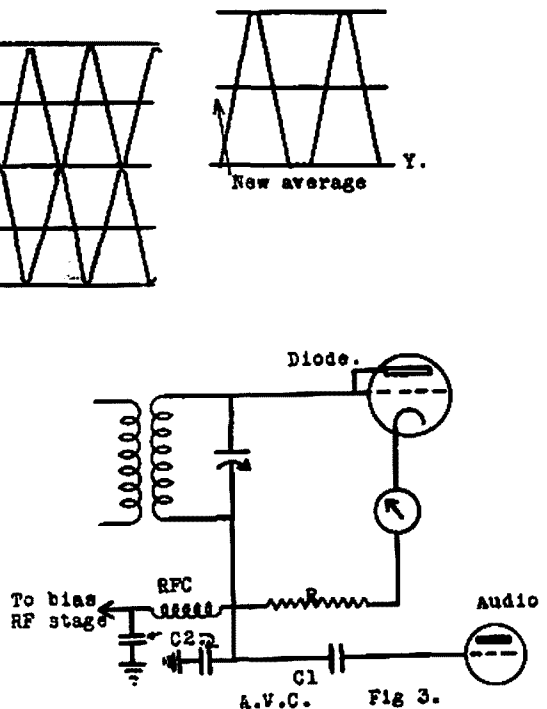
The centre part, Fig. 2, shows the carrier modulated 100%, and notice now that a peak has been added above and a valley has been created below line 1 (shaded area); therefore, the nett result is the same; i.e., the value of line 1 has not altered so the meter remains steady.

Should the modulation become unsymmetrical (extreme right Fig. 2), usually, but not always caused by over modulation, the average value will increase and the meter will show an increase.

To qualify the foregoing remarks and also add further proof, look at Fig. 3, which shows a simple AVC system as employed on receivers.

“R” is the diode load resistor across which the necessary voltage is developed.

The rectified audio component is passed via C1 to the audio amplifier, and the bias voltage for the R.F. stages, after passing the R.F. filter composed of RFC and C2, is quite steady, not-



withstanding the fact that it is a modulated carrier that has been tuned in on the receiver in the first place.

Now, it is easy to see why a controlled carrier transmitter and a receiver fitted with AVC will not agree.

Many transmitters are both frequency and amplitude modulated, and, in this case, if the tuning of the field strength meter is sharp, the meter will undoubtedly move under modulation. For this reason it is best to flatten the tuning of the meter slightly.

What is Your Power Output?

By "Steamboat Bill."

For those who are unable to obtain access to a voltmeter, there is nothing left but a rough estimate of the power input to the oscillator or the R.F. amplifier, and while this is not so serious for telegraphy, it is of the utmost importance for phone work. Unless we know what is happening in our power pack, we can have no idea of the operating conditions of our transmitter, so that it is impossible to adjust the outfit for a good signal by any other means than hit-and-miss methods, which do not, in general, leave the operator any wiser. How can we design our power pack so that the output voltage is anything like the voltage we expect to obtain? Here are the main items responsible for the output voltage value:—

1. Design of the power transformer.
2. Type of filter used.
3. Type of rectifier used.
4. D.C. resistance of chokes.
5. Load resistance.
6. Power transformer.

Starting at the winding, we should design the winding so that it covers as much of the core as possible. The wire used should be of such gauge that energy is not lost in heating the winding, i.e., the transformer should run cool.

The core should be carefully cut, so that when laminations are built up all joints are as good a fit as possible, so that there are no air gaps in its construction.

Each lamination, in addition to being adequately coated, should be free from rags round its edge. The secondary winding should be similar in design to the primary, i.e., with as large wire as possible, and over as much core as possible, and, in addition, as close as insulation will allow to the primary winding. The reason for all this is, that if the primary has high resistance energy is used up in producing heat, and this does no useful work in producing output volts, and so must be allowed for or

eliminated to such an extent that we can neglect it.

If the winding covers the whole core, as in a ring transformer, very little energy is lost in stray fields, which do no good, and quite a lot of harm.

A badly built core permits magnetic leakage, and so these losses must be eliminated or allowed for.

There is also energy used up in producing currents in the core material itself, and these become very formidable unless the laminations are thin and properly insulated from one another. All these losses detract from the energy we are going to obtain from the secondary winding.

The secondary also must have low resistance, as has the primary, or it will use up quite a large voltage to drive the current through the winding, so there would be still a further drop in output voltage. Note that we are discussing the transformer working under load. These are major points of loss, and there are many others, but I think we have gone far enough, and if we take all the precautions above, then allow 10% drop in the output voltage that would be indicated by the turns ratio, we will be very near the actual conditions.

2. Where an ordinary filter is used, consisting of two condensers and choke, and where the first condenser is 2 MFD or over, we are going to drop such voltage in the choke as is necessary to overcome its resistance in addition to the A.C. component, which we shall neglect for the purpose of this article. If the resistance of the choke is high, this voltage drop is also very high; for instance, a 1000-ohm choke passing 30 M.A. drops 30 volts, so the more iron in the choke, and the less and bigger the gauge of wire the better.

3. So much for our transformer. As for the rectifier, if the new mercury vapor tubes are used, we can deduct a further 15 volts from the output, and then forget about it. Another way of helping is to have large condensers and a low value choke, but as this combination is liable to become dangerous for our rectifier it is not recommended for the beginner.

For filters using an input choke, we have a different state of affairs, for all current in the first choke is pulsating, and so cannot be allowed for by the d.c. resistance; it is mainly a matter of inductance, and as this is to be a very elementary paper, we will not enter into a discussion of its effect. However, if it is a value specified by the handbook, it will be quite in order!

If your load resistance is low, we are draining a large current through the transformer windings, rectifiers and chokes, and so the greater the current the lower the value of their resistance should be, to prevent a drop in voltage across them.

Actually, we have arrived at the requirements of good regulation, by trying to get an idea of the conditions governing the amount of voltage that is being lost in the parts of our pack.

FUNNY, BUT TRUE!

Prof. A. Goetz, California Institute of Technology, immersing a 30-foot coil of wire in liquid helium found that the wire lost all traces of electrical resistance and became superconducting while so immersed. 3RX has been thinking how he can fit a tank of it in his transmitter to keep his plate coil efficiency high!

K. G. Jansky, of the Bell Telephone Labs., has discovered a new kind of cosmic ray static that apparently originates in the Milky Way. Please note that if you are erecting a vertical antenna, that you shouldn't point it that way.

In 1620 the Pilgrim Fathers landed on Plymouth Rock. During the last VK-ZL test many hams wished, when W stations answered a "CQ Europe," that the Plymouth Rock had landed on the Pilgrim Fathers!

Station Description

VK2QE

Owned and operated by A. A. Fritz, Albury, has been in operation since July, 1934, low power S.E. rigs were used for over 12 months, working all VK's and ZL with under 5 watts to 45 osc. MOPA also used on low power. DX was impossible, so in October, 1935, a PP45 osc. was built, and in ten months with 25 watts input using full wave Zepp, 38 countries were worked. Alterations were again started a few weeks ago and a new rig is in course of construction which, when finished, will consist of 59 EC. 210 buffer 801 final. As a standby 2QE at present using PP45 link coupled to 210 PA and has during last few weeks added 6 new countries, including LU9 for WAC, making total 44 countries. The QRM problem is bad here in Albury, as out of the 6 hams 4 are active and 3 on 20 MX, where this station is permanently situated. Have one station only 100 yards away, and he also a Dx fiend like myself, and rx here is only a 6C6 det., 37 audio.

BERU CONTESTS, 1937.

VK3EG has entry forms for the BERU contests which extend from February 6th—1900 GMT to February 7th 1900 GMT, and between same times February 13th to 14th. This covers the period of the Senior Contest. The Junior Contest extends from 2100 GMT, February 20th, to same time February 21st, and will be continued on February 27th 2100 GMT to same time on 28th. Power limits are for the Senior Contest, 250 watts; for the Junior Contest 25 watts.

All Entry Forms must be posted within 14 days of the close of the contests. All entrants who are not members of the R.S.G.B. must certify in the declaration on the entry form that they were fully paid-up members of their local BERU Affiliated Society at the time of the contests.

Your local representative has entry forms, or write to VK3EG, Box 41, Tallangatta, Vic.

Correspondence

To the Editor, "Amateur Radio."

VK4DO, "Hobfren."
202 Campbell Street, Rockhampton,

16th October, 1936.

Dear Sir,—On the 9th October, with an input of 40 watts to a 210 in the final amplifier, I worked all continents in 50 minutes operating in six successive QSOs. Immediately following this, and in another 22 minutes, I worked three continents (W6NEP in North America, OH8NK in Finland and VS1AH in Asia).

I am endeavouring to check up per "QST" and American "Radio" to see if this is anywhere near a record, and would like to know if any member in Australia has bettered this time.

On 27th September last WAC was made in 105 minutes, six continents being worked on CW and two on fone in this time. All contacts were made on the 14mc. band.

Yours faithfully,
Harold L. Hobler, VK4DO.

We are indebted to VK2MM and "Break-In" for the following information:—

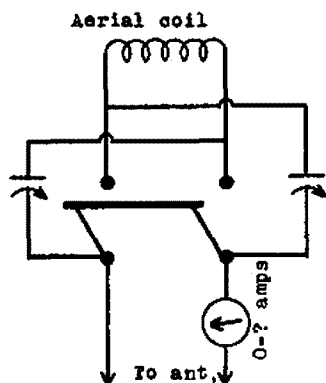
Jimmy Parsons, of Ormond, New Zealand, has been paralyzed for 15 years, and has been totally blind for 10 years. Through the co-operation of several ZL hams, the N.Z.A. R.T. and the Post and Telegraph Department, a special 'Phone licence has been issued to Jimmy with the call sign ZL2JO.

The transmitter is a three stage, crystal controlled rig, and operates on 3,700 KC. Telefunken modulation is used and the input is 20 watts. The complete transmitter is housed in a sealed cabinet, the only external controls being the power and microphone switches, which are operated by his parents.

With a full knowledge of the circumstances we feel sure that VK amateurs will do their best to avoid causing QRM on 3,700 KC., and will join with "Amateur Radio" in wishing ZL2JO the best of luck with his station.

Series-Parallel Switch for the Zepp.

The bugbear of changing the condensers tuning Zepp feeders over from series to parallel can be overcome by



the simple use of a D.P.S.T. knife switch as shown in the circuit. When the switch is in the open position the

condensers are in series with the feeders, whilst, with the switch closed, the parallel connection is arrived at. It will be noticed that in the latter position both condensers are shunted across the coil. This may be advantageous when the scheme is used to tune to 80 metres as well.

CONTRIBUTIONS WANTED.

Features of any description are required by the magazine committee for forthcoming issues. Technical articles, station descriptions, experimenters section notes, or stories (no Audrey's or knock-knocks by request), should be sent to the Secretary. Thanks, gang.

28 and 56 M.C. Notes

By E. H. Conklin, W9FM

By the date this is written, September 22, conditions on ten metres have staged a complete recovery to the point where all continents have been coming through in the U.S.A. One of our most faithful reporters, J. J. Michaels, of W3FAR, mentions that FA8BG and G5FV were heard on September 8 for the first European and Northern African of the season. The time was early afternoon until 2.30 p.m. Similar conditions continued up to September 17 when gobs of Europeans were heard and worked. Some of the 28mc. stations were VP2AT, K5AY, NY2AE, i1TKN, K6MVV, K4DDH, OZ3J, HB9AO, OK1AW, and numerous French, German and South American stations.

Frank South, W3AIR, around the first of September heard many VK, HJ, PY, LU, CO, VP6, HH and HI stations. i1KN was the first European, coming through on about 28,300kc. on the 10th.

VE3DU reported on the first before much of the dx was coming through, but remarked about the number of good W6 signals.

W6ITH says that he has listened all summer, hearing locals, K6MVV, and a few weak W4's. The band opened on September 12 for all eastern districts except 1, 2 and 3, but the W2XAM police transmitter on 30.1 came through. Many 'phone QSO's were made in the following week, on a rig that sounds like a ham's paradise; a pair of 500T's in the final, plate modulated, 1 k.w. input on 28mc!

W6QG sends us a very interesting daily log of west coast conditions since mid-July. Central and South Americans, several W4's and a few, W2, K6, W7 and W8 were heard up to August 1 when the first VK came in. HK3JB (former HJ3AJH) then reported poor conditions, having heard the first VK since June. Aussies and eastern

stations filled the log in August. VK3BD reported to him that the station would be closed, to be re-opened as a VK2. JNJ harmonic came through on 27.9mc. on September 13. On that day, W4AJY advised of working ZU1SE, G6DH, ZE1PJ, ZE1JU, CN8MQ (using single 800 in final). Aussies, South Americans and strong eastern W stations—calling Europeans—continued up to the 20th, but no Europeans reached W6QG. More J commercial harmonics were heard on the afternoon of the 18th, but J2CE came in on the 19th at 6.35 p.m. Pacific time (first J since April), without any commercial harmonics being audible.

A. W. Alliston, G5LA, gives us the British picture as of the end of August. W4AJY was heard on August 20, W1AVV on the 22nd, by G6DH. VK4EI came through on the 19th, VK3JB on the 22nd, indicating conditions quite similar to those in the U.S.A. SU1KG, CN8MQ, PY2CJ and i1KN are among calls heard in England. ZS1H was heard on numerous days during August, reporting renewed W contacts, pointing out that VK and South American contacts were a daily occurrence in South Africa.

An odd observation was made on September 18 by W3FAR. During the evening the band was full of W6 'phones, but not a single code station was found!

We notice that the Europeans have been coming through later than last year when they started to come through, peak strength occurring at 1 p.m., or later, Eastern time. This may happen earlier in December and January, but suggests that 28mc. is not the highest frequency that could have been used to get across the Atlantic. The British continue to listen for U.S.A. signals on straight or modulated c.w. on 56mc. so give them a call

when conditions to Europe are good on 28mc.

There have been practically no really dead ten-metre days in September. G6DH reported only two dead ones in August. Dust off your coils and come on down!

W3EIC hears many VK's on both 80 and 10 MX Bands and is very anxious that Aussies look out for him on these wave lengths.

(By A. Pritchard, VK3CP.)

Most of the local chaps were away at Christmas, and the band was naturally very dead—hi. Although condx have been bad for all contin, there is a steady improvement with many W stns. on during the mornings. Several are on CW again, as the phone carriers are weak off peak periods—K6MVV about 2.30 p.m., and J2iN best J at 5.30 p.m. W1TW and VE4JV are good at 8 a.m. W4CYU is building a Rhombic antenna for his Aust. beam. Other consistent CW Yanks are W6DUC, W6MYS, W6KFQ, W6KiP, W3PC, W3FQM. W6KiP has an extra stage on 5MX with 375 watts input in CW, also XE1AY is CC on 5MX, CW. VK'3s, BQ, YP, CP, and 2GU have CC finals on 5MX. The best phones are W8MWL and W6ERT. The first has 1KW input, but 6ERT with and 800 with 150 W input, and Class B 210 mod. is by far the best. It is several weeks since the Europeans have been heard at the usual

time, i.e., 7 p.m. They are getting through at about midnight; VK3XP qso'd YU7GL, and hrd. F8QW on 10th Jan. On the 15th Dec. 3YP wkd FM8AA from the West Indies; we hrd him for several nights afterwards, but couldn't raise him. He is on during our mornings qso W's, but inaudible this end.

The Johnson Q feed system has been in operation hr at 3CP since May last, and has been most satisfactory. At 3BQ with 3YP 2nd op. hi; the system was put thru its paces, using 11/16 in. brass tubes. In 3 BQ's large passage way the boys found the system sure fire, with calculated measurements vy close to experimental results; standing waves were completely absent from the main feeder—3BQ has the tubes connected to his European beam. At 3YP Patto is changing over his stubb feed also. VK3XP is adding the Q system to his rotary beam. An added advantage is that there is no shorting bar to worry about if using the ant. on another freq., keeping peaked effc on 10MX. The South Africans so far during their contest are very scarce. ZS1H was last hrd on 20th Dec., with a heavy echo. VK2GU is back on the air again after a holiday in Melbourne; 2GU has an Eimac 50T in the final—Class B mod by a pair of 801's. The harmonic of TDC we hr so often is the 2nd; fundamental is on 13985 KC, giving 27970 KC, a nice marker. TDC is situated in Manchuria—73.

Hams!



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R.A.A.F. Wireless Reserve Notes

Officer Commanding: Flying Officer R. H. Cunningham, 397 High Street, Glen Iris, S.E.6, Victoria (VK3ML).

District Commanders—

Second District, N.S.W.—A. G. Henry, Clarendon Avenue, Sandringham (VK2ZK).
(VK6MN).

Seventh District, Tasmania—R. Cannon, Goldie Street, Wynyard (VK7RC).

Third District, Victoria—Pilot Officer V. E. Marshall, 3 Myrtle Avenue, Kew (VK3UK).

Fourth District, Queensland—A. E. Walz, Sandgate Road, Nundah (VK4AW).

Fifth District, South Australia—F. M. Gray, 52 Ormond Grove, Toorak Gardens (VK5SU).

Sixth District, West Australia—S. J. Madden, Dundas Road, Maylands

R.A.A.F. RESERVE NOTES.

The 12 Demons that attended the recent pageant at Parafield turned on a good show from all accounts, and the radio work was particularly outstanding. Although little work was done with the aircraft, reserve members were able to keep watches and see that no one got lost.

It was most unfortunate that the Reserve was unable to co-operate in the Brisbane-Adelaide air race in December, as no one had more earnestly looked forward to providing a bit of co-operation than the members themselves. However, the whole matter had to be washed out because of the present position of Civil aviation and Federal control. If the case had been decided upon a week or two later then members would have been able to carry out the plans that had been made. It is a great pity the show was missed, more especially since every checking in point could have been catered for by a portable station.

The other disappointment that came about was the resignation of 6Z1-VK6MN as District Commander for West Aust. This had to be done, as it was explained, because of business reasons. However, 6Z1 has not left the Reserve, but is an active Section Leader, whilst his former deputy, 6A2-VK6LJ, takes over the command. Jack has had a great deal of experience in organisation, and will be a fitting successor to Syd.

It is expected that an announcement will be made next month with regard to the reorganisation of the Reserve along the lines of the Citizen Air Force, and the calling for new enrolments. In the meantime, things seem to have been quiet in all districts, pending this change. However, Federal watches will be commenced again early in February, and once more a year full of activity is expected.

3rd District Notes.

(VK3UK—3Z1.)

January is always a month in which the work of ordinary schedules is broken into. So many members are away over the Christmas-New Year period, and so many others take their holidays later in the month, that it is usually the end of the month before normal routine settles in again. There is also, through the somewhat scratchy schedules, a paucity of news.

Most of the sections have settled down already to the re-shuffle of personnel mentioned last month, and although it is early to realise fully the advantages of section members being relatively close together on days of poor conditions, already the advantages are obvious in many other ways. The scheme is particularly suitable for the metropolitan members, and their sections already reflect the value of the change over.

Requests for details of the requirements of Reserve members continue to come in as frequently as last year,

but the difficulty is that we cannot take any more members under our existing organisation. Plans are in mind for altering the strength of sections and the method of section control in order that our district strength can be increased. However, our policy always has been quality rather than quantity, and in any expansion scheme our new members will be as carefully chosen as in the past.

We have to welcome two new members this month in 3UO and 3YR. Both are keen and enthusiastic, and should pull their weight 100% in the sections to which they will ultimately be allotted after they have completed their training course.

3B1 made a rush trip to Melbourne last week-end, and we had the pleasure of seeing him for a few minutes.

3D4 is busy rebuilding his gear after his fire.

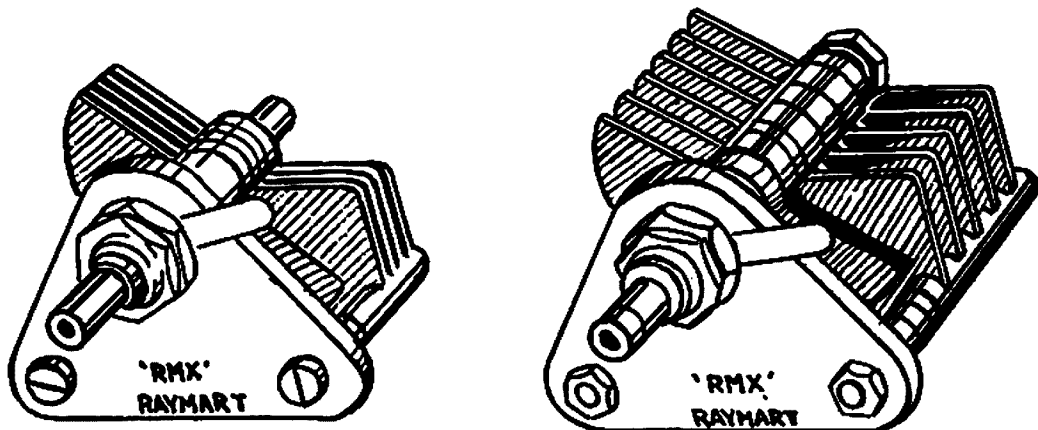
3D6 has been away on holidays with 56mc gear.

3E1 is down in Melbourne for a couple of weeks.

3E2 has taken up yachting, and seems to know as much now about luffing and tacking as he does about buffers and RK20's.

3E4 has been promised AC for over three years, but is still waiting.

3Z1 is busy preparing for the move to his new QRA (note address—75 Argyle Road, Kew, E.4). An excellent example of the value of the 3.5mc band for portable work was shown when his masts were pulled down. The antenna was draped along the fence with the feeders just off the ground, and there was no noticeable difference in signal strength throughout Victoria. What a boon, when using a portable, to know height is not a prime factor for reasonable distances! Of course, theory bears this out.



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Divisional Notes

N.S.W. Division

W. G. Ryan, Secretary, VK2TI, Box 1734JJ, G.P.O., Sydney.

COUNTRY ZONE OFFICERS.

ZONE 1 (Far West)—
J. Percoz, VK2PE, Hope Street, Bourke.

ZONE 2 (North-West)—
H. Euston, VK2HV, Byron Street, Inverell.

ZONE 3 (North Coast)—
R. J. Berry, VK2NY, 54 Bacon Street, Carlton.

ZONE 4 (Hunter River and Coalfields)—
S. Grimmett, VK2ZW, 161 Tudor Street, Hamilton.

ZONE 5 (South Coast and South West)

W.I.A. AMATEUR AND SHORT WAVE RADIO EXHIBITION, 1937.

The N.S.W. Division Council decided to repeat their successful Amateur and Short Wave Radio Exhibition in May, 1937.

The exhibition to run during the week dated from May 3rd to May 8th.

This exhibition was a tremendous boost to Amateurs in N.S.W., and did quite a lot to consolidate their position.

The show will be on similar lines to the one last year, and Amateurs are invited at this stage to prepare gear with a view to competing for the substantial prizes that will be available for competition.

The following were the committee elected to look after affairs:—President and Club Stall Representative, VK2HP H. Peterson, Working Exhibits VK2TI W. G. Ryan, Trade Exhibits and Advertising. D. B. Knock VK2NO, and J. Moyle VK2JU, Lectures. P. Adams VK2JX, Treasurer. F. M. Goyen VK2UX, and Secretary W. M. Moore, VK2HZ.

The location has not as yet been decided as the committee feel a larger hall is necessary.

All the Amateurs in N.S.W. will again be circularised when the final prize list and associated information is available.

Don't forget it, gang; we want your support, and anyway, everyone has a jolly good chance of landing a prize. See all the details in the March issue of Amateur Radio.

ANNUAL ELECTIONS.

The Annual Elections of officers for the N.S.W. Division takes place at the end of February, and members are reminded that it is their responsibility to select the best available talent.

The election in N.S.W. is of an extremely democratic nature, insofar that every member, including country ones, has a voice in the electing of the officers for the ensuing year.

From time to time one hears a moan that so and so is that, and so and so is this, but don't forget the so and so was elected by the members and it is their responsibility to see suitable men are elected. So before voting, give the matter your undivided attention so as to get the right man in for the job.

N.S.W. DIVISION, 1936.

1936 proved to be an extremely successful year for the N.S.W. Division, and the Institutes activities were at a peak. The Council wishes to thank all those that helped them, and they can only hope that the support afforded them last year will be repeated this year.

ZONE NOTES.

Condx here rottener than rotten fer DX tho locals heard on all bands at all times few Europeans on 40 but no contacts HPIAA hrd on 20.

20J keeping Sunday skeds on 40 but qrl thru the week.

QE qso'd CR9AA but hard to raise Europe. Usually weak reports from there.

EU is going to remodel, using gear from QD.

AP hrd quite a bit from new gra.

IG getting out well nowhere! Try- ing to get time to build new recvr.

To every one the chaps in this Zone extend their very best wishes for 1937, and particularly to our W.I.A. officials who have co-operated and helped us in the last year. This doesn't forget good old 2YC QSL officer N.S.W.

Ultra High Frequency Section, VK2VN.

In spite of the Christmas holidays, enthusiasm shown has been quite good during the past month, there being some twenty-five (25) stations operating in the five (5) meter band.

Our old friend 2BP in Hazelbrook has staged a comeback to 5mx and was heard qso 2NO the other night. Incidentally the distance between these two stations is about thirty (30) miles, but 2BP is up in the mountains. On January 24th some of the gang are going up to Lisarow, about fifty (50) miles from VIS northwards, where there is a mountain about 800 feet high from the top of which can be seen Sydney Harbour Bridge. A portable is to be taken using various beams, and it hoped that both Sydney and Newcastle will be contacted.

The writer has just returned from a motor trip to Brisbane where contact was made with the ultra high gang up there.

The boys there are doing good work at the Kingston Speedway, which is a 10-mile course about 2 miles across. By means of a portable, the position of the riders at a distant point is reported back to the starting post. Congrats, VIB!

2HL will shortly be holidaying with a 5mx portable at Ettalong, about 45 miles from Sydney, and on a recent test found that VIS stations could be contacted quite easily.

With regard to 28mc, conditions have shown a very bad falling off, and Europeans have been conspicuous by their absence. The Yanks are not nearly as loud as they were six (6) weeks ago; however, with ten (10) one never can tell. On the other hand the J's have been quite solid during the day.

From the last issue we note with the greatest of pleasure that an U.H.F. section has been formed in South Australia — may we wish you the very best of luck and dx.

It is suggested that 5mx stations give their call sign more frequently as quite often signals are audible for the duration of a minute or so only.

In concluding, may we extend our rather belated best wishes to all for 1937?

NORTH SHORE ZONE.

2ACJ has now changed his call to 2CB.

2BJ worked his first yank.

2LQ, who was 2DU, then 2IH, and has finally come to rest, does much rag-chewing on 5 metres with 2HL who lives down there. 2AET is a newcomer to the Ham ranks and has a qra in Wollstonecraft among the boys around. His rig is crystal controlled, and can be heard regularly on 40mx. 2FV is expecting to be on some time this year, when he has his super working. Just at present he is scratching around for a qra and has been in half a dozen in the past month. 2HA has now completed his rig which stands 6ft. high with an aluminium panel sprayed with black duco. 2HO has started to arouse interest around the Roseville Hams, working dx on 20. 2HZ's new transmitter is going to be interesting with plenty Hammarlund products scattered about. 2IP is heard on 20MX fone calling CQdx. 2ABK, whose signal sounds close at hand, works Yls in Chile. 2WW is also on again. 2LZ has 53/53 excited with series link feed, but don't know if it's using a xtal. 2NN has built a super using pair of 6L6's in the last stage with twin speakers.

2QF's newport phone was heard R8 at Cotter River, F.C.T., on Xmas holidays when 2GV, 2VL, 2VG were down there with portable gear. 2SS is working dx on 20mx. 2YA is thinking of putting in a new xmitter. 2YC had quite a party at his qra the other month with 2HZ, 4EI, 2QL, 2GS and several others.

THE NORTH SUBURBAN RADIO CLUB.

Brown Street, Chatswood—VK2ADF.

(Affiliated with W.I.A.).

The Club continues to be a source of interest to its members, who have made excellent progress in morse code and theory during the past six months.

One member, Mr. Bob. Ackland, sat for his A.O.P.C. in January, and it is almost certain that the Ham list will benefit by one more this month.

Three members, VK2NN, VK2GV and VK2VG will compete for the R.I.'s Trophy, and expect to attend the first heats on 19th January.

Three-letter calls are apparently not popular around this district, as another

member has now taken the opportunity of changing his call to a double-letter one. He was VK2ACJ and will now be known as VK2CB. The other member was VK2ACL, who changed his call to VK2GV.

The Club transmitter will shortly be operating on telephony in order to give members news of club activities. VK2NN is responsible for the modulation system, and the work and time put on the rig is greatly appreciated by his fellow members.

LAKEMBA RADIO CLUB—VK2LR.
(Affiliated with the W.I.A.)

By 2DL.

A new system, introduced by 2JT, has been adopted for the delivery of regular lectures, various members being asked to lecture on some particular subject at each meeting. Points will be awarded by the adjudicators, 2CL and 2IC, and at the end of six months a prize will be given to the member whose lecture gained the most points.

In connection with the Radio Inspector's Trophy for Code, ten members have expressed their intention of entering for the contest.

It is anticipated that the Hurlstone Park-Canterbury "5 mx network" will be in operation in the near future, when there should be at least four 5 mx stations within half-a-mile radius. Under these conditions stability in transmitters is essential, and electron coupling will be quite popular. The use of 6P6's in electron coupled push pull by 20D, and 6L6's by 2DL, obviates the necessity of muti stage c.c. rigs, at the same time affording stability which closely approaches crystal, when correctly adjusted.

2QX has once again returned to 40 mx after a long absence experimenting on 5 mx. 2XM, who was recently transferred to Cairns, has been heard on 40 under the new call of 4XM. Social News reports that our President, 2ZR, was recently presented with a junior op., also 2QP has another addition. The engagement is announced from Brisbane of our former Secretary, 2XZ, to Miss Bacon, of Taringa, Brisbane.

NEWCASTLE NOTES.

2RF.

Congrats. to new hams AES, and AEZ and AFA. Good hunting, boys. ZW has AT xtal, and his 852 perking in final. Clicked a CM on 20 mx. BZ has gr'd mod. fone, and is often heard on 20 mx after DX fone. The annual Club Xmas Party was the best yet, and many OT's, such as CS. MS, and XQ, were present. ZC still pushing out fb fone on BC band. RF looking for bugs in his Class B modn. on same band; music fb on high freq., but distorting on BC frequencies. KB has new rig and rx, so keep a lookout, boys.

Victorian Division

Council Jottings.

The January meeting was held at Law Court Chambers on the 12th. Half way through the sitting the members had the pleasure of being introduced to the four visiting American hams in the persons of Albert Fox, W6GNV, Geo. Brownell, W6KEE, Frank Torchia, W6KEK, and Paul Harper, W6KMS. These lads are the operators on the U.S. training ship, California State. The council moved that the honour of Honorary Life Membership be bestowed on the visitors. It is interesting to note that the last W ham to visit us was Fred. Schnell, W9UZ, who came out with the American fleet in 1926. The reception committee helped to show the gang over Melbourne and country, as well as arranged for shack visits.

Mr. G. T. Thompson, the council chairman, was appointed the Victorian delegate to the Federal Convention in Sydney.

Almost the entire evening was taken up, outside general business, by discussion of items on the agenda paper.

Designs were approved for the Gadsden Trophy, and Messrs. Woodward and Davies were instructed to order same to be completed.

Messrs. Ivor Morgan and Gil. Miles have been compelled, for business reasons, to leave Melbourne, and their resignations from the council were received with sincere regret.

The council wishes them the very best in their new spheres of activity.

Accounts for this month's operations approximated £40.

VICTORIAN KEY SECTION NOTES. VK3DP.

Though some members were still on holidays, the first meeting of the Key Section was well attended. Amongst those present were Miss Ruth Longley, VK6YL and 3EO, ex-2EO, who is now stationed at Flinders Naval Base. 6YL, who is a member of the W.A. Ladies' Cricket Team, continued her journey from VK5 to visit this State.

Plans were made to meet the four W6 hams who are to be in Melbourne for a few days. 6YL and the W68's will be well entertained during their stay in Melbourne.

By the time these notes are out the B.E.R.U. Contest will be in full swing. Log forms may be had on application to 3OC.

There will be an auction sale of junk gear, etc., at the next Key gear you do not want and make your fortune. It is rumoured that 3MR has several punk 852's to dispose of.

Condx generally have been very poor of late. Still some QRM on 7M/c. 14M/c very quiet. It appears that the Key Section are the only section.

An extraordinary meeting of the combined sections was held on the Short Wave Group meeting, and he the W6 hams. The attendance was fairly good. The chair was taken by Mr. Thomson at the close of the Short Wave Group night to welcome introduced the boys to the members. 6YL was also present. The W6 hams were presented with Life Membership Certificates of the Institute (Vic. Div.). Various items of interest to members were discussed, and the attitude of the American ham to high power was a subject fully dealt with. Our visitors were very definitely against very high power, the general opinion being that 50 to 100 watts was ample for all amateur requirements. The close of the meeting was a signal for the members to cluster round the W's, who were submerged under a barrage of questions. An invitation was extended to the members to visit the "California State," berthed at Princess Pier, so

that those fortunate enough to go there could see the gear.

VK3KP.—Local executioner tried to bump 3UO off with new stick that would'n't stay put.

VK3IW.—Now with an RK20—a measure of retaliation against the growing QRM.

VK3CB.—40-metre activities quiet for months of December and January, holiday season. 200-metre trouble.

3PA.—Giving 28/Mc a try after being off that band for five years. Also on 14M/c, and active on 200-metre fone band.

3UX.—At last finished final stage wid 210, and landed first DX, G2PU, and K6KLL. Hi!

3RI.—On 40 metres again, and will soon have fone going. Now have another A.O.P.C. in 3XW. This totals eight hams in our Club now.

3RT.—A junior op. has arrived, but it is not anticipated that he will cause any radio QRM for a while.

3BQ.—Got tired of using 28M/c only, so carried out tests with "Q" matching section compared to "stub," and found the former the more efficient. Now using "Q" section on Yank beam, and find it draws quite well on both twenty metres as a doublet, and on 56M/c. as a double zepp.

3UK.—Will soon be moving to new QRA.

VICTORIAN DIVISION 'PHONE SECTION NOTES.

The last meeting of the 'Phone Section we held on Tuesday, 24th November, 1936, at the Institute Rooms, Queen Street, Melbourne, and there was a fair attendance of the gang, including about 20 transmitters, also Mr. Laniff, of the Allocations Committee, and numerous other non-transmitting members. The minutes of the previous meeting were moved by 3DH, and seconded by 3GY, and carried unanimously.

3CR and 3GK did not require Sunday allocations, but 3GK accepted a week-night allocation. The allocations were for two months, as there was not to be any meeting of the section during December, owing to the Xmas holidays. These notes were held over also for the February issue.

3DH moved at the November meeting that, as there was no other meet-

ing till the end of January, that the allocations be for two months. This was seconded by 3KE, and carried unanimously. After the allocations and the crystals were given out the meeting closed at 10.30 p.m.

During the holidays the Secretary made a tour of Western Victoria, and had a look at some of the country stations, including 3BA, Ballarat, 3LK, Lubeck, 3WV, the new regional station at Doon, and 3RH, Glenorchy. He writes, while sending his 73 to the gang for 1937:—

"Mr. and Mrs. Hodder gave their usual wonderful hospitality during our stay of two or three days with them, and Ivan also had the pleasure of towing us out after we finally became totally bogged on the road about two miles from his place. We had been bogged twice before this, but just managed to get out of it. We had a heavy downpour of rain one morning, which caused the road to get just sticky enough to let the wheels of the car go round without taking us along, and we certainly did some skewing and sliding and side-slipping before we finally did a broadside and blocked the road, completely bogged!"
Nice work, Jack!

SHORT WAVE GROUP NOTES.

By O. E. Davies.

The Group held a meeting on 23rd December, at which all thoroughly enjoyed themselves. 3JO brought in his 5 mx receiver, and managed to qso several stations, using the Group's xmitter. The gang also brought in a lot of refreshments, and an F.B. feast followed.

At the meeting on 13th January we had the pleasure of entertaining four W6 hams, whose ship, "California State," was in port. As a number of members from other sections came up to welcome our visitors, the meeting was turned over to 3TH (Chairman of Council), who conducted it as a general meeting of the Vic. Div. Those who could not attend the meeting missed an F.B. evening, as our visitors gave us some first-hand information on ham doings in U.S.A.

The Council have asked the Group to construct a communication receiver for use at 3WI.

Preliminary discussion on circuits, lay-out, etc., will take place at the next meeting, and at the following meeting, 10th February, it is hoped to commence construction. Any information on S.W. Super-hets would be gladly welcomed at the Group meeting, so come up and let us hear your ideas. 3JO—Still working steadily on 5 metres. 3MQ—QRL night work at present. 3RQ—Intends to get down on 5 mx now. 3JH—Is still as silent as ever. 3XJ—Qrl hard work and YL? 3KP—A new ham; building 6-tube super. 3UO—Not quite so new; suffers QRM Diathermy apparatus. Rest of the gang threaten to get A.O.P.C.'s any day now.

The scribe sends best wishes for a prosperous New Year, and hopes to see you all at the future meetings of the Group.

MALLEE AND NORTHERN DISTRICT.

(3ZK.....3HX.)

Conditions have been fairly good, considering the season, in this part of the State. On 14mc the dx is coming through, particularly some very fine fone. 7mc is, as usual, a QRM mixture in the early part of the evening, but later any amount of DX can be heard, and in the early morning DX fone comes through on that band. 3.5mc is very patchy, on account of the conditions, but nevertheless some stations are using it. Plenty of ZL's are to be heard and worked.

3CE.—With the harvest finished, Roy has a little more time for radio, and is concentrating on 20mx DX.

3KR.—Is mostly on 20 and 10, and is daily adding to his list. On Sked Sunday mornings, and has been heard on 40mx.

3TL.—Treb has been away on holidays.

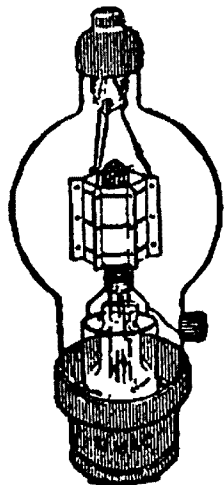
3OR.—Has at last decided to rebuild the rig. Believe Murray intends to build one for high frequencies and another for 80 metres.

3KI.—The radio bug is at work, and Jack is talking Diamond Antennae, etc.

3WN.—Took a portable away on holidays over Xmas.

3IH.—On 40mx, a t9 sig with a 6A6 exciter, link coupled to a 6P6.

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3EP.—Hasn't been heard much since the holidays, but think that Ted is building the new xmitter he has promised himself.

3TS.—Tom Speer heard on 40mx cw with a very nice note.

3GD.—Also on 40mx; nice note.

3BG.—On 40mx with a rough note, but possibly Roth will step out with something special in the way of rigs soon.

3ZK.—Spends his time on 40mx and 80mx. Jim is contemplating a few changes in the rig, so as he can get to 20mx with a little bit of power.

3HX.—Confesses that he worked a little DX getting RST589x from KA1. Has a pirate using his call on 20mx. Some fun when Tom gets down himself!

Queensland Division

Things have been reshuffled in this fair State of VK4. The old mill is to be tried once again on her spelling, and it seems that the old horse again sniffs the battle. In this, my first attempt on the Inky Way in these fair pages, I have been set to follow a standard that has been rigorously held by my predecessor, 4AP. Let not it be inferred that AP is divorced from the etheric excursions. Far from it. He resigned from the Council. Others did likewise at a meeting held in Brisbane lately, and new men are taking over. Ergo, me for the rendition.

Main topic in the mouths of CQ has been the new PKG reg. anent gargling and gramo-grinding. Hoots, mon, 'tis fine sauce. The curb rein has been placed upon some, the GA OM invites others. At the risk of starting a private war, I make bold to endorse the meaty portions of the epistle from J. M. I have long maintained that the best way to lose social prestige is to become publicly intoxicated, be it with the wine when new, power, or pride of possession. A concern without discipline becomes a rabble, and if most of the squawking I have heard these last few years is justified by the W/T Act and regs. I'm open to conviction.

Great will be the tribulation amongst the BCL's when the gang fire up their fones on 3500KC. Said

BCL'S will be peeved because they will, in the main, be unable to hear the conversations on their dual—(pardon)—wave sets, and will be listening up to the multitudinous spots that will occur on their "brand-catchers." The outcome? El-e-mentary, my dear Watson, EL-E-mentary.

Feverish activity on 56MC. What with AP with a 40-metre shivery slab doubled down and down and down, AW and GK on his "hammer," and all with their Simple Simons all hotted up as 56MC superhets., there should be some good work done in the trans-Tasman attempts. And to listen up on 20 and 10 on KH's receiver! Going back home to the three-tube e.c.rx. is almost as sacrilegious as going to the Barrier Reef with Z. Grey, and only taking bent pins and cotton as tackle. There's RY specialising on 56MC portable equipment; WT scrapping his bread-board layout in favour of the new love, a rack and panel outfit. JL, engineer of the M/Y Sweetheart, has her fitted with remote control: has her with a tritet on 3555KC, and laying down copy in W6 and 7. She's entirely driven from her batteries. Have heard him on fone with 4EI. A 42 satisfactorily modulates the last tube, and 89 or an 802. The one switch controls the fls. of the e.c. 2 rx. and the TX, and withdrawing the phone plug of the phones starts up the MG set. Very nice. Incidentally, we doped out an idea. Down on the Bay, leaks due to saltwater action are annoying, so we wound the phones as bias for the 37 amplifier. The case of the fones is as mild as mother's milk now. Ere this reaches the comps. the gang will have staged their annual effort for the Aero Club. 56MC, reporting from the pylons, has given many a corner-cutting flier a nasty feeling when the stewards grab him as he hops down. Of course, JX knocks 'em bandy over in W on 14MC. No strain at all for 4, ex 3, ex 7-JK. FN is quiet, getting started in on a new QRA. Very old-timer 4AZ is feeling his fingers itchy, and v.o.t. RB keeps his end of the RAAFWR free from verdigris. BB wields a wicked key up at Maryborough (Q.). Somewhat akin to the sunrise, up on the really long waves (200-250 metres) LW and JN hold forth.

Am 'most unwound. Council has before it certain problems of moment. See, you 'pounders from the Mallee and below on the Fisk trophy. Get busy, we have the showcase made and it's of best VK4 maple. Happy days, gang—more elbow-room and snappier operating on the 7000 region. No, I did not mention anything at all re a Vigilance Committee.

South Australian Division

By VK5KL

At the Xmas general meeting on 23rd December, the President, Mr. Barbia, welcomed Miss R. Longley, VK6YL, and also asked her to present the trophies won at the last field day held at Clare. Mr. Barber (5MV), 80mx hunt; Mr. D. Reiman, best 80mx receiver; Mr. M. Farmer, best 5mx tranceiver; and Miss Malthouse, single women's race.

In future a Question Box will be available for members to ask any technical question, which will be answered at the meetings.

Due to member's complaint that the members of the local Vigilance Committee not having been made known. Mr. L. Deane, who is secretary, explained to the meeting the full workings in detail of the above committee, and gave permission for the personnel of the Vigilance Committee to be published exclusively in "Amateur Radio." It comprises:—Mr. Dean (5LD), Mr. Bowman (5FM), Mr. Barbier (5MD), Mr. De Cure (5KO), Mr. Golly (5JX), and Mr. Collins.

The recent traffic handling contest resulted in the winner being:—1st, 5HM, 74 points; 2nd, 5RI, 58 points; 3rd, 5RY, 48 points; and 4th, 5LL, 47 points.

Conditions on 28mc still remain bad, but chaps who intend working on this band should be ready when the band opens up again late in February and March.

Twenty metres still continues to attract those who like to qso DX, and several new countries may be worked around midnight. The faithful chaps to 40 metres still persist with QRM and QRN. I don't know which is worse when VK7YL calls CQ.

VKSYL is now active on 40 metres,

and would like co-operation from anyone hearing her calling, to test her gear out.

RECENT MIGRATION.

(I. V. Miller, VK3EG.)

Old-timers never die; they only fade away. A Christmas card from "Connie," ex-VS6AQ, reminds us that that fate does not await all of them. Although he has left Hong Kong, he will shortly re-appear from Bonnie Scotland under a G call sign.

I think our British Amateurs must surely outdo even their Yankee brethren in migratory ability, and it may be of interest to know just where some of them are located.

Emary, VS6AX, has been sent to Palestine, and awaits a ZC6 call.

VU2BL, ex-YI2DC, is now back in England, and active as G6MT. VU1AA has gone to Bahrein Island, and works on 14 mc as VS8AA. VU2FP is also back in England for good, and was recently qso'd through a London station.

Another one to go back home after a lengthy stay in Palestine was LC6FF.

Our old friend, VS1AJ, is now with the R.A.F. at Ambala, Punjab, India, and pending arrival of his new VU call is B.E.R.S. 311. Since Gil. left the second op. Bernie has taken out a licence, and may be worked as VS1AL on 14350 KC.

VQ2RS will not supply the Northern Rhodesian contact any more, as he informed me he was leaving for Nigeria last November, and hopes to be LD soon. However, LE1JT has recently gone to VQ2, so he will fill the gap. As if to further preserve the balance of things, G6ML will re-appear as a LE1 early this year.

Kenya Colony could ill-afford to lose any of its amateurs, but old VQ4CRL left there about 12 months ago, and he is now a 34 Cuney Street, Kimberley, South Africa.

SU1EC has long left for England, as has LB1i recently. EI6F is now in Liverpool.

Coming nearer home, ex-LL4AI is G5LL, and ex-VK2NR, Jack Scott, seems to be permanently settled as G6JB. They've snared his call for a B.C. station now, so guess we won't hear 2NR any more any way.



IN spite of the fact that there are tables available for the construction of tube base coils to cover any desired frequency range, there is always necessary that titter-variation and juggling to get the L/C ratios right. One must assume too much to rely on these tables. Wire gauges, dielectric constant of the former material, and spacing all naturally have a marked effect on the inductance of the coil.

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Hamads

(Continued from page 7.)

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From the picture of the rear of the transmitter it will be seen that all the rectifier tubes are mounted on a special aluminium chassis on the base of the frame. This allows easy installation and change of tubes when necessary; not forgetting freedom of air circulation.

The final article dealing with the modulator design and construction will follow next month, together with any practical operating dope that can be collected.

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Mr. F. Johns, a Director of P. and L. Wireless Supplies Pty. Ltd., of 31 Hardware Street, Melbourne has returned from a tour of the U.K. and the Continent. Our special representative had an interesting chat with Mr. Johns, and a report of his impressions will appear in our next issue.

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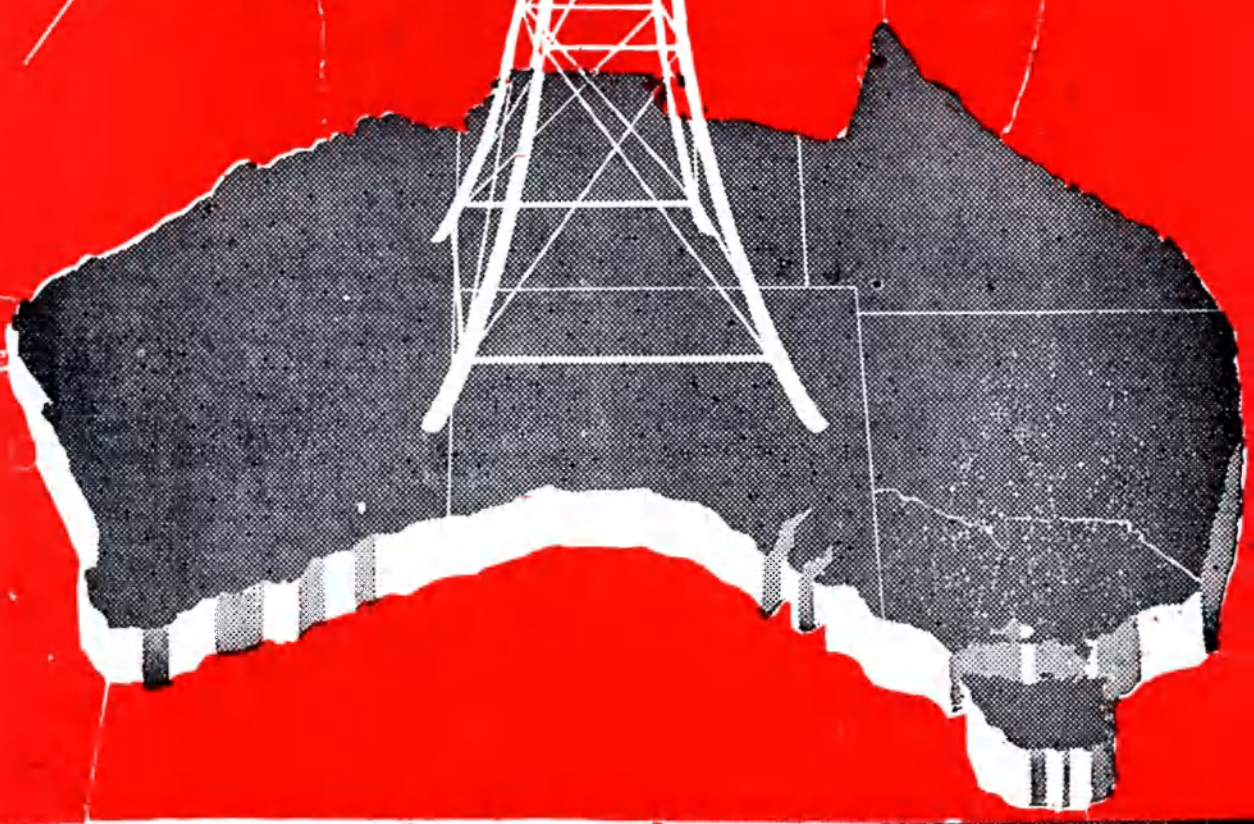
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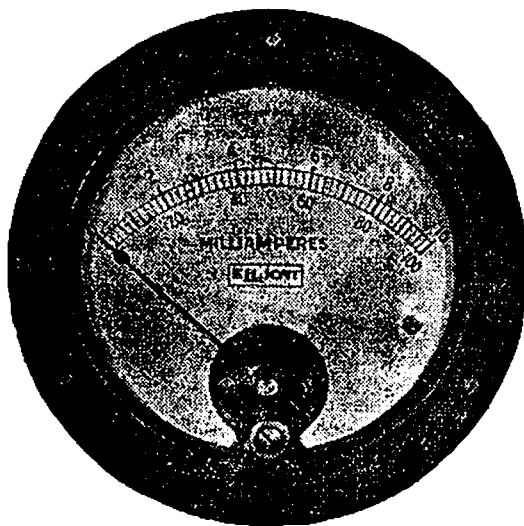
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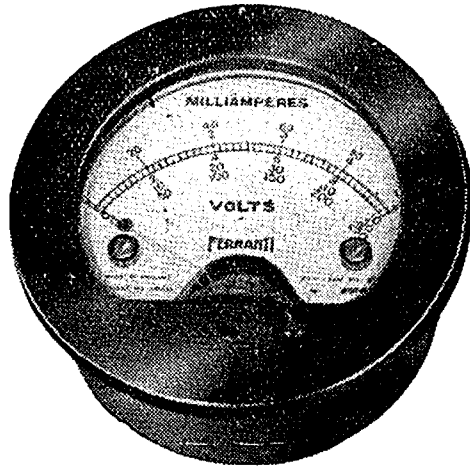
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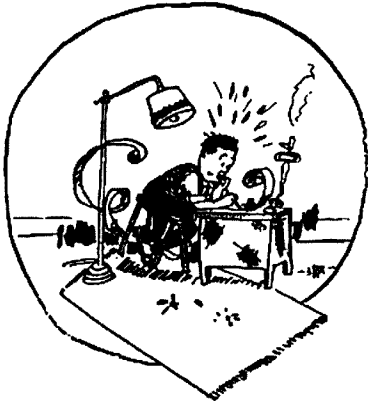
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THE A.O.C.P. CLASSES.

EDITORIAL

This very interesting activity of the W.I.A. has now become an established fact, and is doing good work, not only in the interests of students, but with regard to the financial position of the division. It is no good "beating about the bush": it must be admitted that our present premises are largely maintained by these classes, and there is no reason why this happy state of affairs should not continue indefinitely, providing our members give us their assistance. Up to the present time the whole of the responsibility for the success of them has fallen upon the shoulders of the Council. Many active members have 2nd ops whose object is the A.O.C.P., others know of possible students who are in need of assistance in this particular manner. Here, then, is ample scope to do something which will bear good fruit. By recommending the Institute classes to prospective students you will be helping them and yourselves. The present class is approaching its final examination, and it is hoped to commence the winter session early in April. An inclusive fee of £5 5s. is charged, which covers everything, tuition, books, membership of the W.I.A. for the current year, and the magazine. The full course occupies roughly six months, and the percentage of passes is high. Classes are held on Mondays and Thursdays, from 7.45 p.m. until 10 p.m., and full particulars may be obtained from the Class Manager (VK3TH), 104 Bambra-road, Caulfield, S.E.8. Any member who has the ability to act as instructor in either code or theory is invited to offer his services in that capacity, and a reasonable fee is paid for such services. The class is limited to 30 students, and every

effort is made to give students individual attention. An idea seems to be abroad that we only require people with some knowledge in the classes; this is quite erroneous, as the large majority who come to us have practically no idea of any phase of the subject. Many applications are received from country enthusiasts for correspondence courses, but at present we are not in a position to undertake this type of instruction.

IMPORTANT NOTICE.

All VK amateurs who accept third-party messages from overseas stations are placing themselves in a very difficult situation. Quite a lot of chaps seem to think it better to take this risk than explain to the other fellow that our regulations prohibit this practice.

Also we are not alone in our use of the air—others hear our signals, and these breaches have been noticed too frequently lately to be overlooked by the powers that be.

We received a letter, unsigned, regarding our recent Editorial on Experimental Sections. It is noted that someone reads the Editorial, so we are encouraged to hope that some good may come out of it.

It is necessary to get members interested by preliminary publicity first, before the Council can do much.

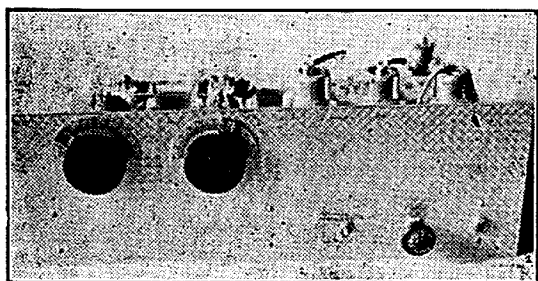
Most people seem to think that the Council can easily arrange such necessary things as an Experimental Section, but this is not so. Members must first show an interest before much can be done.

Any others who are interested, together with our anonymous friend, please send in their names and addresses, and we may be able to get a start.

An Experimental 56 and 112 MC Superhet Receiver

(By VK3ML, Technical Editor.)

It is generally accepted that the most efficient receiver for the ultra high frequencies must be of the frequency-converter-amplifier type; in other words, the superhet or superinfragen. Amplification at high frequencies with stability and sensitivity is not too easy to obtain, and tube efficiencies fall off very rapidly. Then, again, the super-regenerative receiver, whilst having enormous gain and its uses, falls down when it comes to CW reception, not forgetting the well-experienced QRM it can cause to a neighbouring



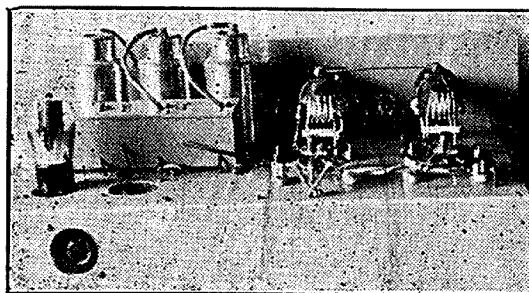
receiver. From my own personal experience, super-regens are hard to beat for the over-modulated phone racketeers, for their weight, and for their simple construction. However, we must progress and see if it is possible to conquer the so far untamed U.H.F.s. with improved gear.

The popular superhet design in Australia seems to employ resistance coupled I.F.'s. The disadvantages of this type are very low amplification, QRM from a nearby B.C. station through rectification in the I.F. stages, and susceptibility to auto ignition interference because of poor selectivity. We have to turn to the English factories to overcome the troubles, and there we find what must be looked upon as being an advancement in transformer design for U.H.F. superhets. The receiver described was built around the "Eddystone" three-stage transformer recently market in Australia. Each of the primaries and secondaries are shunted by a resistance which suffi-

ciently dampen the tuning to enable one to follow slight frequency modulation. The gain is surprising, and each unit being completely shielded prevents any interaction and feedback that one may perhaps expect.

With this unit as a basis the following layout was decided upon:—1st detector and H.F. oscillator, 955's; 1st and 2nd I.F.'s, 6D6's; 2nd detector and first audio, 6B7S, which provides automatic and manual gain control; and lastly, a 41 audio. One eye was kept on the total plate consumption and the other on the filament wattage, as the one receiver was to be operated at home as well as out on field days. A rather large chassis was bent so that there would be ample room for expansion and alterations at any time.

The general layout can be seen from the photos in Figs. 2, 3 and 4.



Aluminium panel and chassis measurements are—Panel, 16" x 9"; chassis, 14" x 10" x 3" deep. The metal being 16 gauge. In Fig. 3 the tube line up from left to right is—955 Osc, 955 1st Det, 6D6, 6D6, I.F.s, 6B7S, 2nd Det. and 41 audio. The blank socket will take a B.F.O. at a later date. Behind each of the acorn tubes are the 20 mmfd tuning condensers and plug in silver-plated coils. The small box-like arrangement in front of the IF tubes is the Eddystone IF transformer, which measures 6½" x 2½" by 1½". In Fig. 4 it will be seen that the low-frequency stages are bunched up together as much as possible in order to leave as much room for experimen-

tal work around the U.H.F. end of the chassis.

So much for the general design; now for reasons why. Acorn tubes were used because, although they are no better than ordinary tubes above 5 metres, they have a marked effect on the lower waves. Oscillators are more stable and easier to get going, whilst 1st detectors function better because of the lower socket and other losses. Electron coupling is the order of the day, and appears to provide a stable beat for the detec-

Fig. 1 that the "hot" grid ends are placed towards one another and with a spacing of about $3\frac{1}{2}$ " between them. This value is best decided upon by varying the distance between the coils for optimum results. The performance of the whole set depends on this adjustment, and it is recommended that the oscillator be not tied down until experiments have been completed. The aerial coupling coil is placed between L1 and L3.

An explanation of the function of the 2nd detector will just about

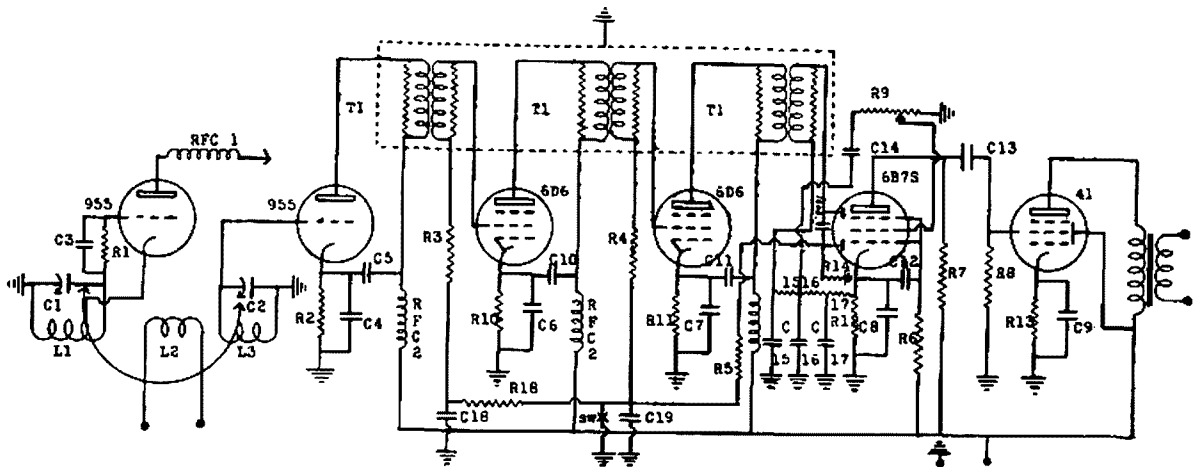


Fig. 1. Experimental 56 and 112 Mc Superhet Receiver.

- | | | |
|--|-----------------------|--------------------------------|
| L1 (56 mc) 5 Turns $\frac{3}{4}$ " diam. | C12 0.1 mfd. | R7 0.25 megohm. |
| L2 (56 mc) 3 Turns $\frac{3}{4}$ " diam. | C13 0.5 mfd. | R8 0.5 megohm. |
| L3 (56 mc) 4 Turns $\frac{3}{4}$ " diam. | C14 0.1 mfd. paper. | R9 1 to 3 megohms. |
| RFC 1. 5.6 microhenries. | C15 100 mmfd. mica. | R10 300 ohms. |
| RFC 2. 17.9 millihenries. | C16 100 mmfd. mica. | R11 300 ohms. |
| C1 6.75-22.5 mmfd. | C17 0.01 mfd. paper | R12 3500 ohms. |
| C2 6.75-22.5 mmfd. | C18 0.01 mfd. paper. | R13 600 ohms. |
| C3 100 mmfd. mica. | C19 0.01 mfd. paper. | R14 2 megohms. |
| C4 0.02 mfd. | R1 50,000 ohm 1 watt | R15 50 000 ohms. |
| C5 0.1 mfd. | R2 50,000 ohm 1 watt. | R16 250,000 ohms. |
| C6 0.1 mfd. | R3 0.25 megohm. | R17 50,000 ohms. |
| C7 0.1 mfd. | R4 0.25 megohm. | R18 10,000 ohms. |
| C8 5 mfd. electrolytic. | R5 1 megohm. | T1. Special Eddystone 2000 Kcs |
| C9 25 mfd. do. | R6 1 megohm. | 3-stage shielded I.F. Trans- |
| C10 0.1 mfd. | | former, with damp.ing resis- |
| C11 0.1 mfd. | | tors. |

tor. Anode bend detection was chosen for the detector for no other reason than its ability to handle a fat signal. Later, regeneration will be wired in this stage. 6D6's are good IF tubes, whilst the duo-diode-pentode 6B7S is an excellent 2nd detector and A.V.C. tube. All due precautionary measures were taken to keep the R.F. from wandering off course by adequate filtering with chokes and resistors. Inductive coupling was installed between the 1st detector and HF oscillator because it was found to be the most effective method of injecting RF voltage into the detector. It will be seen from

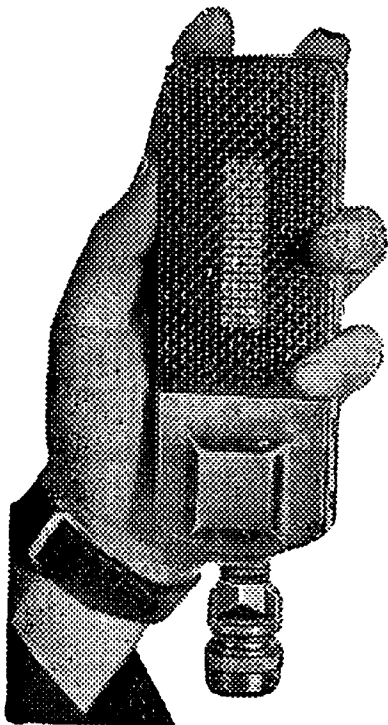
complete this description, as the remainder of the super-het is the same in operation as any other super. The two transformer returns are coupled together through resistor R18 to the A.V.C. diode plate through R5. R5, in combination with C19 and C18, sets the time constant to the A.V.C. circuit. Larger values of R5, C18, and C19 will increase the time constant so that the A.V.C. does not operate as rapidly. R14 is the diode load resistor; its value is not critical as long as it is at least a few megohms. The A.V.C. diode plate gets its carrier voltage from the audio diode

(Continued on cover 3.)

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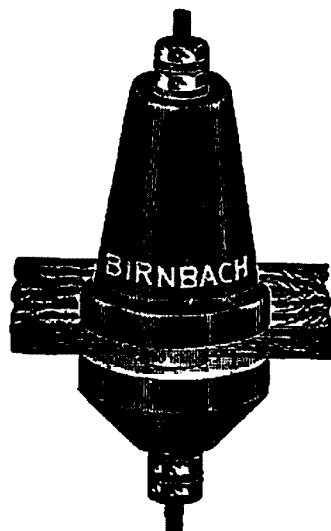
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478J	1 1/4	3/-	966	1in.	1/2
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4125J	1 1/2	3/6	400	G.R. Plug	1/6



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Multiband Antenna for High Frequencies

With Acknowledgments to the Collins
Radio Co., U.S.A.

Section 1. Practical Data:

A high frequency antenna and associated transmission line, capable of efficient operation over a wide range of frequencies, has been urgently needed. Amateurs are rarely fortunate enough to have sufficient space for erecting more than one antenna, and commercial high-frequency stations are also frequently located in restricted quarters where separate antennas for each channel cannot be used.

The ordinary high-frequency antenna consists of a doublet operated at its fundamental (the length equal to one-half wave length) or at a harmonic. Such antennas are popularly classified by the type of feeder system employed such as "Center Fed," "End Fed or Zeppelin," "Singlewire Hertz," "Matched Impedance with Y connected feeders," etc. Only by connecting the feeders into the center of the doublet can the antenna and feeder system be kept electrically symmetrical as the frequency is varied. Unfortunately, the impedance at the center of the antenna changes with the frequency, and any ordinary arrangement for matching the transmission impedance to the antenna impedance can be effective at only one frequency. Furthermore, the effective electrical height (which may be different from the physical height above ground) has a marked effect upon the antenna resistance, and an impedance matching system which is effective at only one value of antenna impedance cannot be counted on to give correct energy transfer to the antenna unless it is adjusted for each particular installation.

The problem, then, resolves itself into the designing of a transmission line which operates efficiently over a wide range of terminating or antenna impedances. The usual two-wire line, constructed of two No. 12 wires spaced about six inches and having a characteristic impedance of about 600 ohms, is not satisfactory for this purpose. For example, such a line one-

quarter wave length long connected to the center of a one-half wave length doublet will not be terminated in its characteristic impedance of 600 ohms, but in the antenna resistance of about 75 ohms, and due to the properties of such a line the input impedance at the transmitter end will be about 5,000 ohms (mathematical study will be reserved for the second section of this article and is not essential for a practical understanding of the system). An input impedance as high as 5,000 ohms is undesirable because it is difficult to transfer power to it, because a slight capacity unbalance will cause serious radiation from the line, and because line losses are high, due to poor power factor, i.e., pronounced standing waves.

In practice the impedance at the center of a horizontal antenna varies between about 75 ohms and 1200 ohms as the frequency is varied. The lower values occur when the antenna length is one-half wave length, three one-half wave lengths, five one-half wave lengths, etc., and the impedance is highest for frequencies making the antenna length one or more full wave lengths long. If a transmission line with a characteristic impedance of 300 ohms (the geometric mean between 75 and 1200) is used, the standing waves will be a minimum at all frequencies, and the input impedance will remain at all times a manageable value not exceeding 1200 ohms. A 300 ohm line can be constructed of two $\frac{1}{2}$ inch tubes spaced $1\frac{1}{2}$ inches by means of ceramic blocks at intervals of about 20 inches. The blocks can be located by crimping the tube slightly on either side of the block. A 50 foot copper line of this type weighs 10.9 pounds and is not difficult to support from the center of the antenna. If necessary, aluminium instead of copper tubing may be used to reduce the load on the antenna supports when the vertical part of the transmission line is greater than 50 feet. A line so constructed has surprisingly low loss.

Amateur Radio

The following excerpts indicate the minimum efficiency obtained for a line 100 feet long terminated in either 70 or 1200 ohms.

Frequency	Efficiency
3000 kc.	98.5%
7000 kc.	98 %
14000 kc.	97 %

By way of comparison it is interesting to note that a 100 foot twisted pair transmission line of popular make has the following efficiency when terminated in its characteristic impedance:

Frequency	Efficiency
3000 kc.	95%
7000 kc.	84%
14000 kc.	68%

Of course, an antenna with twisted pair feeders can only be used on one band.

cuit of the transmitter by a simple pickup coil. An impedance matching network need not be used provided the number of turns in the pickup coil is continuously adjustable.

In cases when it is not convenient to use a transmission line as long as is shown in Table I it is, of course, entirely practicable to reduce the length of the line to a convenient value and build out the equivalent electrical length by inserting an impedance matching network between the transmitter and the line. When such a network is used the line can be made any length, and then the only important dimension is the antenna itself. The only precaution which must be observed is that the transmission line should not be $\frac{1}{2}$, $\frac{3}{4}$, $\frac{5}{8}$,

TABLE I

MODEL	A	B	C	D	E	F	G	
Antenna Length—Feet	136	136	275.5	250	67	67	103	
Feeder Length—Feet	66	115	99	122	65	98	82.5	
Frequency Range	3.7- 4.0	3.7- 4.0	1.7- 2.0	1.7-2.0	7.0- 7.3	7.0- 7.3	3.7- 4.0	
M.C.	7.0- 7.3	14.0-14.4	3.7- 4.0	3.7-4.0	14.0-14.4	14.0-14.4	7.0- 7.3	
	14.0-14.4		7.0- 7.3		28.0-29.0	28.0-29.0	14.0-14.4	
			14.0-14.4					
Nominal Input Impedance	1200 All Bands	75 All Bands	1200 160-80-20 m, 75 40 m	1200 All Bands	75 1200	40 m 20 m 10 m	1200 All Bands	1200 All Bands

A 600 ohm two-wire line 100 feet long terminated in 70 ohms has the following efficiency when properly balanced:

Frequency	Efficiency
3000 kc.	94%
7000 kc.	92%
14000 kc.	89%

In practice, slight unbalances in a 600 ohm line materially reduce the efficiency, whereas the 300 ohm line is not so susceptible to loss in efficiency.

In view of the above information it is seen that an antenna can be made to work very efficiently over a wide frequency range and with any antenna impedance between 75 and 1200 ohms by the simple expedient of using a specially constructed transmission line. Several different models of such an antenna system are possible and Table I shows representative combinations designed for use on amateur bands. In each of the arrangements shown in Table I the length of the multiband transmission line is so chosen that the reactance at the transmitter end is negligible and the line can be coupled to the output tank cir-

etc. wave length long at any of the operating frequencies. If the line happens to be cut to a length equivalent to an odd number of $\frac{1}{4}$ wave lengths, trouble may be encountered due to the network transmitting not only the fundamental frequency but also harmonic frequencies. This difficulty can be overcome by proper adjustment of the impedance matching network, but a discussion of this subject will be reserved for a later article. In general it is better to avoid these specific lengths.

Table I can be used directly for designing multiband antennas for amateur use. It will be noticed that the antenna lengths shown are an even number of one-quarter wave lengths long at the lowest and highest frequencies. In the case of antennas for 14,000 kc. and 4,000 kc. operation the frequencies are not harmonically related, but the lengths, are chosen for the highest frequency, and they are also approximately right for the lower frequency where small variations in length do not represent very large percentages of a wave length.

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In designing similar systems for other groups of frequencies, the antenna length should be $(k \cdot 0.05) \frac{492,000}{f}$ feet where f is the frequency in kilocycles and k is the number of half-wave lengths. Thus, for two or more frequencies integral values of k should be chosen to give approximately the same length and the exact length should be that for the highest frequency.

For example, consider model A antenna. At 14,300 kc. and $k=4$ or a two wave length antenna the length is 136 feet. This length is also correct for $f=7,050$ and $k=2$ or $f=3440$ and $k=1$. The frequency range of the amateur bands may be tolerated by this length even though the transmission line be terminated in an antenna impedance not a pure resistance.

The feeder length should be determined by the relation $\frac{234,000}{m \cdot f}$ feet where f is the frequency in kilocycles and m is the number of quarter-wave lengths. That is, the 66 ft. feeder of model A antenna is one wave length at 14,200 kc., a half-wave length at 7,100 kc., and one-quarter wave length at 3,550 kc.

A slight variation from the above procedure is indicated in Model G. In this antenna the length of 103 feet is $1\frac{1}{2}$ wave lengths at 14,100 kc. and approximately $\frac{3}{4}$ and $\frac{2}{3}$ wave lengths on the 40 and 80 meter bands. The feeder length of 82.5 feet is $1\frac{1}{4}$ wave lengths at 14,200 kc. and approximately $\frac{5}{8}$ and $\frac{5}{16}$ wave lengths at the 40 and 80 meter bands. That is, on 40 and 80 meters the transmission line is terminated in an impedance largely reactive but is of such length that the impedance at the input to the transmission line is approximately a pure resistance. The loss in the transmission line is slightly larger under this condition, but this antenna may be used successfully where space is a factor.

Many amateurs are using so-called Zeppelin antennas rather than antennas fed at the center because their transmitters happen to be located nearer the end than the center of the antenna and the transmission line is shorter if it is connected to the end of the doublet. The Zeppelin antenna is an inherently unbalanced system (Zeppelin feeders balanced for equal currents are not balanced for equal phase and vice-versa) and a considerable portion of
(Continued on Page 17.)

VK-ZL International DX Contest

(By G. B. Raglees, VK5GR Contest Manager.)

The 1936 contest which was conducted by the South Australian Division of the Wireless Institute, in conjunction with the N2ART, proved an outstanding success.

The large number of competitors, both VK-ZL and overseas, was particularly pleasing and gratifying to the organisers. The Committee would like to thank all those who took part, and desire to congratulate those who made top scores in their particular section.

The rules, which provided a sliding scale of scoring from 12 to 1, encouraged competitors to work the hard pieces, instead of making numerous contacts with easy points. The rule of permitting only one contact on each band (except 28 m.c.) with the same station was much appreciated by low-powered stations, where weaker signals were eagerly sought after.

Once again VK3EG won the Australian section, this time rather easily, by working 70 countries for 235,970 points. Other high scorers were VK2AE, with 55 countries; VK4BB, 54 countries; VK2HF and VK4YL, 47 countries; and VK3MR, 45 countries.

In New Zealand ZL1DV worked 44 countries for 95,964 points; ZL1FT being the only other competitor to reach 40 countries.

The operators of VK2HV, VK3HK and VK2YC, by working 27, 26 and 25 countries, respectively, in the handicap section, deserve to be congratulated. On the basis of the power used, their work will bear more than comparison with many of the high-powered stations. The Committee regret that the receiving section did not receive more support in VK-ZL.

The best scores among the overseas stations were made by U.S.A. entrants, which was to be expected, considering what an easy target the "States" are for VK-ZL. The leading stations were W5EHM, 8,850; W6HX, 8,460; W9TB, 8,390; W6FZL,

8,300; W9AEH, 7,550; W3BES, 7,290; and G6CF, 6,970.

It was noticed that North American stations had little trouble in working VK2-3-4 and some 26 stations on 28 m.c. each week-end.

Extracts from Logs.

VK6FL says QRM so bad that he is going to have a new receiver for the 1937 contest.

VK3BQ used only 28 m.c., and worked 11 countries.

VK7JB used lone for HI5X, as did VK3MR and several others.

VK2EG says he blew a lot of filter and lost much sleep and religion during the contest.

VK5FM did good work again, but found that conditions on 28 m.c. did not compare with the Eastern States.

VK3GP was on for 55 hours out of a possible 130 for the whole contest.

VK4YL was thrilled to work G2YL. She wishes to point out that she did not cut out her filter, and can't understand why the note detlorated, but her log shows T8-9 all the time. Looks a case of some untruthful reports being given.

G5GQ worked a few stations the first week-end, but could not forward a report, as he had to leave for U.S.A.

G2ZQ, who worked during part of the contest, also could not find time to send a report. His score exceeded 6000 points.

G6CJ sent a very complete description of all his station and a resume of conditions during the contest. He heard the following on 28 m.c.:—VK2AE, 2JT, 3CP, 3HL, 3YP, 4AP, ZL3DJ and ZL1GX. He found 28 m.c. best from 0900-1200 gmt, and made 10 contacts.

G2TH, G6IJ, and G5VQ had 10 watts, and G6ZO had 11.

G5YG was operated by G5ZX. Like 6CJ, he sent a very complete report on the contest. He worked 67.5% of the stations heard.

Z5IH had all his 27 contacts on 28 m.c., and ZT6Y had four.

Amateur Radio

OE1ER worked VK4BB; E1SF worked VK6AA; SM6WL worked VK2LZ; and OK2RM worked VK4EI as their only contacts on 28 m.c.

G2LB enjoyed the contest, and says a "Million Thanks"—a view which was expressed by many other competitors.

LA2Q sent his report in twice; perhaps to make sure that we would receive a copy.

Many overseas stations commented on the good operating of VK2HF, 3EG, 3MR and 4BB.

VQ8AA used 18 watts for his 21 contacts on 14 m.c.

ZS5U used 7 m.c., and got very good results.

VQ4SNB reports very poor conditions, but most other competitors said that conditions were good, particularly during the first three week-ends.

VU2LJ had no intention of entering, but as VK-ZL's were calling him so hotly, he was forced into it. He says that many of the ZL/UK notes were poor, a complaint lodged by other overseas competitors.

K5AY used 28 m.c. a lot; K5AC called VK4UR five times without luck.

K6CGK was on for only 15 hours. A popular 28 m.c. station was XE1AY, who had 51 contacts on that band.

HB9AT made a few nice comments, and says he admired G2YL and others, who left their warm beds to boost their scores.

VE3AU was another to send a detailed record of his work. After waiting six months for his first VK7, he worked two in ten minutes, but could hear no ZL3's. He says that ZL/VK stations were only audible for two hours each a.m., when it was often only 10 deg. above zero.

OK2OP says VK2LZ, 3LP, 3BQ, and 4AP were FB on 28 m.c., and he also heard VK2GU, 2O5, 3CP, 3KX, 3XP, 3YP, 4EI, 4BB, 5KO, 5LJ, 6AA, 6CA, 6FO, and ZL1BV, 1DV, 1GX, 2PC, on the 28 m.c. band.

The Secretary of the D5AD, D4BUF, again sent a detailed report setting out the activity in that country. He says that VK2LZ was outstanding on 28 m.c. German stations active on this band were D4SNP, D4XQF and D4BUF.

W3BES worked 47 and W9AEH 41 ZL/VK stations during the first week-

end, which must be nearly a record.

W9VVR says five week-ends gave a chance of one good week-end!

W8BXC says VK2HF, 3MR, 6FO best VK's, and W8FGA says VK2NY, 6FO, and 7JB were the best with him.

W1SZ was only on during the two last week-ends, but scored 5,700.

W5EHM, the best overseas competitor, used 7 m.c. 1 kw., with Johnson Q antenna; 14 m.c. 1K.W. with V beam and 28 m.c. 800 watts with V beam. He and W6FZL made nearly 70 contacts on 28 m.c.

W6HX had 1 kw., and made 51 contacts on 28 m.c.

W2HHF noticed a large number of VK/ZL stations coming the long way.

W1JPE had several different antenna systems for various times of operation.

Station Reports.

J2IS (November 1).—Recently every morning W's come through very nicely; above all W6 and W9 phones very good indeed. VK's and ZL's all day long OK. LU6AX, LU9AX, and LU9BV heard very often during October. In evening OK, PA, D, F, HAF, HB, G, and ZS come in here rarely, but OH7NF very often. On October 19th heard KA1XR sending V's on about 7 metres at 17.00 J.c.t.

ON4NC.—Reported that W signals from all districts started to come in on September 15th, sometimes with very good volume. South Americans and ZS1H were heard, but no VK or ZL. J's came in on the 20th. Using grid modulated phone, 40 watts to a pair of 46's.

VE3ER.—Worked 31 countries on "ten." Found a poor dx period in the middle of October, but conditions good to work W's in mid-west and west. Need Asia for W.A.C.

W8ZY.—Using 250 watts to a T-55 final, with a 66-foot vertical antenna. Have been working considerable dx on 28 m.c. recently. Heard several J's on the week-end of November 7-8, when conditions were quite satisfactory.

W9JGS.—Plenty doing on 10 metres. Heard VK3YP in early morning on November 2nd. Heard SU1SG for first time. SM stations are loudest from Europe.

W6JNL.—Starting November 1st, band was hotter than 14 m.c. as

Amateur Radio

far as hearing all continents consistently was concerned. Europeans S6 to S7 in mornings, with PA/AZ most consistent. ZS1H is only African coming through, but is heard daily. J2LU is in during early afternoons, and lasts till evening. Late afternoons LU9AX is S7, as most consistent from South America. Rig here RK20, with 85 watts input, working into 133 foot and fed antenna.

W6ITH.—On phone exclusively; working VK2GU daily for an hour, giving him the Simpson news. VK2GU has moved to 28,120 kc. to avoid the c.w. QRM on low frequency end of band. Have planned diamond antenna for Europe.

W9BPU.—Worked all continents this autumn, using 6L6-804-150T, with 450 watts input. The morning of November 8th was particularly good for Europe and Africa; heard U1CR and U1AD in Russia, YT7MT in Yugoslavia, and TF3R in Iceland. Worked 30 countries on "10."

W5FJ.—Band opens here about 8 a.m., usually going dead about 6.30 p.m. Europeans come in until 1.30 or 2 p.m., then Aussies start about 4.30 p.m. October 31st was almost completely dead. Had a nice contact with mobile W6CNE, who was on an RKO set filming a picture.

AUSTRALIAN OPEN SECTION.

VK3EG	235970	VK4DO	16420
VK2AE	138940	VK2YL	16023
VK4BB	127818	VK2RB	13471
VK4YL	105750	VK4LE	13040
VK3MR	104670	VK5LD	12581
VK2HF	93060	VK4UR	10800
VK3KX	83353	VK3BQ	6440
VK5FM	71410	VK4CG	6304
VK2DA	50470	VK7LZ	6204
VK3GQ	44736	VK4EI	5750
VK6FO	44400	VK3IW	4519
VK2XT	40703	VK5CM	4459
VK2NY	40524	VK5RD	3224
VK7JB	39092	VK5ZX	2920
VK3GP	35815	VK6SA	2416
VK5HW	32400	VK2ABC	1785
VK2TI	32172	VK3HG	1746
VK7AB	29302	VK3JJ	1260
VK5WJ	25208	VK3YP	1056
VK6MW	24732	VK7CL	990
VK2EG	22132	VK5RT	916
VK2QE	21525	VK6JE	912
VK4HR	21120	VK5LL	788
VK6FL	20372	VK4JB	276
VK3UW	19470	VK3WD	276
VK3CP	19056	VK2TJ	68

VK HANDICAP SECTION.

	Power	Total Points	Points Per Watt
VK2HV ..	20	33372	1638.4
VK3HK ..	25	39520	1580.8
VK2YC ..	20	20300	1015.
VK3TU ..	25	4875	195.
VK3RJ ..	19	478	25.1

VK RECEIVING SECTION.

VK3-ERS 109134 C. H. Miller 24340

NEW ZEALAND.

ZL1DV	95964	ZL3AB	15523
ZL1AA	69030	ZL3AJ	14200
ZL1FT	51020	ZL3GR	13904
ZL4BQ	47589	ZL2BP	10556
ZL4CK	38950	ZL3KG	9600
ZL1GX	37310	ZL1BC	9420
ZL1LM	35802	ZL1CV	8196
ZL2DS	31248	ZL2OD	5109
ZL2OQ	26472	ZL3JX	4676
ZL2QA	23940	ZL2CP	2947
ZL1FE	19075	ZL3CS	95

ZL RECEIVING SECTION.

ZL166 48600

CANADA.

VE1IW	4350	VE5PW	2106
VE2AX	3850	VE1HK	835
VE3AU	3096	VE3GT	294
VE5BI	3042	VE4ABH	141

CANAL ZONE.

K5AY	4707	K5AC	3080
NY2AB	3760		

MEXICO.

XE1AY	6660	XE1CM	4590
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CUBA.

CM7AI 2196

PORTO RICO.

K4RJ 825

GREAT BRITAIN.

G6CJ	6970	G2WQ	2016
G2YL	6540	G2LB	1792
G5YG	6420	G5TB	1656
G6RB	4910	G5VB	1592
G5KG	4430	G2TH	1050
G5MS	4390	G5VQ	900
G6XN	3360	G6IJ	705
G2IO	3168	G5SR	564
G6BS	2940	G6GH	355
G6XL	2808	G6ZO	70

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GI5UR 460

GERMANY.

D4XCG	6350	D4SIG	192
D4SNP	4500	D4QET	174
D4BUF	3090	D4LIM	108
D4LTN	2646	D4DLC	108
D4YWM	1953	D4RVC	108
D4XQF	1672	D4GDF	108
D4GAD	1608	D4YBF	108
D4VRR	1520	D4YTM	108
D3CUR	1458	D4GFF	48
D4NKR	1080	D4LQM	48
D4DMC	984	D4OUT	48
D4BEC	744	D3CSC	23
D4YUM	364	D4BBF	12
D4MOL	312	D4ANF	12
D4BMH	300	D4GOF	12
D3DLC	300	D4KRJ	12
D4YFI	236	D3CPC	12
D3FZI	198		

UNITED STATES OF AMERICA.

W1JPE	6050	W5FI	6440
W1SZ	5700	W5FRD	1632
W1FH	5520	W5ARO	1449
W1TW	3800	W5KC	1113
W1AVJ	1575	W6HX	8460
W1IQF	1432	W6FZL	8300
W1FPP	141	W6CIS	4820
W1BBN	108	W6IPH	3990
W1AVB	12	W6MVK	3940
W2BHW	6520	W6GPB	2241
W2AIW	5810	W6OGA	1864
W2HHF	5110	W6IWS	1548
W2CJM	3450	W6GVM	1127
W2DZA	3440	W6LPC	1106
W2JME	2930	W6FRN	984
W2AXZ	2750	W6CFK	276
W2FAR	1827	W6LFX	12
W2GVM	1421	W7EUY	2240
W2FU	959	W8ZY	6540
W2GVX	875	W8DFH	6440
W2BJ	515	W8BTI	6180
W2EYG	24	W8JIN	6120
W3BES	7290	W8FGA	4890
W3EVT	6920	W8CJJ	3630
W3SI	6580	W8BXC	1440
W3CZO	3024	W8BTK	1421
W3AWH	2510	W8OQV	1288
W3EUJ	2250	W8LVH	735
W3CHH	1672	W8OQF	630
W3BYI	887	W8CXR	355
W3BGD	141	W8NQL	355
W3BVO	12	W8IFY	174
W4CYC	3750	W8APD	23
W5EHM	8850	W9TB	8390

W9AEH	7550	W9RPW	1561
W9PLM	4310	W9CTR	1440
W9PTC	3672	W9IYA	990
W9PST	3096	W9CFB	130
W9AMM	3080	W9MUX	70
W9BEZ	3080	W9SRT	48
W9UBY	2970	W9VVR	23
W9VKF	2088	W9INY	12

CZECHOSLOVAKIA.

OK2OP	6550	OK2HX	320
OK2LO	3640	OK3MB	70
OK2RM	742	OK1AM	23
OK2CM	356	OK3MGS	12

SWITZERLAND.

HB9AT	6020	HB9AK	4290
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AUSTRIA.

OE3FL	3780	OE1ER	1712
OE7JH	2090		

HUNGARY.

HAF4H	3360	HAF1G	889
HAF8C	1280	HAF8D	756

NORWAY.

LA2Q	1687	LA5Y	108
LA4K	355	LA2U	48

SWEDEN.

SM6WL	1904	SM7UC	360
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FRANCE.

F8EO	4380		
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DENMARK.

OZ7KG	1155		
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BELGIUM.

ON4NC	1980		
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HOLLAND.

PA0QQ	1032		
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ITALY.

I1KD	896		
------	-----	--	--

DANZIG.

YM4AA	1792		
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FINLAND.

OH3NP	48		
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LITHUANIA.

LY1J	48		
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Amateur Radio

ARGENTINE.				DE3642r	1280	DE1082h	498
LU9BV	4437			DE2371t	1280	DE2403u	410
PERU.				DE2836u	1200	DE3443t	350
OA4J	3366			DE2581i	1200	DE2102g	261
INDIA.				DE3214h	1092	DE2877t	190
VU2LJ	2288	VU2EB	48	DE3394c	944	DE2224k	171
JAPAN.				DE2555i	810	DE2982c	171
J2JJ	3645			DE3745i	768	DE3168b	110
SINGAPORE.				DE3492c	756	DE3395e	108
VS1AL	1869			DE3641f	744	DE3345u	92
HAWAII.				DE2784c	610	DE3384h	48
K6JPD	4900	K6CGK	4810	DE3600i	500		
MAURITIUS.				GREAT BRITAIN.			
VQ8AA	1170	VQ8AE	276	2CAR	7780	2AZF	5620
VQ8AF	440			BRS1535	7710	2ASH	5250
SOUTH AMERICA.				BRS1173	7470	2ADY	4570
ZS5U	2034	ZT6Y	1750	BRS1885	6720	2BIU	4300
ZS1H	1869			2AZX	6540	BRS720	3590
KENYA.				2AWX	6530	BRS1948	4010
VQ4NSB	236			2AOU	6300	BRS1371	3420
EGYPT.				2ADC	5760	2BDT	3360
SU1WM	3510			2AOZ	5720		
RHODESIA.				AUSTRIA.			
ZE1JV	1740			OE-059	6534	OE-053	1845
OVERSEAS RECEIVING STATIONS.				OE-151	4279		
GERMANY.				FRANCE.			
DE2415h	7230	DE1480i	4830	FR1940	3880		
DE1729u	7180	DE3234f	4710	U.S. AMERICA.			
DE2881o	6410	DE3042u	4580	W2BBK	5790	W5FIT	970
DE2750c	6290	DE3648n	4270	CANADA.			
DE2981c	6120	DE1971o	4130	Allan H. Pratt		S. G. Clark	850
DE1609c	6030	DE1977b	4060		2610		
DE3559n	5511	DE3095r	3190	HONG KONG.			
DE3166n	5460	DE3623m	3100	BERS3265	3040		
DE2449t	5450	DE3149i	2520	INDIA.			
DE2327m	5320	DE3329u	2439	BERS311	7270		
DE2409f	5310	DE3388o	2385	HOLLAND.			
DE3587n	5280	DE2574i	2349	L208	108		
DE3197r	5190	DE2518f	2223	TRANSMISSION SCHEDULES.			
DE3250m	5110	DE3368u	2160	MARCH, 1937.			
DE3282c	5060	DE3204p	1784	VK2ME.			
DE2497k	5030	DE3647m	1719	Sydney Time. G.M.T.			
DE2680g	4880	DE3264c	1519	Sundays:	4 p.m.-6 p.m.	0600-0800	
DE3313c	4830	DE3603i	1440	„	8 p.m.-Mdt.	1000-1400	
				Mondays:	12.30 a.m.-2.30 a.m.	1430-1630	
				VK3ME.			
				Melbourne Time. G.M.T.			
				Nightly			
				Monday 7 p.m.-10 p.m. 0900-1200			
				to Saturday			
				(inclusive).			

Radio Abroad

Return of Mr. F. Johns from Interesting Tour.

Our special representative had a chat during the month with Mr. F. Johns, co-director with Mr. L. Aarons in the P. and L. Wireless Supplies Pty. Ltd., of Hardware Street, Melbourne. Mr. Johns left by the Orient liner "Ormonde" for England at the end of May last year. He arrived in England on 2nd July, and on the 15th of that month went to Berlin, Germany, arriving there a fortnight before the commencement of the Olympic Games. While in Germany



Mr. Johns on Victoria Station London,
prior to his return home

Mr. Johns visited a great industrial exhibition known as Deutschland Austellang. This was held at Charlottenberg, and comprised a vast collection of buildings connected up by a maze of subterranean passages. The whole was topped by a great radio tower similar to the French Eiffel, and from its summit, reached by express elevators, the whole of Berlin could be seen as a mighty map. This great exhibition is a perpetual one, and is a masterly exposition of all the trades and professions for which Germany is world famous.

Speaking on radio matters, Mr. Johns explained that all radio and television are controlled similarly to our own systems. The present make of television set is the Telefunken, on the principle of the cathode ray. Television has been materialized by the taking of a film of the actual scene, which is developed and fixed in 90 seconds, and then tele-

vised. The whole system is carried out so expeditiously that the finish of a race can be screened almost simultaneously with the actual event. By this means the training, sprinting, high-jumping, and other events at the great games were being continuously filmed and broadcast. The actual receiving set is housed in a large-sized cabinet, on top of which is the screen, a concave piece of greenish glass. Tuning is done by the usual control, and the reception is wonderfully clear and precise.

Another feature at the Games were the giant amplifiers, with both mushroom and directional type speakers. By the use of a single mike the announcements are made and broadcast over the whole stadium—a quarter of a mile in circumference, and



Herr Hitler's arrival at the Stadium
saluted by his admirers

capable of accommodating 130,000 persons. The mushroom speaker is used over the audience and the directional type over the arena.

There are many contrasts between radio generally in Germany as compared with Great Britain. Generally speaking, it is more expensive. In Great Britain is available a cheap American set which is jobbed out at £3/17/6. This set is a 5-valve Freed Eisemann, suitable for both A.C. and D.C. Apart from these sets, about £22 seems to be the standard price. Generally speaking, the sets are good,

(Continued on page 17)

28 and 56 M.C. Notes

By E. H. Conklin, W9FM

One of the most interesting phenomena to report this month is the reception of VK3YP by W9BPU, W9JGS and others at around 7.30 a.m. Central time on November 2nd. VK3YP was R7 at W9BPU, and gave the latter an R5 report. At the time, W3AIR, W4AJY, and general east coast reception was possible in Illinois, but other dx signals did not make their appearance for two hours, when ZS1H was heard.

Two reasonable explanations might be put forward—that the signals followed the long daylight path, or the shorter darkness path, along the great circle route, with conditions as favourable as on 14 m.c. At the same time, 14 m.c. signals have been found to follow the short path through the darkness, and not to be audible in Europe. This, plus the fact that Europe and Africa were not heard for several hours, suggests that the short path may have been taken by the signal. In the summer, when VK signals are heard here occasionally, they come in not during our afternoon, but as late as ten or eleven p.m. During the late summer, VK's were heard in England as late as 1500 G.m.t., or 2:00 a.m. in Melbourne and Sydney, Australia. Summer conditions on 14 m.c. also permit late evening or night work—and November approaches midsummer in Australia. VK3YP was operating just before midnight his time, at which hour here we have sometimes been able to work as close as 700 miles during our summer. Perhaps during the next year some of our dx friends will listen or transmit at odd times throughout the day and night.

November Conditions.

Crockett, of W9KG-W9ALV, says that in his opinion 28 m.c. is tapering off gradually but surely until next spring, inasmuch as European signals are not bouncing in as they did a year ago, while VK's and J's are very weak. On the other hand, W8ZY reported hearing J's on No-

vember 7 and 8 for the first time, and others have said that conditions were quite satisfactory. One thing is certain—there are plenty of dx stations deserting 14 m.c. and giving "ten" a try. Miss Nelly Corry, G2YL, late in October said that 28 m.c. is getting just like 14 m.c., and one might as well be on one as the other.

Australian Conditions.

We have just received the October issue of "Amateur Radio," published in Australia, in which VK3JJ conducts a "5 & 10" column. He says that during the recent winter months "down under," the only dx stations heard on 28 m.c. were a few W's and J's, while there were very few VK stations active to work with them. An improvement was noted early in September, with W signals increased greatly in strength, making contacts easier. Europeans also started to come through again. ZS1H was heard with weak signals. W6DIO and W6GRX were very consistent, and about the strongest W's, working plenty of VK's and ZL's. J3FK was putting in a good signal week-ends, but few other J's seemed to be active. VK3CP has worked five continents on phone, and is experimenting with beam antennas.

(By A. Pritchard, VK3CP.)

Ten metres has come into its own once more, and the band is alive with DX. The only contin. poor at present is Africa. The U.S.A. is fb from 7 a.m. till 2 p.m., with occasional w 6 or 7 later—VK2GU qso'd W6DMN as late as 4 p.m. All the morning many W phones are R9, and these stns., W1DEY, W2TP, W2GJK, W3FSD, W4FT, W4CYU, W6GBO, W6LPN, W6NCT—with gong and 2 mikes—hi!—W6ERT, W7FQK, W8DCE, W9TTB, using pair of Eimac 300T, are probably the best. There are many K6 stns., K6LCV, K6EXP, K6MVX, K6MVB—1st is outstanding. Sigs from Asia have improved, J2iN is R8 at 8.30 a.m. and 6 p.m.,

also J2CF and J2CB are consistent. On the 9th Feb., the Europeans were OK once more, and F8QW was qso hr at 10.30 p.m.; two days later G6DH was qso at 7 p.m., and F8QW hrd—G6DH qso'd ZL3DJ and 2GU also. ZL1CD was r4 hr, showing a short and a long skip. In all probability the band will be open from 7 p.m. till 10.30 p.m. for Europe, and in a few weeks time should be alive with their sigs. Our old friend HJ3AJH, HK3JB is now HK1JB, and was qso'd hr on 14th Feb., Sun. at 2 p.m. VK3XP hrd him as early as 1 p.m., but no contact. 2GU and 2ZC also qso'd him about 3 p.m. On the following day, 3YP had a long chat with him—HK1JB is building an H type beam for Aust. similar to his U.S. beam. The W stn.'s have been calling HI7G lately, but ng. hr in Aust. The local gang have been re-vamping their gear with an eye on 5 mx dx. At 3YP Ingram has made many changes to his rx—6K7 1st iF and 6H6 2nd Det and combined noise silencer. Patto says it works like a dream! The Xmitter on 5 mx will have an extra 800 doubling from 10, and driving an Eimac 50T in the final. An H type beam is in construction also, and fed by Johnson Q net work. At 3BQ Max is making many changes. He is building a reg. doub. stage with an 801, and driving the Eimac 50T final; 3BQ is designing a Rhombic ant. for 10 and 5 mx. It should have good radiation characteristics, as one stick is 80 ft. high. The 8-tube super gives wonderful results on 5. The 6L6 class B mod is finished, and gives over 60 watts of Audio. Hr at 3CP a new 8-tube super has just been completed, and the performance on 10 is a revelation. For 5 mx an 801 as a reg doub, resonance dip on 5—250 mills to 40 mills—driving PP 801's final. An H type beam is under construction. VK2GU is getting his gear on 5 mx, and is putting in a pair of the new 808 type RCA tubes in PP. The super is fb on 5, and has received many DX stations.

QRA'S.

Cards for VK8XT may be sent to Box 103, Cloncurry.

OSIBR on 14430 is located at Karanah near Jeddah Hedjaz—Also uses 7156 KC with 1KW input.

(Continued from page 9)

the energy is unavoidably radiated from the feeders, which radiation may or may not be useful for transmission. The multiband system just described should receive preference over the Zeppelin arrangement even if the transmitter is close to one end of the antenna, because the additional loss introduced by running the transmission line horizontally to a point under the center of the antenna, then vertically to the antenna itself will be entirely negligible, and probably will be considerably less than the loss in Zeppelin feeders. The multiband antenna is readily supported from suitable stand-off insulators and can be carried around corners by making bends having a minimum radius of about 10 inches. It is entirely feasible to double back the line in trombone fashion, if desired, to obtain a length which will obviate the use of an impedance matching network.

The directional properties of the multiband antenna vary as the frequency is changed. The directivity is not ordinarily considered in amateur installations where transmission is carried on in random directions.

(Continued from Page 15.)

but selectivity is weak. There is not the choice of stations such as we enjoy, inasmuch as owing to the poor selectivity they cannot cut out as we can. The hours of broadcasting are drastically different from ours. The first session, comprising weather reports and news, goes over at 10.30 a.m., then at 10.55 the station closes down for an interval. There are no commercial stations such as we know them.

Mr. Johns obviously kept his eyes and ears open, and the result was that the interview was most informative. He returns to Melbourne enthused with fresh ideas and inspirations, which must necessarily enhance the already established value to hams of the progressive Hardware Street establishment.

GENERAL MEETING. Victorian Division.

By request of the Divisional Council Mr. O. Hoist will lecture on Modulation so all those who attend can be assured of an interesting and instructive evening.

R.A.A.F. Wireless Reserve Notes

Officer Commanding: Flying Officer R. H. Cunningham, 397 High Street, Glen Iris, S.E.6, Victoria (VK3ML).

District Commanders—

Second District, N.S.W.—A. G. Henry, Clareville Avenue, Sandringham (VK2ZK).

Seventh District, Tasmania—R. Cannon, Goldie Street, Wynyard (VK7RC).

Third District, Victoria—Pilot Officer V. E. Marshall, 3 Myrtle Avenue, Kew (VK3UK).

Fourth District, Queensland—A. E. Walz, Sandgate Road, Nundah (VK4AW).

Fifth District, South Australia—F. M. Gray, 52 Ormond Grove, Toorak Gardens (VK5SU).

Sixth District, West Australia—J. Mead, 111 Gerrard St., East Victoria Park, W.A. (VK6LJ)

Federal Notes.

Once again activity has commenced in districts which have been pretty quiet since the Xmas holidays. VMD, VME and VMG are staging come-back contests, and from what we have heard from visiting members from these States there is plenty of energy saved up for such a show.

Federal watches were commenced for 1937 on Monday 15/2 on 7317 kcs., but the training was marred by the annoying presence of JAU. An idea of establishing trunk lines from Melbourne to the remotest spots of the Commonwealth has been brought forward, and it is probable that it will be put into effect in the form of several chains of stations, the idea being to have reliable net-work connecting all States for all cases of emergency.

During the month we had a visit to headquarters from 4EI, 5MY, 5JT and 7JU, all reserve members who have returned home full of ideas, a desire to get back into the thick of the traffic! We may be able to announce big things next month, so watch out for them.

3rd District Notes.

(VK3UK—3Z1)

Our objective in the re-shuffle of sections has now been reached as all personnel are fully active and poor conditions cannot upset a schedule to any major extent through the close proximity of section members to one another. We are now going ahead with the use of Phone for message handling. This will be a novel innovation as the procedure involved is different to the normal W/T method. The country sections will be the first to get

going on R/T as most of them already have Phone installed. VMC is going to include the Riverina in its organisation and I am anxious to have a section going in this area as soon as possible. Any Ham up there who would like to join kindly let me know before the end of March so that a start can be made early in April.

3E2—3KI has been making a name for himself as a yachtsman up on Lake Boga as he landed a Trophy last week for the big race of the year.

3C3 is down in Melbourne for his holidays so will be off schedule for three weeks.

3F9 has returned to Glenorchy after a spell in the city and is starting the training of the new Training section immediately. He has installed new modulation equipment so that some of the explanatory matter can be got through more speedily.

3D4 has completed the rebuild of his gear after the fire that destroyed his station last month.

VMC will be co-operating with Army Signals in a bivouac they are holding over the last week-end in February. W/T will be handled to both Melbourne and country stations.

Some of the Western District members had a trip to Adelaide for the Fourth. Test.

3Z1 has not got the new masts erected at the new QRA yet but is working schedules using a temporary antenna strung along the fence. The change of address has put a few more hundred yards between the diathermy equipment at the local hospital and 3UK with beneficial results. The bedlam that seemed to have become a definite part of 3.5mc is not nearly so bad.

Divisional Notes

N.S.W. Division

The general elections of officers takes place during March, and so by the time this issue appears we will possibly have a new Council. The Institute has grown very quickly during 1936, and the committee for 1937 have quite a constant job before them.

The B.E.R.U. Contests attracted quite a solid entry here in N.S.W. The winner of the Senior Test in this state should be 2AE with approximately 820 points, a very fine total. Other scores are 2TI 575, 2EG 442, 2JX 420, 2VN 428.

N.S.W. was the centre of some activities when the 13th Annual Federal Convention was held here in Sydney. The N.S.W Division had the pleasure of welcoming, and entertaining the various interstate delegates. However more of the convention elsewhere in this issue.

W.I.A. DINNER.

The N.S.W. Division held their Annual Dinner in conjunction with the convention and it served as a welcome to the various Interstate Delegates.

The Dinner held at the Dungowan Cafe was immensely successful, some 80 experimenters were in attendance, included in the visitors were W. T. S. Crawford senior radio inspector, O. F. Mingay, secretary Institution of Radio Engineers, Capt. Cormack, Army Signal, V. Wilson, ZL1JW, R. Beatson, VK4BB, G. Thompson, VK3TH, D. Barbier, VK5MD, L. E. Goddard, Esq., and country visitors in 2XL, 2TX and 2OC from Wyong, 2ZC, 2TY, 2SO, from Newcastle, 2XT from Abermain and 2WA from Young.

The toast W.I.A. was proposed by R. H. W. Power Esq., who stated that the success of the organisation depended on its members, and their support was the main reason the W.I.A. was progressing.

The State President Mr. H. Peterson occupied the chair, and Secretary W. G. Ryan, proposed the toast to the Radio Inspector, Mr. Crawford in replying supplied some interesting information regarding recent changes in Departmental policy.

The dinner was by far the most

successful by the W.I.A, here for many years.

W. T. S. CRAWFORD TROPHY CONTEST.

The following were the successful entrants from the various centres who will participate in the final to be held during the Amateur and Short Wave exhibition May, 3rd to 8th.

C. Fryer 2NP, A. J. Barnes 2CE, E. Colyer 2EL, W. R. Nash 2WW R. Priddle 2RA, R. Corthorn 2VG, D. Dunn 2EG, J. Howes 2ABS, K. Westzee 2FK, I. Meyers 2KS, H. Sherlock 2TQ, T. O'Donnell 20D, A. McKenna 2WB, S. Grimmeh 2ZW and J. Cowan VK2ZC.

The Senior Radio Inspector Mr. Crawford has kindly arranged a practice to be held in March, and all the finalists will be invited along to get into form for the final in May. The practice will be held at the Radio Inspector's Office, Haymarket.

AMATEUR AND SHORT WAVE EXHIBITION.

Arrangements are going ahead for the Amateur and Short Wave Radio Exhibition to be held from May, 3rd to May, 8th. Everyone is invited to start making gear as the prizes will be bigger and better this year. The Committee appointed to look after things is 2HP H. Peterson Chairman and Club Exhibits, 2JU, J. Moyle and 2NO, D. K. Knock. Trade Exhibits, 2TI, W. J. Ryan Working, Exhibits, 2UX, F. M. Goyen. Treasurer and 2HZ, W. M. Moore, Secretary.

Give the Exhibition some thought, and when it comes around have something to show.

NOTES FROM FEDERAL HEADQUARTERS.

13th Annual Convention.

The 13th Annual Convention of the Wireless Institute was successfully concluded on the 31st January.

Those actually participating in the business of the convention, in addition to the Federal Executive were as follows:—

VK3TH, G. Thompson, delegate from Victoria; VK4BB, R. Beatson delegate Queensland; VK5MD, D. Barbier,

delegate, South Australia; VK2TI, W. G. Ryan, delegate for N.S.W.; VK2NO, D. B. Knock, proxy for Tasmania; VK2LZ, W. E. C. Bischoff proxy, W. Australia. and ZL1JW, V. Wilson, representing the N.Z.A.R.T.

Each item on the agenda paper received full consideration and was discussed at considerable length so that the decisions made should be of the most benefit to amateurs in Australia.

Federal Headquarters expect to be able to publish the minutes of the Convention in the next issue of Amateur Radio, so that the proceedings

may be made known to all members of the Institute.

It was decided, that for the next two years. Federal Headquarters would still be located in Sydney and in view of the sesqui-centenary of Sydney in 1938, that the 1938 Convention will also be held in Sydney. The present President, Vice-President and Secretary, were re-elected for the next two years by the unanimous decision of the convention delegates.

The writer was very fortunate in being present at the Annual Convention of the New Zealand Association of Radio Transmitters held in Auck-

Federal and Victorian QSL Bureau

(VK3RJ QSL MANAGER)

Ken Rankin VK3KR who as usual is well amongst any DX on tap advises that VQ8AH is situate on Salaman Island in the Chagos Archipelego about 600 miles south of Ceylon. The VQ uses 5 watts in a SE rig and is located on 14020 KC.

Ample supplies of log forms for the forthcoming BERU tests, are available at this Bureau on receipt of stamp. Intending competitors should note alterations to some of the rules.

VS8AA is situated on Bahrein Island, in the Persian Gulf.

A new QSL Bureau for China has the following address:— China Radio Club, Y. M. C. A., Hangchow, China. The QSL managers signature is a little obscure but looks like "Chow."

Cards from SV1KE are now coming to hand. His QRA is C.TAVANIOTIS, 17 Bucharest St., Athens, Greece

Log forms for the recent BERU tests are available on application to this Bureau.

GM is the new prefix allocated to Scotland.

"Tubby" Vale, VK3MK, has slipped across the border from Mildura to Wentworth; his call now being VK2AED.

Esmond Waddle, VK2UU, recently passed through VIM enroute to Sydney after holidaying at Stawell.

Dick Giddings VK3DG, invites all hams passing through Stratford, Victoria on the Princes Highway, to stop over for an hour or two.

Alf. Kerr, VR3AL recently returned from a tour of U.S.A., speaks highly of the ham hospitality shown him there. He happened to be in Chicago during the convention and met hundreds of hams, headliners and others and votes all a great bunch of chaps. He developed a great liking for "Tom Collins" as dispensed by Blackie of W9BBU.

Tom Hogan, VK3HX complains of someone using his call sign on 20MX, Cards are arriving verifying Toms' allegation.

A recent foto of VK3DW's TX is to hand. The mag will welcome a description and foto Doug.

Last months QSL notes were left out of the mag by somebodys inadvertence. (Received too late Ed.)

Cards are on hand at the Bureau for the following VK3's. Please collect promptly as files are getting clogged:—

AH, AM, AP, AT, AX, BK, BL, BS, CK, CW, DI, DJ, DR, DS, DT, DZ, EH, EM, ER, ET, EW, EZ, FB, FJ, FK, FF, FN, FS, FX, GA, GB, GE, GJ, GO, GP, GX, HB, HD, HE, IL, JC, JK, JE, JZ, KA, KI, KK, KO, KT, KY, LP, LQ, LT, NA, NB, NG, NT, NU, PA, PG, QE, QK, QO, RL, RM, RT, RW, SA, SM, SO, ST, TB, TG, TO, TY, TZ, UF, UJ, UN, US, VB, VL, WL, WN, WX, XD, XG, XK, XU, XV, XW, YG, ZB, ZC, ZF, ZJ, ZQ, ZO, ZU, ZW.

Ballarat, Dinan, Howard, Hibberd, Clark, Evans, Craven, Tonkin.

land at the end of December, 1936. The agenda items discussed at this Convention were of a similar nature to those discussed in Sydney a month later.

VK—ZL CONTEST

The contest to be held in October, 1937 will be run on a slightly different basis to our past contests inasmuch as there will be two sections.

A junior section for transmitters using a maximum power input of 25 watts and a senior section using the maximum power rating allowed by the rules of the contest. In all probability the 1937 contest will be managed by the N.Z.A.R.T. Headquarters.

U.H.F. NOTES.

VK30F.

Following the comparatively poor attendance at the first meeting of the new year, a greater number attended the second meeting on the third Tuesday in Feb. Several new members were welcomed among them being 3SA, 3SG, 3NB, and 3QJ.

These new members and several more who expect to attend the next

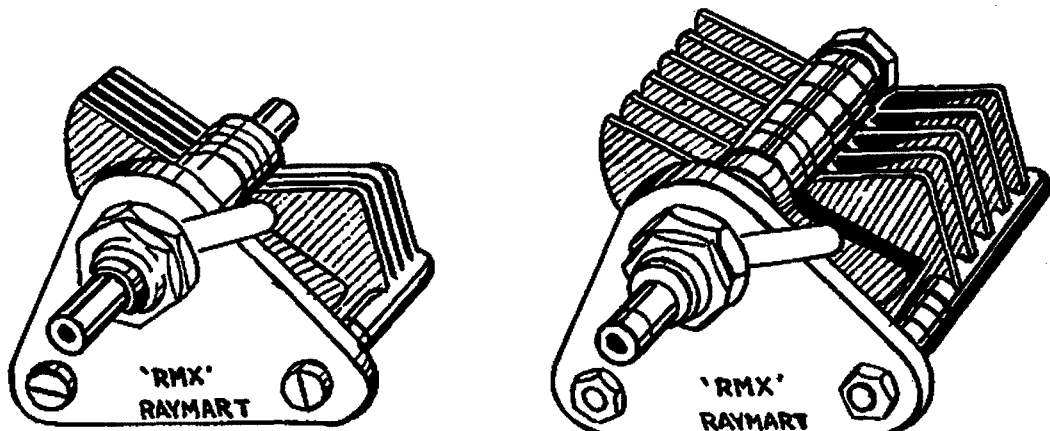
meeting will do a lot to fill the gap caused by the loss of 3KQ, 3DH and 3HZ. With the absence of these three stations operated by our three technical advisers, by our secretary and by our Council member, the section has sustained a tremendous blow, a blow that would have knocked the section out of existence but for the enthusiasm of the remaining members.

3KQ.—removed to Hobart is expected to stir up the local gang into activity, while 3DH and 3HZ will help swell the gang of hams in Shepparton, Victoria.

At the meeting it was decided to leave the election of new office bearers to the meeting next March. A full attendance is expected.

The field day to be held on Sunday, Feb. 21st was discussed and arrangements finalized to call and listen for 7AB to schedule. Portable stations are expected to be operated by 3ML, 3NB, 3OT and 3OF.

A question was asked as to whether a station newly licensed could build a modulator and use it for code, with a buzzer in place of the mike. The



Raymart Ceramic Micro-Variables !!

Special Ham Prices

V.C.15 15 mmfd 3/6

V.C.40 40 " 3/8

V.C.100 100 mmfd 3/10

For transmitters Triple Spaced

N.C.15 15 mmfd .07 in. 6/-

T.C.40 40 " .07 in. 7/6

Price's Radio Service D. G. McIntyre

5 & 6 Angel Place Sydney, N.S. W.

section decided that he could as it would give a more readable note. It is thought that the regulations would not be broken by so doing.

3OT has a new 40 foot mast and with his new beam antenna expects to put a hefty sig into parts unknown. He and 3XM are still on the air at 1900 daily.

3VH feels the loss of 3HZ whose absence brings down his list of QSO's 3JD had an accident and does not expect to be on for a couple of weeks, while 3OF with an injured foot, and newly married is on the air again with six other 5 mx stations quite close by.

At the present time there does not appear to be very much activity on 5mx. I think that most of the "regulars" are either building M.O.P.A.'s or at least thinking seriously of it.

At our last meeting a very interesting and instructive lecture was given by 3JO on "Experiments with M.O.P.A.'s on 5mx." Just to prove that he knew what he was talking about, he brought along with him the said M.O.P.A. after the final experiment was completed.

It was mentioned at one of our meetings that there are several 5mx enthusiasts out Preston way who have been contemplating joining the UHF's for some time now, but up to the present they have not done so. We offer an invitation to these chaps, in fact anybody interested in 5mx activity to join us by coming along to our meetings. These meetings are held twice monthly, viz., the first Saturday and third Tuesday every month.

This section is anxious to get as many enthusiasts as possible, whether hams or future hams, to join us and make ours THE section where SOMETHING IS DONE.

MANLY RADIO CLUB NOTES.

(affiliated with W.I.A.)

By "Second Op."

The club have been having a round of social events of late. First the boys attended the W.I.A. Annual Dinner and then the Waverley Radio Club's 18th Annual Reunion on each occasion we had a very fb time.

The boys are now preparing for their Reunion which is to be held in the clubrooms on Saturday, 27th February, this promises to be even better than last years so it will be some night out.

The 5 meter craze has arrived in

Manly and the gang are busy building receivers and mitters for some tests. We have had a small rig working and ocal reports are far.

The new rig on 40 meters is nearly completed so this will also be on the air very soon. Keith and Jim are looking forward to hooking up with their old pals again.

Three new members have joined the club since the New Year, they are very keen to go for their tickets so we wish them the best of luck.

CLUB CHATTER.

2HF is still working the dx on 20 meters fone and how he gets out; 2IP our member over at Crows Nest is on with his new rig and is working his share of the dx on 40 and 20 meters. How abt coming over to see the gang Geoff om. 2KX hrd on once or twice during the month, what is the trouble om.?

2ABK hrd from Newport on a number of occasions vry fb fone too, don't forget the reunion om.

2WQ was down from the creek last week-end looking very well, he is putting out fb fone from there when not working.

Cliff Haydon has left for New Guinea where he will be living for some time.

2NG hrd on 40 and 20 meters with his usual fb fone.

The club would like all 5 meter stations to keep a look out for 2MR down there and if anyone with a 5 meter receiver hears them, send us a report and we will Qsl 100 per cent.

The annual general meeting will take place on Tuesday, 23rd February; all members are asked to be present.

FONE NOTES.

VK21G

Condx very unreliable on all bands. Plenty W's on 40. 20 seems to be getting like the middle of last winters conditions.

2QE has his WAO cards OK. Getting the DX very often.

2OJ grl wid movie fotos. Quotes given for quantities! Is taking the gang hr with view to exchanging with W hams. FB idea Noel om.

2EU not heard much but on fone occassionally.

2DN was making comeback but blew his modulator coupling condenser. Not so hot, Jack or was it?

we were made the guests at the Capitol Theatre, where Les 3DX showed us the works.

Sunday was spent sight-seeing and a visit to 3YB, being most enjoyable, where we saw a BLUE PRINT of the outfit there, drawn up by our old friend, George Glover, who was, unfortunately, away in Melbourne. Some of the lads got sunburnt, and some tried hard to, but they were made of the wrong kind of stuff. But the best bit of Warrnambool was kept to the very end of our visit, when Les 3DX brought his swell YL to light. Leaving Warrnambool at 3.15 p.m., contact was again made with GQ, GC, KX, KJ, and others en route, and with tea, Colac (what price the steak, OM's!). The long last stage to Geelong was completed, and everyone was sorry that the end had come, for us city folk had the train trip from which to seek solace in and ponder on one of the most enjoyable outings I myself have ever had. I can assure you that everyone is looking forward to another delightful trip with Arch and his fb turnout.

Well, here's 73's to Les and his boys, and 88's to Mrs DX, snr., and Lorna.

PHONE SECTION NOTES.

By J. R. KLING—VK3JB

The first meeting of this section for 1937, was held at the Institute Rooms on Tuesday, 26th January at 8 p.m.

There was a good attendance owing to the cancellation of the permits of

some of the stations which operate on the B/C Band.

The meeting developed into a brain racking discussion on everybody's part to ascertain the fairest way that an arrangement could be arrived at. In the end it was decided that the last stations to come on the band would be the only ones concerned, and a chart was made of their order of merits over the last 12 months, which necessitated in the Secretary and Mr. Kerley departing for Mr. Kerley's place in a hurry to pick up last years order of merit book.

The allocations committee compiled the chart, and afterwards was all worked out and agreed to by the members the stations affected were told of their fate.

Our old 3LU consented to pull out and give some of the other boys a go, and 3DH has had to go up country for business reasons, therefore he stood down and other stations affected were 3XL, 3EL and 3PQ.

3TM.—has had trouble with his eyes owing to some accident I think, and sat out the meeting with much difficulty owing to the artificial light and black glasses.

3LM.—has done away with his Linear Amplifier, and has a Class "C" final now which seems much better.

3OY.—has been rebuilding and seems to be OK now.

3OV.—has been on again, up to his old standard.

3KE.—has improved much lately.

Hams!



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SHORT WAVE GROUP NOTES.

by O. E. Davies

At the meeting on January 27th a letter was received from Mr. Manning 3XJ resigning as President of the Group due to pressure of personal business.

Mr. Manning's resignation was accepted with regret and we extend to him our very sincere thanks for the very excellent work he has done for the Group in the past.

Mr. Stevens was elected as President for the balance of the ensuing term and Messrs Burdekin and Ayre were elected as Vice-Presidents.

A number of members spoke on the construction of the Super-Het for 3WI.

At the meeting on February 10th a motion was passed that the representative to Council endeavour to have a power-supply constructed for use in the Institute rooms on experimental evenings and so obviate the necessity of having to "lug" in the power-pack from home.

Messrs Stevens, Ayre and Meallin brought in Short wave receivers and gave a very excellent demonstration, following which it was decided to proceed with the construction of a Super-Het on the similar lines to that demonstrated by Mr. Ayre.

Next month, if possible, an effort will be made to publish a circuit and description of the intended receiver.

MALLEE AND NORTHERN DISTRICT. (3ZK—3HX)

The unsettled weather conditions which were experienced during most of the past month made conditions on all bands erratic 80mx being usually nothing but static, but from now on that band should improve. 40mx has also suffered from static, but in spite of that the band has never been deserted. 20mx has been very patchy and even there "ole man static" made himself heard. Concentrating on that band during the month, dozens of countries have been heard, both on fone and CW the most notable fone signs heard have been HI7G, W6ITH, W9RUK, W4DSY, PK1MX, KA1BH.

3EP Ted spends most of his time on 80 and 40mx with an occasional trip to 20 to work Dx. Is at present trying out a single wire matched impedance feed to the antenna, and judging by his 'sig here on 40mx, it seems to be working FB.

3TL Has long since returned from his holidays, and is usually on sked Sunday mornings. Treb is much taken with the new 913 midget type cathode ray tube and reckons that he'll have an oscilloscope soon.

3OR has been heard on CW with new rig. We understand that Murray will be giving radio the go-by soon, well you see Murray has done found himself a YL and got engaged. Congrats Murray.

3HR.—has made a comeback and was heard on 40mx.

3WN.—has also been heard on that band.

3BG.—Roth has rebuilt his rig and is now putting out a very nice sig. look out for fone at the end of March.

3TS.—is on the job with a 6L6 tri-tet and has worked a yank on 40mx.

3WE.—is worth a mention because one night he was heard working a PK on 40mx a hasty search of the band was made but no PK. It was afterwards ascertained that Bill was on 20mx. FB Bill.

3IH.—has had the misfortune to strike a 6A6 which is not so hot, nevertheless Fenton is helping to keep Charlton on the map.

Our congratulations go out this month to one of 3ZK's 2nd op. Martin who has passed A.O.P.C.

3ZK.—living up to his motto "We'll try any thing once" had an argument with the ground. It appears that Jim in a hurry to get home for a sked (yes 6YL was to be in attendance) had the misfortune to break the front fork of his bike and he spent the night in hospital. Jim is OK again now except that he doesn't look so handsome.

WESTERN DISTRICT NOTES.

(By 3HG.)

Most of the district's activity seems to be on 14 m.c., no doubt due to QRW on 3.5 m.c. and QRM on 7 m.c.

3KX's phone makes a big noise on 14 m.c., and 3GQ is also often on this band. The latter heard on 7 m.c., with YL operator, who is studying for her ticket. Another A.O.P.C. aspirant recently sat in Camperdown, but haven't heard the result yet.

3KK, of Coleraine, has announced his engagement! 3OR has gone and done likewise.

3HG and 3OW visited Adelaide recently, and met some of the VK5 gang, also attended W.I.A. meeting

and VK5RI Club night. Called on the Narracoorte boys on the way home.

3XG has changed to 7 m.c. phone, which is quite good.

3XU still FB T9 on 7 m.c.

3BG has at last installed crystal control, using a patent single tube tritet circuit, which sounds very good.

There are several new stations in this district, but none have yet been heard. Evidently they are waiting for the six months' phone restriction to pass.

EAST GIPPSLAND NOTES.

On Sunday, the 14th February, the following of the gang down in Gippsland met at 3DG's, and discussed their doings, etc.:—VK3GO, 3BR, and 3DG himself. VK3LY unfortunately had to work, as they were installing a new ant. at 3TR, much to the disgust of 3DG, who receives them R max all over the higher frequencies.

Among the gathering were Keith Scott and Jack Mills, of Maffra, who were successful at the recent examination for their AOPC, and hope to be on the air at an early date, when they receive their calls.

Believe the following line-ups are being given thought, too:—6P6, Ocs. es 6P6, PA, for Keith, es Jack, 6L6, 6L6 es 802 pa.

VK3GO has struck all trouble about the place with his 59 ec osc es 45 pa, but is shifting to a new qra shortly, es intends starting and rebuilding everything, including ant., which is going to be a half-wave Zepp in place of full wave.

VK3BR has been inoperative for a long time through power troubles, but hopes to have AC on now very shortly, es then look out, but in meantime may stage a comeback on qro with a MOPA, using Jenny motor and superhet.

VK3DG, with 15 watts input to 45 TNT, doing a little dx on 20 mx, few W's CM, VU, I. Pks; hopes to rebuild, and going to try a 6P6 in final stage, wid Xtal using 53 Osc and Doubler.

VK3LY has at last got a Xtal to perk, and can be heard on 40 mx wid plenty of punch es vy nice fb note; also rebuilt ant., now using 3 half waves in phase, rig also migrated from pair of tens in parallel to Xtal wid a 6L6 in final.



Phone U9028.

397 High Street,
Glen Iris, S.E.6,
February 18th.

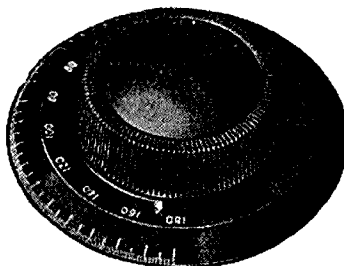
Dear Hams,

I am enclosing with this letter a few photos I have had taken of certain "EDDYSTONE" lines that may interest you.

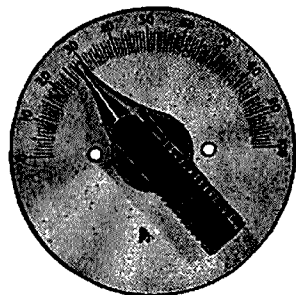
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A shipment opened last night produced six new lines, which bring the total stocked up to 50. The latest additions are a low capacity neutralizing condenser suitable for the Eimac series of tubes, etc.; whilst Nr. 1062 is an iron cored filament choke for use in the filament circuit of battery operated super hets using an electron coupled oscillator. Two dials were included, one of the "airplane" type having a dual ratio range of 20:1 and 100:1, and the other a precision job suitable for laboratory equipment, etc. A beautifully made split stator condenser with Frequentite insulation is an example of superb workmanship. The stators can be connected in series or parallel at will. All the components are well illustrated in the new catalogue, which enables you to see "for yourself." It is free just for the asking.

Hamfully yours,
R. H. CUNNINGHAM, VK3ML.



Nr. 1005.



Nr. 1027.

South Australian Division

By VK5KL.

As predicted in last month's notes, the ten-metre band opened up for DX communication the first week in February. Sunday, February 7th, DX heard was VE, W, K7, K6, J, LU9, ZL, and occasional VK2's. Yanks can be heard until 2 p.m., and in evenings G6DH is most consistent European station. The Technical Development Section in this State have been occupied in energetic work, and in the future the service of frequency checking, which was made use of by most VK stations on 40 mx last year, will be more accurate, and so more beneficial than before.

Two social cricket matches have been arranged for members, and are as follow:—On March 7th, at Hawthorn, Dean versus Waymouth Motors; and on April 4th, with the Railways Institute Club, VK5RI, at the Gorge. During the fourth test several interstate hams were in Adelaide, and attended the meetings, VK4EI, 3HG, 3OW, 2VQ, 2ZJ.

Recent lectures which have been given were by Mr. W. Parsons (5PS), "Progress of Motion Picture Projection," and by Mr. M. F. Hider, "Refrigeration and its Applications."

Members are reminded that the elections take place in April, and are asked to try and find a man who will stand for Council and do the right thing for benefiting the Institute.

Tasmanian Division

(VK7JB.)

This division held a very successful field day on the 31st January, at Blackman's Bay, a popular resort about 10 miles from Hobart. Instead of the usual hidden transmitter and D.F. receivers, the day was spent in a cricket match between teams selected by 7CW and 7JB, the former team winning by 18 runs. Considering the bumpy nature of the pitch, and 7CW's bowling, some good scores were made, the dark horse of the day being 7YL, who made 18 runs in fine style. A wrestling match to decide the championship of the

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Institute, between 7JB and Sec. "Chum" Moorhouse resulted in a deadlock when the combatants got into a half-nelson-scissors, and could not be separated. It is hoped to hold another such outing in the near future, so brush up your cricket, boys!

The circular issued by the P.M.G.'s Department re high-power permit cancellations for those holding 200 mx permits has caused some surprise and disappointment, particularly in view of the forthcoming B.E.R.U. and A.R.R.L. contests when the 200 mx hams will have to compete with 25 watts against 100 or so of the others. To date no satisfactory explanation as to the reason of this ultimatum has been received.

MEMBERS' NOTES.

7YL.—Had hopes of winning Junior B.E.R.U. contest, but an illness has curtailed activities for some weeks to come. We wish you a speedy recovery, Joy.

7JH.—Resumed Technical School duties, but still finds time to work an occasional Wes K6 on 20 mx.

7KV.—Only heard on 10 mx nowadays. Taking advantage of the B.E.R.U. contest to work a G for W.A.C. Ten.

7CT.—Had an argument with an axe, and came off a bad second with a badly gashed foot, which necessitated the insertion of four stitches in said foot.

7DW, 7HM ("Sec." Moorhouse), and 7JD hope to bust the ether very soon. J.D. (John Dodds, of 7HO) will be using crystal control on 80, 40, 20 and 10.

7CW.—Probably inspired by 7PA's example, will soon be joining the ranks of the Benedicts. Best luck and sympathies, Cros, om.

7JB.—Pruning down the transmitter to 25 watts.

7AB.—Interested in B.E.R.U. contest. Heard a rumour that you are

contemplating marriage, Doug. Seems to be getting a habit among the VK7 boys lately.

7KR.—Has recently purchased a TC 04/10.

7AM.—Got 100 m.p.h. out of his mo.-bike in a speed trial, and now going back to radio for excitement.

7BQ.—Also affected by 25-watt limit for B/C. permit.

7CL.—On 20 mx fone and CW, and working quite a few new countries.

3WX.—Stationed in Launceston again, and hopes to take out a VK7 call, much to the YF's disgust.

7HY.—Trying hard to work a W. Say om you don't hear key clicks on a gramo. record!

7CP.—Installing high-power linear stage in 7BU.

7LC.—A new ham (QRA, L. Chappell, Ross). Very active, judging by QSL's here.

7BM.—An old-timer; hopes to stage a comeback on 5 metres.

HEARD IN POLAND.

The Wilno Short-Wave Club reports the VK stations heard in Poland, from September, 27—October, 25

By x SP 1LM—Recvr. 1-v-1. Reports are RST. On 14mc band.

VK4HR 338, VK4AP 446, VK4YL 559, VK5HW 559, VK5BY 539, VK5FM 559, VK5WR 559, VK2HV 559, VK2TG 338, VK2AE 448, VK2OJ 449 VK3MR 349.

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The class Manager Mr. G. Thompson is anxious to contact all likely students for the next class.

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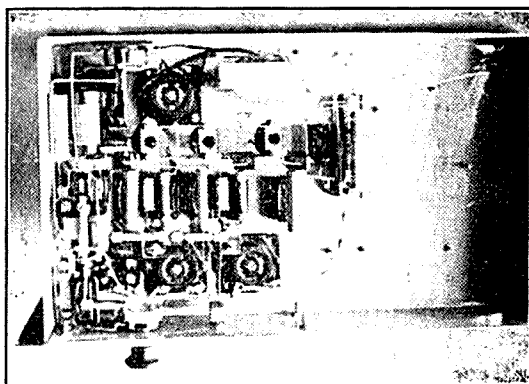
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(Continued from page 5)

plate through the diode plate coupling condenser (100 mmfd). The audio diode load resistor consists of R15 and R16 in series. The load condenser is split into two sections, C15 and C16, to aid in filtering R.F. from the lead, which goes through the audio coupling condenser, C14 to R9, the audio volume control thence to the grid of the penthode section. C16 and R17 comprise a de-



coupling circuit for keeping RF out of the cathode resistor. In the audio diode circuit fixed bias must be avoided, hence the return is made to the cathode direct. In some cases it may be necessary to connect a condenser of about .00025 mfd from the penthode plate to earth in order to stabilise the tube.

This receiver, by the way, performs well on the lower frequencies, and could be made into an all band receiver if the IF's are sharpened up. The best suggestion to date is that a 2000 Kc/s crystal gate be plugged in the first I.F. transformer.

SPECIAL ANNOUNCEMENT TO VK HAMS

A small shipment of English Transmitting Penthodes will be arriving in Melbourne about April 20th. The general characteristics of these tubes is comparable to the RK20; but the price, including socket, will be £5/5/- nett, and they are fully guaranteed by the maker.

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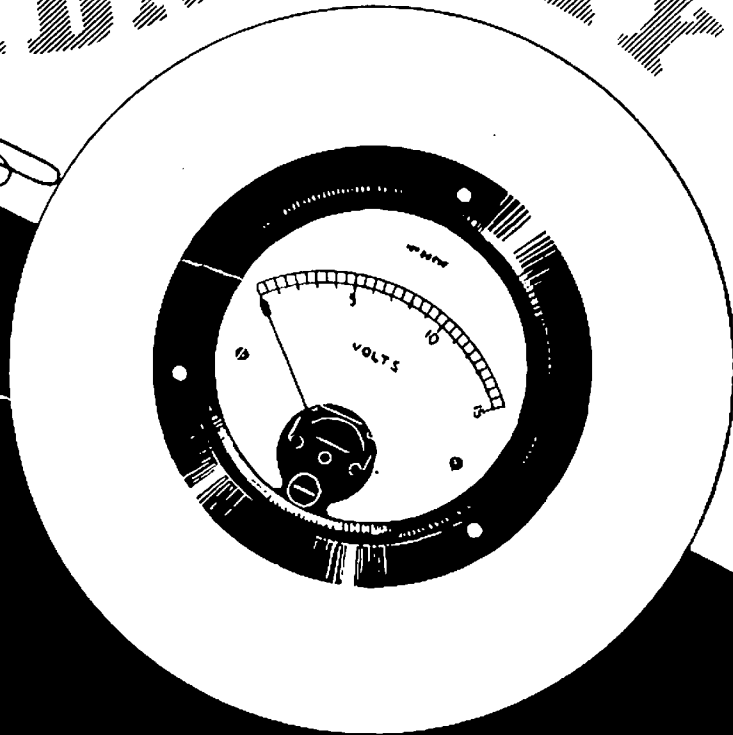
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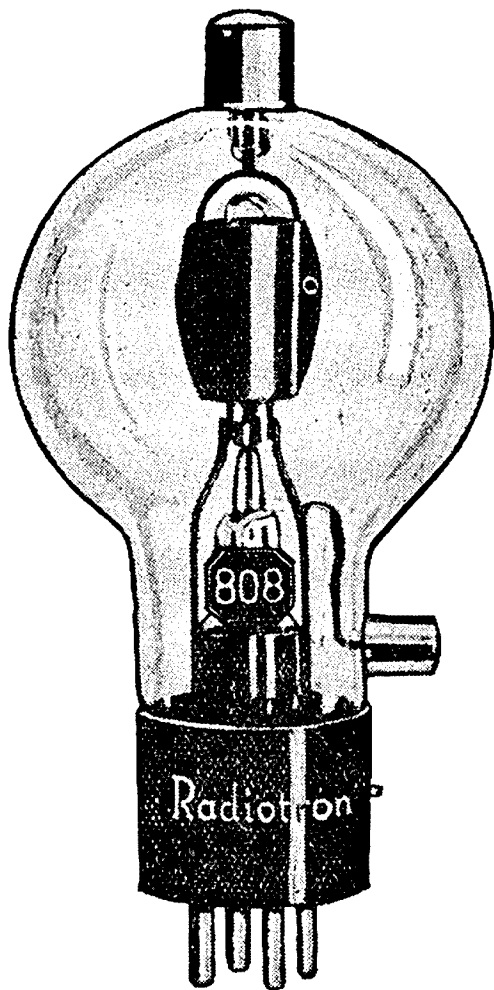
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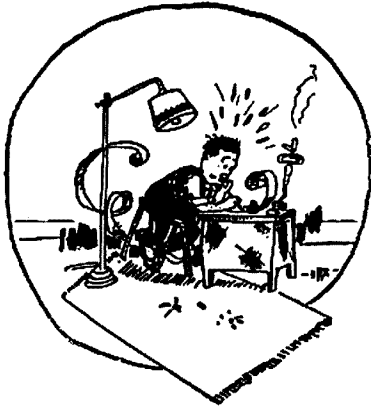
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8. HEAVY DUTY FILAMENT — 7.5 volt, 4 amp. filament provides large reserve emission for heavy-duty operation.
9. CONSERVATIVE RATINGS — Class C telegraph service: 50 watts plate dissipation, 1500 plate volts, 200 watts input power.

RADIOTRON



EDITORIAL

Whilst seated at the Fifth Test Match watching Bradman and McCabe in their memorable record partnership, we heard two men sitting behind us glorifying the cricketers of old. In fact, one would have thought that two schoolboys were batting instead of the greatest run-getter cricket has seen and the finest stroke maker in the world to-day. That night three of the younger Hams dropped into the shack, and after the usual talk of conditions and DX, the conversation drifted around to Radio in general. One of the visitors said that he would give anything to have been born ten years earlier, so that he could have lived through those great days when the short waves were just being "broken into." "How I envy you fellows who worked DX on 100 mx, who could work the world on 30, and who have grown up with radio," he said. This chap had worked some 300 stations in 38 countries in the last few months, so we asked him what he DID want from his Hobby. We told him of the little incident at the cricket during the afternoon, and asked him if he had ever heard of the old adage, "Distance lends enchantment to the scene."

We settled further into our chairs and pulled a little harder at our pipes, and, as the smoke curled upwards, endeavoured to show these Young Squirts our point of view. For although we had lived through those grand old times, our earnest belief is that our Hobby can cram more genuine pleasure, amusement, comradeship, research and usefulness to the community into one hour to-day than we could spread out over twenty-four then. We emphasised the fact that it COULD, not that it does.

Admittedly, the scales were loaded in the old-timer's favour, because there was a chance of being the first Australian to EVER work U.S.A. or England or Europe, where now one could only be the first to do it on any new band. On the other hand, unless Lady Luck hands someone a good slice of her precious gift, it requires, if anything, more thought, preparation, knowledge, and experiment now to work a country on a new band now than it did then.

Take "Five" for example. It is only a matter of time before someone breaks through to England or America. We know the cycle is almost at the optimum, and we have a fair inkling of a connection between atmospheric conditions and "ultra high" DX. "Here is the chance of a lifetime; someone must get through; why shouldn't it be you?" we asked them. They demurred, they had never been on Five, they—we cut them short: "Can you give us one logical reason why a Ham shouldn't be striving every nerve on the ultra-highs whilst still carrying on his DX and local QSO's on the other bands? Gear need not be elaborate; with reasonable intelligence it is as easy to get an outfit going on Five as it is on Twenty; the back yard has yet to be designed that could not accommodate a Five-meter di-pole. Even a fiat is no bar, as the gear is light, and can be made compact; it lends itself to portability and—" "Hey, steady on, your enthusiasm is running away with you," they objected, "in any case, we have heard that a hundred times." "Alright," we replied, "if you know the obvious advantages, why not get going? No, we know the answer, so we'll tell you. Ham Radio is so easy

to break into these days, the Handbook and kindred publications are so comprehensive, modern equipment is so easy to obtain and so efficient when going, that the present-day Ham is, in point of fact, born in the lap of luxury. Every angle of our Hobby is simplified and made easy, bar one, compared to what it was in the early days, the personal element alone is the same. The environment of Radio to-day breeds an indolent, drift-as-you-please attitude, where ten years ago a man had to be up and doing or his signal would not survive jumping his back fence!"

"Therefore you consider the Old-timers were made of sterner stuff?" one of them interrupted. "No, definitely not. The Ham of to-day is every bit as good a man, but being able to go a certain distance with little or no effort, he doesn't bother to spur himself to real endeavour. You envy the Old-timers because they achieved something, but there are opportunities staring you in the face to-day for achievement as great as theirs. The ultra-highs are your proving ground, and the time to start is NOW, or you may have to wait eleven years for the chance again. It is earnest, enthusiastic effort that is required, and we will guarantee you will have your reward in the feeling that you really are getting somewhere worth while. Think it over, and then let us have another yarn on the subject."

As they went out the door there was a thoughtful look on each of their faces, and if we have stimulated a "will to do" and a desire to get somewhere in them then we will feel the banner of Amateur Radio is passing on to worthy hands.

In drawing readers' attention to the technical article competition announced in this issue, we must again thank the New South Wales Division for such a tangible example of their support.

In the previous competition, for which a trophy was donated by the Council of that Division, the number of articles submitted showed a decided improvement.

We must have a continued supply of technical articles on the hook—members do not seem to realise this, or, if they do, they are quite prepared to leave it to the other fellow to write one.

The New South Wales Division realise our difficulties in this direction, and feel that by providing a trophy for the best article submitted, the incentive is given members to write articles and, at the same time, prove to all Divisions that they are giving the magazine all the support possible. The Editors appreciate their efforts—show your appreciation by sending in that technical article.

BOOK REVIEW.

The experience a ham gains after some time on the air often teaches him that "all that glitters is not gold," wherein the "glittering" comes from the plate of a boiling hot tube. Burning up watts that may or may not reach out further than the back fence is slowly becoming a thing of the past, and in its stead more attention is being paid to the actual radiator of that power; the antenna. Proof of this can be found in the rapidly growing number of VK and W hams who are going in for directional or controlled angle of radiation antennae.

To provide for the necessary dope on such systems and the means of feeding them, "RADIO," of California, has published a very valuable publication known as the "Radio Antenna Handbook." This has been on the market just a short time, and McGill's Agency, of Elizabeth Street, Melbourne, report that the booklet is being very well received indeed.

A review of the "Radio Antenna Handbook" shows that it suffers from very few minor defects. It may have been more helpful to refer to any one of the many newly named antennae per medium of a general index—whereas there is not one.

The handbook starts off well with a resume of antenna fundamentals and is followed by some advice on the choice of the antenna to be used.

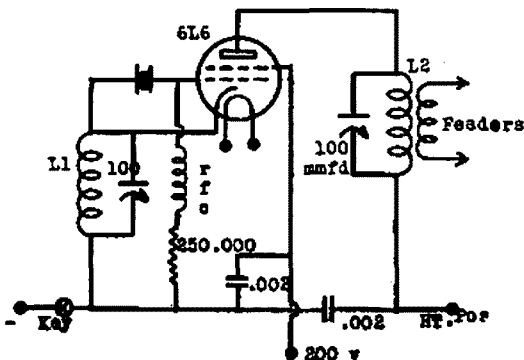
The following chapters are devoted to Methods of feeding antennae, Coupling to the transmitter, Harmonic antennae, Directive antennae, Receiving antennae, Special antennae, and finally some constructional details on masts and towers. In its 80 pages this handbook deals quite fully with all the latest designs of arrays and more especially, the manner of feeding them.

A Simple 25-Watt Crystal Transmitter for the Beginner

(By Roth Jones, VK3BG.)

How many of us, when we start off in this great game, use the self-excited oscillator and hit the roof because we get "bum" notes? Yes, I was one of them, and regret to this day that I did it.

Well, to be brief, I got sick of the self-excited T.N.T., and decided to build a 25-watt crystal rig. There are many ways of getting our legal 25 watts. But what interests a beginner (and the old-timer just as much) is the question of economy. Some chaps have a three-stage rig, and get



their 25 watts; some get it with two, but there are very few who ever do, or ever attempt to, get it from the oscillator. After going through many books on high power crystal oscillators, the question of cost came into prominence, and also the importation of suitable tubes, which is now next door to impossible.

With the advent of the new 6L6 (the new beam power tube released through A.W.A.) we have an excellent crystal oscillator tube capable of good output. The 6L6 has been incor-

porated in the familiar tritet circuit at VK3BG, and words cannot explain the excellent results that have been obtained with it. Reports have been excellent. With about 360 volts on the plate, and 200 or so on the screen, an input of 25 watts is readily obtained, and the efficiency is in the vicinity of 55%. There is ample output from this little rig to drive P.P. 210's. As everyone knows how to tune the tritet, it is not worth detailing it here, sufficient being to have low c in the plate tank circuit and higher c in the cathode circuit. The screen voltage should not exceed 200 volts, and a milliammeter should be inserted in the screen lead to make sure that the current does not climb. The metal tube has been used here, but the glass tube should give similar results, as the characteristics are identical. The metal shield is left floating. The tube gets rather warm when the "overs" are a bit long, but seems to have no detrimental effect on the efficiency.

In short, the 6L6 tritet transmitter is an efficient little 25-watt rig, with plenty of output, and only requiring a 100-mill. transformer.

For the beginner with limited cash it is an excellent rig to start off, and with two xtals 80 and 40 meter a good output on three bands can readily be obtained.

If anyone building this transmitter has any troubles a letter to VK3BG, 11 Mitchell Street, Bendigo, will receive a prompt reply, and will be only too pleased to help anyone. The coils are not given, but can easily be obtained from the handbook.

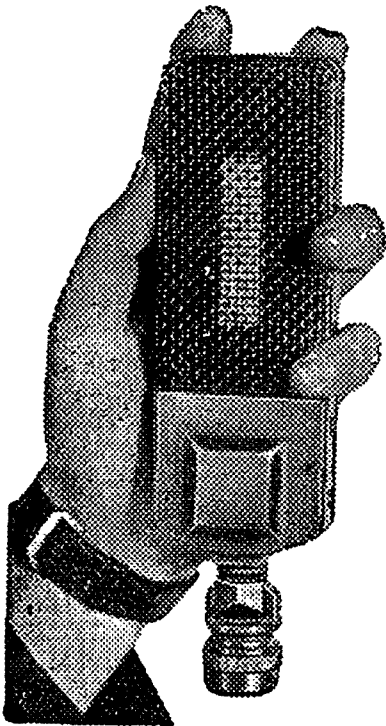
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Some Considerations in the Design of a Radio Frequency Amplifier

With Acknowledgments to Eimac Radio Co.
U.S.A.

In practically every instance the users of EIMAC tubes will wish to realise optimum efficiencies from the circuits in which these tubes are employed. Without going too deeply into the technical considerations we are setting forth a few suggestions that have proven helpful in many instances. The radio frequency amplifier can be divided into four parts for the convenience of illustration and discussion—1. The grid circuit. 2. The plate circuit. 3. Neutralizing. 4. Antenna coupling.

The Grid Circuit.

The grid circuit is the control circuit. Very seldom does the stage furnishing the excitation supply an overabundance of power in order that we do not waste too much power in the transfer from the plate circuit of the driver to the grid circuit of the amplifier it is important that some consideration be given to the losses that may occur in the grid circuit. An independently tuned grid circuit coupled to the driver with a low impedance line is the most efficient method of power transfer. By the proper matching of the low impedance line to both the driver tank and the grid tank we find that it is possible for the grid circuit to assume the maximum voltage swing permissible by the supplied power regardless of the plate voltage of the driver stage. The use of a low impedance line prevents capacity transfer back to the driver and permits complete neutralization within the amplifier. The grid circuit tank condenser may have to withstand considerable voltage if the excitation power and bias voltage on the amplifier is high. In all but the most extreme cases a double spaced transmitting condenser will prove adequate. The condenser would preferably be split stator as it lends itself well to both push-pull amplifiers, if two tubes are used, or to grid neutralizing when only one tube is used. If a split-stator plate condenser is em-

ployed with a single tube the grid condenser can be single ended. The grid coil should be designed with an idea towards efficiency, so that it should not be too small or wound with too fine wire. The grid return for the bias should be tapped on the centre of the coil if a split-stator arrangement is used, or to the "cold" end of the coil if a single section condenser is employed. The use of an RF choke at either point is questionable, as the chokes now available usually have similar characteristics, and if a choke is employed in the plate circuit there is a possibility that the two chokes will resonate with each other, causing parasitic oscillations at low radio frequencies. In order that the grid circuit be properly adjusted it is absolutely necessary that a meter be employed either permanently or temporarily in order to determine the value of grid current and to properly adjust the circuit for maximum efficiencies. The grid circuit should always be adjusted for maximum grid current.

The Plate Circuit.

The design of the plate circuit is probably the most important one in the amplifier if optimum results are to be expected. Considerable confusion has existed regarding the proper choice of capacity for the amplifier plate tank condenser. There apparently has been two distinct schools of thought, one leaning toward extremely low capacities, while the other leans just as far in the opposite direction. Any tank circuit, regardless of the inductance capacity ratio, would have infinite "Q" at resonance providing there was no resistance in the circuit. Where there is a finite value of resistance in the circuit it is found that the circuit with the least capacity will have the highest "Q" when unloaded, because the loss occasioned by the tank circuit resistance is a function of the circulating current. When we couple

useful resistance into the tank circuit we find that the low capacity tank circuit loses its "Q" at a faster rate than the high capacity circuit. If the coupling is carried beyond a certain point we find that the high capacity circuit would probably have more "Q" than the low capacity circuit. It has been determined that for optimum conditions of performance the value of "Q" should not go below a certain minimum. The "Q" of the tank circuit should be higher for phone operation than for telegraphy work. We note that for every value of plate load there is a certain minimum capacity that it is undesirable to go below. In order that the same capacity-inductance ratio be maintained we find that the size of the capacity varies directly with frequency. If we maintain a constant plate current it will be found that as we raise the plate voltage the value of coupled resistance becomes higher, making it possible to use a smaller size tuning capacity. Summarising, we find that the optimum value of capacity is determined by load, frequency, plate voltage and type of service. It is also undesirable to make the capacity any larger than necessary, as excessive circuit losses will result, due to the high value of circulating current. This type of loss makes itself apparent by excessive heating of the tank circuit.

The tank coil should be of low loss construction. Tubes operating at high plate voltages and lightly loaded require low values of tuning capacities so that losses occasioned by circulating currents are low. The low values of circulating currents makes the use of small sizes of copper tubing, or even of No. 10 wire, highly desirable, as losses occasioned by distributed capacities are less, with resulting higher overall efficiencies. It is desirable that the tank coil fasten directly to the tank condenser. If it is impractical to do this, make the connecting leads between the coil and condenser as short and as heavy as possible. The dimensions of the coil should be reasonably large, with approximately four inches as a minimum diameter in order to obtain the highest efficiencies.

Neutralizing.

The comparatively low values of capacities that are used with tubes operating at high plate voltages and lightly loaded, makes the tank circuit

susceptible to outside influences. When operating a vacuum tube under such conditions it is absolutely imperative that neutralizing be accomplished in such a manner that practically the same values of capacity and inductance be present in the neutralizing branch as in the branch to be neutralized. To realise such a condition it is important that the node for the circuit to be neutralized occur at the electrical centre. There are two schemes for neutralization which are in general use. One employs a split-stator condenser in the plate circuit. The electrical centre is formed by the symmetrical capacity to ground realised by the use of a split-stator condenser. Neutralizing voltage is fed from one end of the plate tank coil to the grid of the tube through the neutralizing condenser. The grid condenser can be single ended. The second method uses a split-stator condenser in the grid circuit with the electrical centre formed by the condenser. Neutralizing voltage is fed from the opposite end of the grid tank to the plate of the tube through the neutralizing capacity. When tubes are operated in push-pull a combination of the two systems is employed. In all cases where care has been taken to make everything symmetrical and the leads to the capacities short, it will be found that the capacity of the neutralizing condenser is approximately equal to the tube capacity. It is important to note that the minimum capacity of the split-stator condenser to ground should be three to four times the capacity of the connected tube electrode to ground, in order that the condenser will have sufficient capacity to determine the electrical centre of the circuit.

Antenna Coupling.

In order to operate an amplifier at its maximum efficiency it is important that the tank circuit, when tuned to resonance, represent a pure resistance into which the vacuum tube is to work. Standing waves on the transmission line will result in a change in power factor of the tank circuit, with the resulting increase of tube dissipation. Unless the standing waves are completely eliminated it is imperative that some sort of "buffer" arrangement be used between the tank circuit and the antenna. The "buffer" should consist of an impedance matching network which will correct the errors in

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the transmission line and reflect a pure resistance into the tank circuit. The proper loading of both sides of a push-pull tank circuit is another important consideration. Coupling to a two-wire transmission line should be effected symmetrically around the electrical centre of the tank coil. If only a single wire feed is used with a push-pull amplifier a low impedance line should couple the plate tank to a second tank to which the single wire feeder is connected. This second tank will allow the proper impedance matching as well as tend to eliminate undesirable harmonics.

Types of Amplifiers.

All the above considerations hold for all types of amplifiers regardless of their use. We find the real differentiation between the various amplifiers is in the amount of bias employed and the available excitation power. Different amounts of bias alter the performances to such an extent that the amplifier classifications are designated in terms of ratios of plate voltage to bias voltage. A class "B" amplifier is one in which the plate current is reduced practically to zero by the bias. This amplifier gives the maximum power gain with limited excitation powers. Over a good portion of the cycle the plate current varies directly with the grid voltage, so that this is the type of amplification used in radio frequency linear amplifiers where modulation has been effected in some low level stage.

A class "C" amplifier is one that is biased beyond the plate current cut-off point and is noted for the somewhat higher plate efficiencies obtained. Somewhat greater grid driving power is necessary so that the power gain is less with this type of amplifier. Where modulation is effected in the plate circuit of the amplifier the bias voltage should be great enough so that a condition of twice plate current cut-off is noted if 100 per cent. modulation is expected.

Tuning.

The grid circuit should be tuned to maximum grid current. The plate circuit should be tuned to resonance with plate voltage off by noting the maximum deflection of the RF meter used for neutralizing. The neutralizing condenser should be adjusted until the RF meter shows minimum deflection. The plate tank circuit should then be readjusted until the RF metre

Concentric Line Feeders at High Frequencies

By E. H. Conklin, W9FM

Every year or two, someone calls our attention to the advantages of the concentric transmission line, but few appreciate these advantages particularly where the antenna is also to be used for receiving.

The dimensions of such lines are usually selected so that the surge impedance is around 65 to 100 ohms with the inside diameter of the outer conductor usually from three to four times the outside diameter of the inner conductor. Most of the loss is in the copper resistance of the inner conductor and the dielectric loss in the spacers. Price usually determines the size of the outer conductor, after which the proper size for the inner one is calculated for the lowest loss.

The loss in this type of line is not large, even at ultra-high frequencies where other low impedance lines, such as the twisted pair, are practically useless. The loss varies as the square root of the frequency. A three-eighths inch line built by Doolittle and Faiknor, of Chicago, is said to have a loss of 0.8 db per 1000 feet at 1000 kc. At 100 mc. (3 meters), therefore, the loss in only 100 feet would be 0.8 db. A two inch line is available at twice the cost (but requires expensive factory-made bends) with a loss of only 0.14 db per thousand feet at 1000 kc. On the usual amateur high-frequency bands, the loss in moderate lengths of the line will not be appreciable.

It is possible to end-feed an antenna with a low impedance line, which is most convenient for verticals mounted high. Because the impedance at the end of an antenna is not infinite but is very roughly 3000 ohms (depending upon conductor size, insulators, etc.) a quarter-wave matching section can be used to match this to the approximately 75 ohms impedance of the line. The transformer can be a pair of wires or tubes so spaced that the calculated impedance, squared, equals 75×3000 —the product of the antenna and line impedances. This works out

to be a little less than 500 ohms. This same stunt is called the "Johnson Q" when it is used to match a spaced line to the center of a doublet, in which case the matching transformer must have an impedance below 200 ohms, requiring close spacing or large tubing.

Tuning.

Some care should be taken to cut the antenna to the correct length. The presence of standing waves in the feeder can normally be detected simply by measuring the current at both ends of the line, which should be the same. If the antenna is resonant at the operating frequency, the spacing of the conductors in the matching section can be varied to obtain proper match. The antenna power will, of course, be equal to the line current squared times the line impedance.

Coupling to the transmitter is quite simple. A few turns of wire near the final tank, close enough to load up to the proper input, will fill the bill. A "Collins Coupler" is not required.

Advantages on 56 Mc.

A number of five meter stations have placed half-wave length antennas at the top of expensive towers in order to work greater dx without a beam. These same stations may be troubled with ignition interference when using the high antenna for receiving because of feeder pick-up. The grounded concentric line, forming a well-shielded circuit, would eliminate pick-up below the antenna. The cost of 25/- a foot for the small three-eighths inch line, which will handle 5 kw unmodulated cw or 1 kw phone, does seem large but the advantages of the high and expensive tower are not really enjoyed until the full benefits are available for receiving.

The value of a concentric line is illustrated by the experiences of the Wheaton, Illinois, police on 40.1 mc. With the receiver at the police station, an automobile running in the block

(Continued on page 14)

W8ZY's 96-Footer

(By E. H. Conklin, W9FM.)

A year ago we called upon Karl Duerk, W8ZY, and became interested in his 39-pound duralumin mast, which, placed upon the house, reaches up to the 96-foot level, and acts as an all-band antenna. Recently we made a special trip to Defiance, Ohio, just to take another look, and obtain a description, which is presented below. If you are interested in its operation rather than the construction, skip over the following details:—

Material.

The bill of material calls for 70 feet of 0.120 inch wall, 40,000 pound tensile strength "dural" tubing. The wall is slightly less than $\frac{1}{8}$ inch, and therefore tubing in quarter-inch steps will telescope together. The five 14-foot lengths have the following inside diameters:—2", $1\frac{3}{4}$ ", $1\frac{1}{2}$ ", $1\frac{1}{4}$ " and 1". The total weight without the guy wires is 39 pounds, and can literally be lifted single-handed. A telephone call to the Alumin Company revealed that tubing of this strength is relatively inexpensive compared with heat-treated materials. It is described as "52 S.H." In quantities less than 25 pounds of each size, the cost runs around 61 cents and 62 cents a pound for these diameters. The duralumin therefore will run to about 25.00 dollars.

The mast is supported on a large multi-skirt insulator (who said "pop Bottle?"), because high voltage will appear at the bottom. Good insulators should be used where the guy wires connect to the mast, because these must handle the strain as well as the voltage. Duerk uses the twelve-inch Johnson type. Other guy wire insulators can be the inexpensive "eggs" which involve looping the wire through so that a broken insulator doesn't let the mast down on somebody's head. Number 12 galvanized iron wire—or copper-clad steel where smoke might cause corrosion—is used at the upper guying position, while only #16 is necessary for the lower guy wires.

The upper guy wires are attached to a pipe flange, which has had its threads turned out to slide on the

$1\frac{1}{4}$ -inch section resting on the $1\frac{1}{2}$ -inch section (inside diameters). Fittings of this sort without internal threads are probably available also from brass supply or boat supply houses—or whoever supplied the rails before bars went modernistic.

The sections are bolted together with $\frac{1}{4}$ -inch drill rod, threaded at the ends and cadmium plated. A single bolt at each joint is sufficient, because the outer tube is squeezed against the inner one sufficiently to remove the "shear" strain upon the bolt.

And, lastly—get a cork to plug the top to keep rain water out.

Construction.

It is difficult to distinguish between the construction of the pole and the operation of raising it. The only real construction job is drilling four holes for the bolts. If this is done beforehand, the bottom two sections can be slipped together ten inches, and the bolt hole drilled through (see figure 1). The same overlap is used at the second and fourth joints. The third joint, however, carries the strain guys. In this case the overlap is made $2\frac{1}{2}$ feet long, and, in addition, a four-foot piece of the 1" section is slipped inside of the $1\frac{1}{4}$ " section to strengthen the joint.

The total length above the base insulator at W8ZY is just 60 feet, the visible length of each section beginning with the bottom being 14', 13' 2", 13' 2", 11' 6", and 8' 2". Originally the whole top section was used, the total length being 65 feet, but the top swayed around a little more than was thought safe with the upper guys 25 feet below the top. If the full half-wave length is desired on 7 mc., it might be better to start with a 20-foot section of the two-inch tubing, thus raising the upper guy wire position, keeping it twenty feet below the top.

If a vertical rod is pivoted at the base and is guyed two-thirds of the way up, it could vibrate mechanically with a "half-wave length" below the guys and a "quarter-wave length" above. By placing the second set of guys one-third of the way up, the

possible vibration is reduced to almost nothing. The top will weave about as much as two or three inches, but no serious bending has been observed.

The guy wires can be made ready. In the W8ZY mast, the upper guys are broken into 6½-foot lengths, the lower guys into 4½-foot lengths. They can be attached to the substantial insulators located just at the flange. Four guys at the upper position are recommended.

One way to support the high-tension insulator on a slanting roof is to make a box to fit over the peak, bottom side up, requiring no nails in the roof. This box can be large enough to bridge across two rafters in the roof. See

If you are going to put the pole on top of a peaked-roof house, a handy gadget is recommended. Duerk built up a little double platform from 2 x 8 planks and some 1 x ¼ inch iron bar (see Figure 5). The perforated strip used to support pipes from basement ceilings probably could have been used. The iron bar is bent to conform with the roof angle at the peak, and bolted at the ends to triangular pieces of the plank which support a narrow, horizontal platform on each side of the peak. If the mast is to be right at the edge of the roof, don't fix things so that the mast grows up through the centre of the platform unless you have arranged to take the platform apart to remove it. One dodge is to move one of the iron straps in from the end of the planks so that both straps will be on the same side of the mast.

Wood can be used in the construction of the platform in place of the strap iron, or two ladder-like arrangements can be built and bolted together so that one ladder goes down one side of the roof while the other, bolted to it at the top end, serves as a counterweight down the other side. (See

Raising the Pole.

A scaffold was used the first time this mast was raised. When it was taken down, shortened, and replaced, the "handy roof gadget" was used. With men standing by the upper guys and two on the roof, the whole thing was lowered, rebuilt and raised in about an hour.

The first thing to do is to cork the top section and set it on end. Then the next section can be bolted below, working over the edge of the roof. The flange is then slipped on, and the

middle section is bolted on and passed up hand-over-hand. The fourth section and sway-guys are next attached—half-way between the strain guys and the bottom—followed by the bottom section. Some help will be needed from the guy wire attendants on the ground by way of keeping the pole vertical after the third section is attached.

While ordinarily a mast of this height would require numerous sets of guys and a large area over which to stretch the guy wires, the fact that the upper guys are only two-thirds of the way up reduces the space requirements. Duerk has one guy attached to the house only 30 feet from the base. The other three are fastened to convenient trees and posts from 30 to 50 feet from the base.

The Feeder.

At W8ZY, the total length is now only 60 feet above the peak of the house, and therefore the feeder runs as a single wire for an additional six feet from the bottom of the pole before the second feeder starts. On most bands, the feeder is switched to a pair of condensers and a coil, the latter being link coupled to the proper transmitter. On ten metres there was a shortage in the condenser supply, so the coil was placed in the feeders without a tuning condenser, and the turns squeezed together until resonance was obtained. On 80 metres, a horizontal wire could have been attached to the second feeder, or the whole mast, plus feeder, could have been worked against ground, but Europeans could be raised just by tuning the feeders and antenna, allowing the feeders to become unbalanced.

Operation.

Our first impression of the operation of this mast as an antenna was that it would be fine on 7 mc., but because it is a full wave length on 14 mc., the higher angle of radiation might reduce its effectiveness. We had visions of center-feeding it to get 2 db gain and concentrated low-angle radiation. However, the absorption of radiation from the bottom half may be greater than from the upper half, which is in the clear above houses and trees, so that the pattern may not be as unfavourable as might be expected. W8ZY does get out very well on the 14 mc. band, however, and gave us this illustration. —

A chap from Akron, Ohio, recently

moved to a rubber plantation in Liberia, and put up a rig to keep in touch with the family. He is using the call UN2A (14,404 kc. with a real signal!), and a beam pointed across the U.S.A. W8ZY has plenty of competition with other 1 k.w. rigs on 14,397 kc., yet UN2A says that other R9 signals cause no trouble, even when copying several hundred words of news from home—with two exceptions, W1LZ and W6CXW.

On ten metres, the pattern presumably has several lobes, including some at low angles. With 250 watts input to a T-55, W8ZY seems to work plenty of dx, with reasonably good reports.

On receiving, signal strength is better on all bands than on anything else that has been in use. On the highest frequencies, ignition noise is worse than on a horizontal doublet, but the better strength justifies the use of the single antenna for all purposes.

The field strength within the house is noticeable, making it necessary to use some by-pass condensers across lights. That would still happen, probably, if the mast supported the end of a low horizontal antenna. If a short pole is available in the yard, the mast could be mounted on that, away from the house.

No one is making claims that this antenna is better than stacked doublets, beams, etc. Yet it is up in the clear, where some power can be radiated above trees and houses, it can be used on several bands, and is not as unsightly as a pair of poles with a lot of guy wires all over the lot.

(Continued from page 14)

could make it impossible to hear the cars. An eight element bi-directional beam—two stacks of four elements—helped somewhat when the squad car was in line with the beam, but also brought in the New Rochelle, N.Y., station a bit too well on occasions. Jim Wilson, W9BUK and Charles Fetweis, W9KJW suggested placing the transmitter and receiver, remotely

controlled, at the base of the water tank, with a concentric line to the antenna high above. With this antenna cars directly below were some distance away, in the direction of least antenna pick-up, so ignition troubles practically disappeared. The fixed station was able to hear the squad cars anywhere in the city at any time.

At Lower Frequencies.

When there is a vacant lot nearby, the "ham" usually cannot take advantage of the space. A concentric line along a fence or buried would make the vacant space available for an antenna. When this type of line is buried, moisture may collect in it, which can be blown out with dry air or kept out by filling the line with nitrogen under pressure.

Most of us object to untuned lines because of the usual requirement of a separate antenna for each band. Bruce, we understand, uses one of these lines on a diamond antenna operating on various frequencies over about a three-to-one ratio. So you see, it can be done.

£1 1s. ARTICLE CONTEST.

The New South Wales Division feels that the prize it offered some months ago for the best technical article, over a period of four months, advanced the standard of articles to a considerable extent, and in order to further the standard a step more, has offered another prize of £1 1s. This generous donation will be awarded on the same basis as before, that is, for the best all-round contribution received and published before the end of August. The editors of "A.R." will be the sole judges, and their findings will be binding. Here is an opportunity for all, and is by way of a change from DX contests, which have come to an end for a while. The articles can be theoretical or practical, and circuit diagrams, plus photos, will carry much weight. Post contributions to

THE EDITOR,

Box 2611, G.P.O., Melbourne.

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Accurate grinding to .03 per cent. 3.5 M.C., 20/-; 7 M.C., 30/-.
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PROMPT DELIVERIES

MAXWELL HOWDEN (VK3BQ) CONS. RADIO ENGR.

13 Balwyn Road, Canterbury, E.7.

28 and 56 M.C. Notes

(By A. Pritchard, VK3CP.)

The W-CW contest is over, and oh!—did they come thru on 10! There was an absolute harvest for those VK's who could be on during the day time. W's 1, 2, 3 started getting thru at 6.15 a.m., and W6 and 7 faded out at 3 p.m.—many phones as late as 4 p.m. W6CKR phone carrier audible at 5.30 p.m. VK's 6SA, 5KO, 4AP, 2LZ (r 6 hr), 2PN, 3MR, 3BQ, 3CP, 3YP furnished most of the VK's for the States. VK3iW, 3VB, 3UW, 3GU were also on for a short time. On the 8th March, W1TW was r6 at 12.15 p.m., and 3YP qso W2TP on phone at 1.30 p.m. The Canadians were more plentiful on 10 than 20 mx. VE5QP, 4PH, 3ER, 2KA were probably the best. K7PQ CW r8, K7FBE phone r7, are easy contacts. From Central America, XE1AG, XE1AY, XE1LM, XE1AM, and phone from VP5PZ are good from 9 a.m. till 12 noon. W1SZ, with a Rhombic ant., was r9 at 8 a.m. on the only dead morning, the 15th March. Last year, during the contest, W1's were the most scarce. This year W1TW, 1ZZ, 1CUH, 1ME, 1BPN, 1AV, 1iCA, 1TS, 1Xi, 1HOU, 1ZB, 1ANA—cw—were all bumper sigs. W3EUQ, 4AH, 2DZA, 8DYE, 5EHM—using diamond—WtRH, W6JN, 7BYW were all r9 for hours at a time. VE4PH, 4SH, at 7 a.m. and 1.30 p.m. respectively, were fb. As we expected, the Europeans were at their best again during our evenings. On Sunday, 28th February, VK3BQ had a fine bag (!), and worked more than a dozen. D3BMP at 5.30 p.m., and YL2CG at 11 p.m., marked the beginning and ending of the fbKX. G2AO, G6DT, FM8AD, ON4VW, F8LX, D4XJN, G2PL, U9AW, G5QY were all r8 between 10 and 11 p.m. Also ZE1JU was pounding in at 10.15, and was qso by 3BQ. YP, CP at that strange time for South Africa. On the 25th February, phone was put over to HK1JB, which completed the 10 mx phone WAC hr at 3CP, and the next day all continents were fb—1.30 p.m. HK1JB, 1.45 p.m. VE5QP, 6.20 p.m. G2PL, 6.30 p.m. ZE1JJ, 6.45 p.m. J2CF, and 7 p.m. VK3BQ, qso hr at 3CP

for WAC in 5½ hours. On the 5th March OE3AH, YM4AA, PAoAZ were all OK at midnight, but faded out at 12.30 a.m. VK3XP has been rebuilding his modulator, 27-2a5 class ab 42, giving over 20 watts audio. VK3BQ has the Rhombic up, and is getting good reports. Each leg is 2¼ waves long on 10. VK2GU has dozens of contacts on phone each day with the States, and Arch. is well known for his fb phone. W6iTH has his 5 mx rig nearly finished. This consists of 6L6, 807 doub. 35T, and 100TH 400 watts tone modulated. The ant. is vertical WID, 3 refl. and 5 directors, set on Aust. VK3CZ has enough room to put up a diamond ant. (over the tennis court), and is all eyes on Max's ant. for results, etc. Arthur has built a reg. doub. with a '210, from 20 to 10 mx; the output gives at least 30 mills grid C in the 800's PP final. VK3YP has completely rebuilt his mod., 57.57 2a3-2a3PP, class ab 6L6G. Patto qso'd 22 W's in an hour. All remarked on the quality and punch. Xtal mike does the job! VK3OC has qso 5 contin, and only wants Europe for WAC. Ray is making coils for his new super, so we'll hear him again on 10.

(By E. H. Conklin, W9FM.)
56 Mc. Dx Again!

On 2nd December, Frank South, at W3AIR turned on his 28 mc. receiver shortly after noon, to run across W6DOB's signal calling "CQ 56 mc." This apparently was 28 mc. doubler leakage to the antenna. Frank had learned of his 56 mc. harmonic, so ran up the bias voltage to increase the second harmonic output from the 28 mc. transmitter (a pair of 830 B's), and raised W6DOB. Back he came with "ur r7 qsb r2—am copying u on 56 mc.—are you on five?" W6DOB attributed the ten meter output to the proximity of the 28 mc. antenna feeder and final tank coil. He mentioned having schedules with G5BY, LU1EP, XE1AY and VK4AP on 56 mc., and expressed regret that W3AIR was not listening on five metres to make it two-way. We believe that this QSO should be credited as the first for W3-W6 on 56 mc.

On 22nd November, between 10:00 and 11:00 G.m.t., both G2HG and BRS250 heard CN8MQ on 56 mc. On seven days between 13th and 28th October, ZT6K, in South Africa, heard the sound portion of television broadcasts on 7 metres from Alexandra Palace, London. On 20th October, he heard the 56 mc. harmonic of W6IRD calling ZS2P. The receiver at ZT6K consists of a battery model Pilot Wasp, regenerative detector, and two stages audio, with home-made coils for seven and five metres.

We feel that more U.S.A. stations could hear 56 mc. dx if ordinary regenerative receivers or good super-heterodynes were in use, capable of hearing code, or phone carriers. In December, a month of long skip distance, 28 mc. signals have occasionally been heard as close as 600 miles. A year ago W6DOB was heard at W3SI. Certainly the shorter skip this coming spring and summer should enable us to set up new records for long-distance five-metre work.

We have been looking about for stations which would volunteer to put automatically keyed five-metre code signals on the air more or less continuously. These could be straight c.w. where local interference would otherwise be created, but some tone modulation could be applied elsewhere so that non-oscillating receivers could hear the signal. With such "beacons" on the air regularly, the 56 mc. gang would definitely have something to listen for. This long distance work does not require beam antennas, and horizontal receiving antennas can probably be used to good advantage (if high) where local noise would interfere with a weak signal received on a vertical antenna.

The Oakland and Berkeley, California gang, we hear, is gradually shifting to crystal control—realising that a ten-watt crystal signal will out-perform fifty watts self excited.

28 Megacycles.

During November and December there has been some complaint about lower signal strength on ten-metre dx. Part of this may be the usual year-end slump of very long distance signals between points north of the equator, though some may be due to a larger number of signals and consequent QRM, particularly in the jam at 28 mc. flat.

To all except the west coast, Asians on ten metres are still news. Yet to W3AIR (phone, with a pair of 830 B's) who uses the beams described in the November issue of "Radio," they are just the evening entertainment. Frank sends us this list with frequencies, all worked except J2DC:—

J3FJ	approximately	28,450	k.c.
J2CB	"	28,080	"
J2IN	"	28,120	"
J2DC	"	28,220	"
J3FZ	"	28,300	"
J2IS	"	28,305	"
J3FK	"	28,350	"
J2CF	"	28,355	"
J2LU	"	28,090-28,400	"

If you have trouble finding J's, listen late afternoons and evenings from late January to April.

The beam for receiving not only helps signal strength when the stations can be heard on an ordinary antenna, but increases the number of days on which J's can be heard, and the length of time they come through. The matched feeder, of course, is a help. Recently we have been working out the patterns for stacked antenna systems, directional or not. We have about concluded that stacking horizontal antennas one above another gives gain without lowering the angle of radiation, although with vertical antennas both gain and low angle radiation result. The horizontal arrangement has an advantage on receiving, when the signal follows a somewhat higher angle of approach, and where local interference is to be reduced.

Every now and then we get word from one of the gang asking us to stress the need for the use of a proper (resonant) receiving antenna on 28 mc., and a feeder that gets the energy to the receiver.

New countries are represented, this month, by YT7MT on about 28,300 kc., reported by W3AIR; YR5OR, heard by ON4NC; and PK3ST, who has been working G's. Several of our readers have asked for frequencies of various dx stations, particularly the "hard" ones. We'll print them if you send them in.

Station Reports.

British Report, via G2YL.—Conditions during November were very similar to those of October, but showed a decline toward the end of the month, and the band sometimes went "dead" as early as 17.00 G.m.t. Australians and New Zealanders were more numer-

ous than before, but the latter were usually only audible for a short period around 08.15 G.m.t., and VK's are now often stronger at mid-day than earlier. Activity in Asia is gradually increasing, and new stations heard on the band in November include VU2AM, PK3ST, VS6AS, J2CB, J2CE, and J3DC, but J's, like ZL's, are getting rather scarce now. VU2AU and VS6AH are probably the most consistent stations, the latter's phone being R7 in England at times. African 28 mc. stations continued to get through well, and their numbers were swelled by FT4AG, SU1CH, SU1SG and ZE1JR. ZS1H was audible at all hours of the day, and it is rumoured that his 28 mc. Contest score is now in the neighbourhood of 130,000 points! South and Central Americans were heard spasmodically, but there are still only a few active stations. They include CP1AC, K5AY, LU1EP, LU9AX, OA4J, PY1BR and VP2AT. All districts of U.S.A. and VE1, 2, 3 and 4 were heard during the month; occasionally it seemed as if the usual occupants of the 14 mc. phone band had emigrated *en bloc* to 28 mc. W6 stations have been as good as ever, but for some reason W7's have become scarce. European signals were considerably louder and more numerous than at the same time last year, the most consistent countries being the comparatively distant ones, Russia, Finland, Latvia, Roumania and Jugoslavia. New G stations appear on the band almost daily, and the number now active must be approaching the 100 mark. A noteworthy feature this winter is the frequent reception of "distant" G's at about R3-4. G6DH has added considerably to his contest score during November by working 22 different Oceanic, 7 Asiatic, 15 African, 20 European, 5 South American, and 207 North American stations. On 22nd November he worked all continents—VS6, three VK's, LU, ZU, OH and W2 in just over 2½ hours, and apart from the Asiatic contact was W.A.C. in 1½ hours! G6YL has made W.A.C. and W.B.E. twice since 21st October, and heard 30 different countries worked with 6 to 10 watts input include VK, VS6, U9, ZS, ZE, FB, LU and PY. She suggests that dx stations, even if they prefer to transmit at the low frequency end, should sometimes tune their receivers from the high fre-

quency end after a CQ. G6RH worked seven W6's in consecutive QSO's on 28th November, 17.15-19.00 G.m.t.: W6IOJ, W6LEE, W6GRL, W6JNR, W6JJU, W6NEP, W6EYC. Conditions were very poor in England on Sunday, 29th November; African and South American were the only continents heard.

ON4NC.—The rare continent in October was South America. Asia in the mornings with J, VS6 and U9. Heard a rare one, TI2EA. ZL and VK at about 9 a.m. ZS1H still comes through, weaker in evenings, but often QRM'd by U.S.A. stations. W stations, all districts, begin to get over at about 13.00 G.m.t. West Coast a little later in the afternoon. On the whole, conditions fine in October.

W9ALV.—Work here week-ends during the past month included G6OZ and OK2HX on 20th October; D4GFF, HAF8C, OE1FH, G5QY and OK2RM on 1st November; VP2AT on the 8th; D4QET, D4DMN, and SM7YA on the 15th; and G2WO and J2IN on the 22nd. Not much doing on the band from then to 22nd December, with signal level down. Expect a pick-up in conditions in February.

W9DSR.—Deserves mention, says W6ITH, for R8-9 signals on phone, using only 5 watts to a type '19 tube in his final. Antenna is Johnson-Q fed. Uses a wind-charger, storage batteries and dynamotor.

W6ITH.—During Sweepstakes Contest in November, worked 111 stations on ten-metre phone, and had replies from K7PQ, ZL1CD, LU9AX and HI7G. VK2GU's new frequency is 28,120 kc. with a very nice phone signal about dinner time, working up to a dozen fellows every evening. He goes to work at noon, so can spend his mornings on the air. VK2YP and VK7KV are heard infrequently, but well. VK4WH, at Longreach, in the middle of Queensland, is using 12 watts to a single '10 feeding a Reinartz beam (see "Antenna Handbook"), and working Europe quite often. Australians hear FM8AA occasionally. ZE1JR comes in well on 28,e90; J3FZ on 28,285 fairly well with good English; LU9AX occasionally on about 28,040. Worked ZU6P at 8:00 a.m. P.s.t., and received 27 letters and cards from SWL's in England on this one QSO. "Of course, all the above is on phone."

(Continued on page 28)

R.A.A.F. Wireless Reserve Notes

Officer Commanding: Flying Officer R. H. Cunningham, 397 High Street, Glen Iris, S.E.6, Victoria (VK3ML).

District Commanders—

Second District, N.S.W.—A. G. Henry, Clareville Avenue, Sandringham (VK2ZK).

Seventh District, Tasmania—R. Cannon, Goldie Street, Wynyard (VK7RC).

Third District, Victoria—Pilot Officer V. E. Marshall, 3 Myrtle Avenue, Kew (VK3UK).

Fourth District, Queensland—A. E. Walz, Sandgate Road, Nundah (VK4AW).

Fifth District, South Australia—F. M. Gray, 52 Ormond Grove, Toorak Gardens (VK5SU).

Sixth District, West Australia—J. Mead, 111 Gerrard St., East Victoria Park, W.A. (VK6LJ)

Federal Notes.

The recent cyclone at Darwin, which caused much damage and loss of life, should be a fair enough warning of what may happen at any other place at any unforewarned time. Failure of communications and domestic services are serious items in such cases, and if one, the former, with which we are concerned, can be provided, then a most valuable service can be rendered to the community. Radio must be looked to to provide the means of communication when line-connected services fail. When radio enters the picture one must have two essentials—firstly, the gear, and secondly, the operator and organisation. The matter of portable transmitters and receivers that will operate over a period of a few weeks independent of commercial power supplies cannot be taken too lightly. It is very clear that this organisation must be fitted to cope with any emergencies in such a way that a station may be erected at a moment's notice without having to design and build apparatus. One may even go as far as to say that a reserve station is NOT complete without emergency gear, and an appeal is earnestly made to all to immediately check over the spare gear available and construct something that will possibly mean the saving of lives and property.

The primary consideration is, of course, the power supply. This has been gone into by members who have already built portable stations, and the vibrator system operated from a six-volt accumulator appears to be

the most satisfactory to date. Power is not an essential IF good design and components are used. As a suggestion by one who has tried it, a simple tri-tet 6L6 crystal oscillator with 2 to 5 watts input will suffice. In about one month's time we will stage a field day in the Reserve for all equipped with emergency gear, and prove that the organisation is as strong and efficient as we claim it to be.

3rd DISTRICT.

(By 3Z1—VK3UK.)

An interesting test of the progress of training was had this month when a cypher message was put in the weekly Broadcast with the instruction that it was to be decyphered before any Sectional training was proceeded with. The cypher message was an instruction to forward a weather report to section leaders for relay to 3Z1, assuming that a weather chart of Victoria was required urgently. Excellent time was made by VMC2 and VMC4, for their section leaders were ready with the reports 53 minutes after the forwarding of the message. Considering section leaders had to call their section roll, make certain each member had the message correctly, each member had to decypher it, make up a weather report and forward in turn to the section leader, the time was an indication of the efficiency and ability of the sections.

We had unexpected visits from two country members this month. 3F2 was down for a few days, and had time to come out to 3Z1 for the weekly schedule on Sunday.

(Continued on page 28)

Federal and Victorian QSL Bureau

VK3RJ, Qsl Manager.



The D.A.S.D. states that the German Broadcasting System "well reminds the merits of Amateurs in the development of short wave radio" and lends its voice for the benefit of the "great international bona-fide Amateur idea." Amateur broadcasts are made from time to time on 9560, 15200, 15280 and 17760 Kc.

W. T. Edwards, Principal of the Tifton High School, Tifton, Ga., U.S.A., wishes to know the Sydney Amateur who called CQ at 4.11 p.m. on Sunday, January 31st!!! Who was it? Hi!

The Secretary of the N.V.I.R. points out with "utmost stress" that the only Qsl Bureau address for PA is Box 400, Rotterdam.

We congratulate Edgar Sebire, VK-ERS, of Wandin, Vic., winner of the receiving section of the last VK-ZL international test on his achievement. A matter for further

congratulation is Edgar's venture into the matrimonial sphere. Good luck, Edgar. We trust your reports will always be RST 589 and no QRM.

The Hon. Secretary of "The World Friendship Society of Radio Amateurs" solicits members for the society. Any amateur who will promise "to make such use of Amateur radio as to promote international friendships and who will never voluntarily permit his station to be used as the tool of selfish nationalistic interests and who will strive to promote world peace," is eligible for membership, and should communicate with G6AQ.

Cards are on hand at the Bureau, 23 Landale Street, Box Hill, for the following:—

VK3-AD, AH, AM, AP, AX, AT, BS, BK, BL, BV, CA, CD, CV, DJ, DR, DS, DQ, EM, EW, EX, FJ, FK, FG, FM, FN, FS, GB, GE, GO, IL, JC, JM, JZ, KA, KG, KE, KK, KQ, KO, KM, LL, LP, LT, NB, NG, NT, NU, OI, OU, PA, PG, PH, PS, QK, RM, RL, RQ, RT, RW, SA, SM, SO, TG, UN, UF, VB, WL, XD, XG, XK, XS, XU, XW, YG, YL, ZC, ZF, ZG, ZW, Ballarat, Howard, Hibberd, Evans, Clark, Ryan.

6L6's in Glass

IMPORTANT ANNOUNCEMENT
We have been appointed Victorian Distributors for Eddystone Short-Wave Equipment, and a full range of these products is on view in our Showrooms. An invitation is extended to all Hams to inspect, Call or Write for Illustrated Catalogue.

Special Prices to Hams

A further Limited Shipment has arrived and is now available.

ISOLANTITE SOCKETS
4, 5, 6 & 7 pins 2/-; 8 pins 3/3

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Divisional Notes

CANDID COMMUNICATION TO OUR VALUED CORRESPONDENTS.

From VK3RX.

What I am going to mention in this open letter must not be taken as being directed personally to any one, but is the result of some six or eight months editing of these Divisional Notes.

Several pages of the total number received generally have to be re-written because of the too free use of abbreviations, and to make them sufficiently readable for the linotyper to set up. A little punctuation and capital letters now and then, where needed, would make things easier.

Please double space all typewritten notes if you can remember it, and, of course, one side only.

Now for a few "don'ts":—

DON'T use "es" for "and." "es" is the Morse abbreviation for "&," and should not be written.

DON'T write the Greek letter "lambda" for metres or wavelength.

DON'T write "wid" and "fer" instead of "with" and "for."

When mentioning calls, don't write V.K.3. RX., but put "VK3RX."

DON'T write more than we usually publish each issue. A glance over the back issues will show you. If you usually write a thousand words, and 500 is published, prune it a bit yourself before you send it to the editor, to arrive here before the 18th of the month. It goes to press the following day, hail, rain, or Sunday notwithstanding.

1937 Convention

Saturday, January 30th, was an eventful day in the annals of the W.I.A., as it ushered in the commencement of another year. The venue was Sydney, and the delegates representing the various divisions were:—W. Moore (Federal President), Don Knock (Tasmania), Beatson (Queensland), Barbier, (South Australia), Bischoff (West Australia), Ryan (New South Wales), Thompson (Victoria), P. Adams (Federal Vice-President), and Harry Caldecott (Federal Secretary). Mr. Wilson, whose ZL call sign I have forgotten, was invited to be present, as representing N.Z.A.R.T. A fairly lengthy agenda was presented for the attention of delegates, which fortunately were in the main non-contentious. One very outstanding fact which the convention proved was that each representative preserved a very

open mind on all questions, and approached the various problems with only one thought—the good of the W.I.A. and the "ham" game. State jealousies, if such a thing exists, were conspicuously absent. There is no necessity to go fully into the various questions here, as no doubt each division will receive a full official report in due course; suffice it to say that the whole paper was satisfactorily disposed of. The New South Wales division gave a dinner at the Dungowan Cafe on Saturday night, at which a very large gathering of "hams" were present. Among the many guests were representatives of the Wireless Branch, Press, I.R.E., New South Wales Radio Clubs, and visiting delegates. A very comprehensive toast list was duly honoured and replied to. It had been the intention to change the location of

Federal Headquarters to Melbourne for the 1937-39 period, but in view of the coming Sesqui-Centenary of New South Wales next year it was considered advisable to leave H.Q. in New South Wales. The next Convention will probably be put back from the usual January date until Easter of 1938 to coincide with the big "doings" in Sydney. In this particular regard, it would perhaps be advantageous to all concerned if the conventions were at all times held at Easter, as the usual Foundation Day week-end is really far too short, having regard to the distances delegates have to travel from the various divisions. The final act was the appointment of officers, and delegates were quite satisfied that the retiring officials had done a thoroughly good job of work, and they were re-appointed. The thanks of all delegates are due to the VK'2 who so generously and lavishly entertained them, and to the various organisations for their kindness in placing their plants at our disposal for inspection.

N.S.W. Division

The Annual Meeting of the N.S.W. Division was held on 18th March, some 50 members attending.

The Secretary's report for the year was presented, and duly accepted, and without a doubt this Division is in an excellent position from both a financial and membership viewpoint.

A vote of thanks was passed for the work done by Messrs. Adams, 2JX, and Moore, 2HZ, on the State Council, the motion being carried in the usual manner. Both 2JX and 2HZ were not standing for re-election, as they were holding positions in Federal Executive, and the dual role, Federal and State, in their opinion, could not be successfully carried on.

5MZ and 2YE were welcomed as visitors, and new members were EX3OS and 2ADZ, ex ZL1JW.

The ballot for the election of officers for 1937-1938 was closed, and ZHZ and 2YC were elected as scrutineers.

The ballot resulted as follows:—H. Petterson (VK2HP), President (unopposed); F. M. Goyen (VK2UX), City Vice-president; O. C. Chapman (VK2OC), Country Vice-president;

W. G. Ryan (VK2TI), Secretary (unopposed); W. McElrea (VK2UV), Assistant Secretary; R. A. Priddle (VK2RA), Publicity Officer. Council—J. Moyle (VK2JU), D. B. Knock (VK2NO), M. Meyers (VK2VN), J. Kinnell (VK2ZR), H. W. S. Caldecott (VK2DA).

K. J. Burnett, Esq. (VK2BJ), delivered an interesting lecture on "Forms of Frequency Stability," and was extremely well received.

The President, H. P. Peterson, in closing the Annual Meeting, thanked all members, and especially the council, for their support during the past year, and hoped that the same support would be afforded during the ensuing one.

ZONE 5 NOTES.

(By VK2LG.)

Beru Test now over, and WVE in full swing. The W stations rather patchy to contact on 20 c, but fair on 40 c. Believe a few on 10 c easy to raise.

Hilton Dixon old QD came off his mo'bike, and now in hospital, progressing slowly.

QE working the Europeans in fine style in BERU., also qso'd his first MX.

OJ still get work, but only occasionally. Heard on fone on 20 is sounds FB.

EU is building Xtal rig, and soon be on 20 with fone.

Our new ham AFD was in 11M on a job. IG rig playing up. Superhet working well.

Qso'd HPIA Sunday afternoon.

As usual, no news from the rest of this zone.

AMATEUR AND SHORT WAVE EXHIBITION.

The organisation of the W.I.A.'s Amateur and Short Wave Exhibition is progressing, and the final layout of States, etc., is being arranged.

In view of the lack of space after everyone had been fitted into the last exhibition, it was decided to hold this effort in the Sydney Town Hall (the lower hall), and the dates from 3rd May to 8th May.

A preview at this early stage shows that there should be an extremely fine amount of gear showing. The prize list should be very similar to last year, and many prizes will be worth competing for.

The exhibition will again be opened from America, and this time Professor Woodruff, President both of the I.A.R.U. and A.R.R.L., will do the job.

Amateur Radio

The show should definitely be the best amateur show ever shown in Sydney, and will give the experimenters a chance of revealing to the general public their work and worth.

NORTH SUBURBAN RADIO CLUB'S REUNION.

(Affiliated with W.I.A.)

An extremely successful Club reunion was that held by the above Club at Chatswood on 16th March.

It was the Club's first birthday, and some 50 members and guests turned up in terrible weather to celebrate the event.

The Senior Radio Inspector, Mr. Crawford, in replying to the toast "P.M.G. Department," expressed the hope that the Club would prosper, as an organisation of such nature was of value to the Amateur movement.

The Chairman and President, Mr. Burnett (2BJ), donated a cup for the best ultra-high-frequency effort amongst Club members. VK2HL (H. Hapthorne) was the winner, and the

cup was presented to him by Mr. Crawford.

The outcome of the W.I.A. Field Day on 5 mx was discussed by Mr. Knock (VK2NO), who read a letter from 2ZC, Newcastle, who said that both 2NO and 2EM were heard near Newcastle during the Field Day.

At the conclusion of the celebration the various club delegates drew lots for their stall positions in the forthcoming W.I.A. Exhibition.

The following were represented at the reunion W.I.A. Federal, W.I.A. State, and Manly, Zero Beat, Waverley, and Lakemba Radio Club.

LAKEMBA RADIO CLUB—VK2LR.

(Affiliated with the W.I.A.)

(By 2DL.)

The 7th annual reunion of the above Club will be held at the club rooms, Sunrise Hall, Canterbury Station, on 20th April. Admittance will be by invitation card, but an open invitation is extended to any interstate visitor interested who may be in Sydney at

To ensure insertion all copy must be in the hands of the Editor not later than the 18th of the month preceding publication.

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Illustrated Catalogue

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the time.

Two club DX contests were conducted recently, the first being for the VK2UU Cup, which was won by 2AS. The Slade Cup was won the second time in succession by VK2KS, who managed to abandon his motor bike and other attractions for two week-ends, and worked some really good DX.

20D, 2ABT, and 2DL recently conducted 5-metre tests from Government House, Sutton Forest, but were unsuccessful in contacting Sydney.

Since 2UC has moved to Lismore, 500 miles north of Sydney, 2MH and 2UB have been holding fairly regular skeds at the week-ends. 2UC reports that DX is not so good as at his former location at Marrickville.

Len. Worrall, now 4XM, is on 20-metre telephony at present, and is anxious to contact some of the VK2 hams. At various times 4XM puts a very strong signal into Sydney from Cairns.

Ultra High-Frequency Section. (By VK2VN.)

During the past few weeks two Field Days have been conducted by the section.

The first one was held on 24th January, when Mr. J. Moyle, 2JU, accompanied by 2HZ and myself, took a portable to Mt. Elliot, 40 miles air-line north of Sydney. The location was reached by 11 a.m., and it was not long before the gear was in operation.

The first aerial tried was two horizontal half waves in phase, with stub and twisted pair feeders. Although this arrangement had worked well in Sydney beforehand, it was definitely not a success. A change was made to a vertical doublet, and contact was immediately established with 2NO, when signals were R8 both ends.

2LZ was heard from early in the morning continuously at R8, but, unfortunately, although Con was on all day for our benefit, contact was not established until late in the afternoon. 2XK, at Maroubra, was also qsoed, while 20D and 2AZ were among other stations heard rather weakly.

Sunday, 7th March, was set aside for the biggest 5MX Field Day ever to be held in this State, but owing to inclement weather it had to be postponed until the following week.

14th March turned out to be a beautiful sunny morning after almost

a week of continuous rain, and shortly after 8 a.m. six mobile stations were on the way to the selected qras., two from Newcastle and four from Sydney.

A listening period was reserved between 12 noon and 2 p.m., and ten stations transmitted for ten-minute periods in a pre-determined order, the remaining 20 minutes being taken up by other Sydney stations.

Official stations and their locations were as follow:—2W1, Control Station, Kurrajong Heights; 2BP, Hazelbrook; 2JU, The Gib, at Bowral; 2LZ and 2NO, Sydney; 20D, Hurlstone Park; 2TX, Norah Head; 2UV, Hawkesbury Look-out; and 2ZC, Mt. Sugarloaf, near Newcastle.

Complete results are not yet to hand, but will be given in detail in next month's issue.

Records have been both created and broken, possibly the longest distance contact being between 2JU and 2WI, but this is eclipsed by log forwarded by 2ZC, who reported hearing 2NO and other Sydney stations at Mt. Sugarloaf.

We take this opportunity of thanking all stations participating for support afforded the section in conducting the test, for we realise that its success lay in the hands of those co-operating.

Victorian Division

(By VK3DP.)

By the number of VK5 hams present at the February meeting of this section, it would appear that they are trying to dodge the Test match. They were VK5JT (VKZ), VK5MY, and VK5LG. All spoke on the conditions and doings over there, particularly 5LG, who gave rather a fine talk on the mining operations carried on by the B.H.P. at Iron Knob (Mount Morgan), where he is employed. Arrangements were made to show the visitors over some of the shacks before leaving for home. 6YL was again a welcome visitor, and I am told on good authority that this YL will be here for some time, having obtained a position with a radio firm here. VK3 is sure the place to catch 'em and hold 'em! Best of luck, 6YL, and hope to see that call changed to VK3 shortly.

Amateur Radio

The auction sale that was to have taken place was sure a wash-out! Apparently the junk gear is too ancient to sell. It is to be held over until the March meeting. I think it would be a very stout idea to bring something along, junk or otherwise, and set the ball rolling.

Most chaps are pruning up their rigs for the B.E.R.U. test. The new rules will keep down high scoring in VK this year, but the test should prove very interesting for all that. "Snow" 3MR is trying very hard for the senior section, and we all wish him luck.

The only report from our Council representative was on the censoring of the items for the Convention.

The American visitors certainly had a swell time during their stay here, and were shown the hospitality of the W.I.A., the Key Section in particular. The evening before their departure the Coburg gang gave them a little house warming party. We first had a look round 3YO's shack, where Mrs. YO had some eats and drinks waiting. After cleaning out the house we moved on to 3MR's milk farm. "Snow" had a sked with

6SA for 6YL. After an exchange of greetings "Snow" brought to light more eats and drinks. He was very anxious for us to sample the Campbell milk, so brought the cow to the shack door and milked her on the spot. (So they told me.) After wrecking this shack, the mob moved over to give 3DP's shack the once over, later moving over to 3OC, where Mrs. OC had a fine supper laid out for us. All present had a thoroughly enjoyable time. I am convinced that all hams have R max thirsts by the way they were knocking tops off bottles. "Snow" and the W's had an argument on signal directions, and—you know what "Snow" is. Hi! This racket continued until 2 a.m., when good-byes were said and all went their various ways, having had a swell nite.

3KE.—Heard lately on 40mx fone. Is sure fb. Been having great trouble dodging QRM from 3RW.

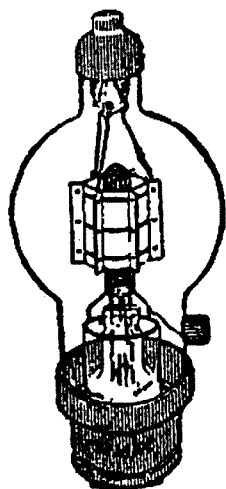
3FW.—Building Xtal rig. Otherwise very quiet, using TPTC at present.

3YR.—Still silent.

3RJ.—Back to earth in the Maryborough and Bairnsdale districts

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3QR.—Building new short wave rig in between activity on 175 metres.

3ZJ.—New fone rig working fb on 14mc., and has big stick up now.

3UW.—QRL, but time for a spot of DX on 14mc.

3XL.—Given up 200 metres fone es now active on 40 metres. Re-building, and will soon be on 20mx.

3BQ.—Still away at seaside with family at week-ends—ten metre rx down there and condx; vy fb when car QRM permits. Counting on using a diamond ant. shortly after returning.

3RD.—Going to try fone. B.C.L.'s, beware!

3UO.—Messing RAAFWR skeds up and how!

3VW.—QRL QYL. Comes to UO wen QSO 6YL. Who sed coincidence?

3LX.—Hoping to use PP 6L6 modulators on 14mx fone.

3CB.—Active on 40 and 200 metre publicity band in conjunction with YL QRM. Have an inkling for 20mx. key only. A new panel rack under construction, and general upset of shack for more room.

3Cp.—Just finished 8-tube S.S. super.

6LR.—Now 3TQ.

7MF.—Now 3ZS.

3CZ.—Wants S.S. super to overcome vy powerful vy local QRM.

3IW.—Getting many headaches with new 7-tube super!

WESTERN DISTRICT NOTES.

(By HG).

Conditions are quite good on all bands now, QRM having lifted on 3.5 M.C., and good DX can be heard on all the other three bands. A few

W's can even be heard on 3.5 M.C., but no contact as yet.

3OR.—Paid his final visit to this station for some time, when he came down to take his future bride home. The latter says, "Murray is not to visit any more hams!"

3FA, of Byaduk, after many trials and hardships, has made his debut on the air, and worked a few locals. His signals sound very nice, and should get out well.

3TW.—Has a B class ticket, and is manager of Hamilton's picture theatre. Will be on 7 M.C. phone soon with fine rig.

3TN.—Also of Hamilton, was married recently. We wish he and his YF all the best, and hope it will not be long before he is on the air. He has some nice gear ready for action.

3AC.—Seen out recently with some YL's, which, perhaps, explains why he has not been heard lately.

3NQ.—Heard on mike at 3WE recently while holidaying there with his YL.

3JQ.—Heard regularly on 250 meters.

3DX.—Still entertains the BCL's on this band.

3SE.—Has quite nice phone on 7 M.C.

3OS.—Now in Sydney, but has not taken his gear over.

3HG.—On 3.5 M.C. phone mainly, and finds conditions very good, although the band is not very popular yet.

MALLEE AND NORTHERN DISTRICT.

(3ZK—3HX.)

Notes this month are very small, as both the above signed have spent

HAMS

EARLY Application is advised for the 60-watt Penthodes which were announced in the March issue of "A.R." These valves are a first-grade product, and are made by the 362 Valve Co. Ltd., London.

Further Technical information can be obtained from the January, 1937, issue of "Television and Short-Wave World."

This tube only requires about 3 watts of Grid excitation for maximum output, and being a screen grid needs no neutralising. It gives wonderful results Suppressor modulated on 14 and 28 mc. For further dope call on or write

Norm. GUNTER

VK3NG

7 Harrison Crescent, Hawthorn

some of the month in VIM, and consequently out of touch with the doings.

Prior to going away conditions were very bad, ole man static being the main offender, due to unsettled weather conditions.

Congratulations this month go out to Bruce Mann, who at last has succeeded in obtaining his ticket, and probably will be chirping away as 3BM, Quambatook.

3KR, accompanied by Bruce Mann, paid a visit to V1S, where the gang are bemoaning the lost gear. Hi!

3TL is active on at least two bands; has been on 40 mx fone, and, as usual, making a hole. "Vin" his 2nd op. will be heard soon.

3OR is active on fone, and CW in spite of other important matters. Murray is having his speech amp. operated upon.

3EP.—Heard on 80 mx in spite of QRM; spends most of the week on 14 mc., where Ted works a few, looking for WAC.

3BG is now on 40 mx with a 6L6 tri-tet; is adding an E406 as final amp. Roth is also building a new RX.

3AI is rebuilding his rig, and no doubt will be on soon.

3IH is expending a lot of time on the rig; has now a 6A6 exciter link coupled to P.P. 6 P.C.'s. Just put up a 62-ft., pole.

3CE.—Roy is rather inactive, but shortly hopes to get on 20 mx now and again. Has also had a holiday.

3NN.—After a spell, Herb. has made a comeback with fb sigs, due to raising the free end of his antenna.

3TS and 3FF haven't been heard, but are probably waiting to cause a sensation.

3WN has been to the Fire Brigades' Demo.

3HY, at Murchison, has been heard on 40 mx fone.

3ZK and 3HX have both been active and in VIM. With the aid of 3HX's car a few of the gang were visited, and both rigs have certainly been improved since returning home.

SHORT WAVE GROUP NOTES.

(By O. E. Davies.)

The Group has been very active of late, especially in testing various types and designs of receivers.

All this buzz of excitement came to a head at the meeting on 10th March, when the first of the components for the construction of Superheterodyne at 3WI were delivered.

The Council have voted a sum out of revenue for the completed receiver, and it is being constructed on such lines so that no needless expense will be incurred.

After much deliberation and debate the ultimate design agreed upon was as follows:—An eight-tube Super using metal tubes in the following line up:—1st Det and Separate Osc., 2 stages of I.F., Diode Second Det., B.F.O., 1 Driver stage, and Pentode output.

Features of the receiver are:—Approximate uniform bandspread obtained by use of series plug-in condensers, fitted to the coils. Regenerative mixer, chosen as the most satisfactory manner of improving the signal/noise ratio and gain at the front end of an Amateur Band Super. AVC with on/off switch for optional use. Provision for use and inclusion of a Xtal Filter at a later date. Triple impedance antenna coil; and optional use of either phones or speaker. The whole unit is powered by a supply on a separate chassis.

This Superheterodyne is now in the process of construction, and can be seen at any S.W.G. meeting by those desirous of inspecting same.

Our President, Mr. Stevens, was heard t'other night on 5, using a three-stage M.O.P.A. Good work, Steve.

The rest of the gang are too busy on OUR super to spend much time on anything else at present.

Queensland Division

At the March meeting much business was attended to in relation to the forthcoming annual meeting, which is to be held on 2nd April; so much, in fact, that the lecture to have been delivered by Mr. F. M. Nolan, VK4FN, on "Modulation," had to be postponed till a later date. At the annual meeting, which promises to be a record-breaker, Mr. G. T. Fisk has consented to present to the Queensland Division the Fisk Trophy. The presentation is to be arranged by a recording through one of the local "B" class stations, owing to Mr. Fisk's absence from Australia on that date.

DX conditions generally have been bad, especially during the BERU contest, although some of the South American fone stations still come through. A change is expected with

the sudden approach of rainy weather and winter.

4VJ is on 20-metre fone with a solid signal, and raising things comparatively easily. A velocity mike starts off the speech end.

4LX has improved his fone quality and modulation depth out of sight, and now sounds first-class fone.

4AP has been on holidays, so it looks as if the BERU Senior has been given the go-by.

4YL and 4UR heard a lot during the BERU Senior, and likewise 4EL, who, it is rumoured, is not satisfied with the performance of his 45-valve with 90 watts input, which cashed in after the key-thump filter blew, raising a large blister on the plate!

4EI.—Just completed six weeks holiday after visiting hams in four States and seeing the Adelaide Test match. The only boys he did not visit were VK6 and VK7. He at present uses a pair of 6P6 tubes in final, the RK20's having gone west.

4ZO returned to his QRA after visiting V1B, and also the Ipswich gang.

4JP has left for U.S.A., where he is looking forward to obtaining some good dope and meeting some of the gang he has contacted from 4JP and 4JX.

4FB is back on the air again, after a slack period, and has a super working well with a recently added RF stage.

4RG works quite a lot with 4HA on 40-metre fone. At the moment 4RG is trying a hand at 20 metres with good results. George's pet subject now is correct loading.

4WT has his 6A6 exciter working, and lands ZL stations quite OK on the doubler. Bill's present worry is trying an 802 as a quadrupler.

4AW turned commercial for a few days, and provided an outside relay to the nearest landline for one of the local "B" class stations.

4JB back from the West, and holidaying at South Coast (Social Notes).

4RY and 4AW took the latter's 56 mc. gear up to 4CG, Toowoomba, the land of the Hill Billies, where they contacted locally, and were successful in hearing 4CG on the return journey at 6 p.m., over a distance of 40 miles.

4NW on again on 40, after very long absence.

4MM has built up a super that hikes at the new QRA, and a good QRA, too.

4RY has a new model car, and has not decided yet just where he will put

the portable gear—over or under the bonnet.

South Australian Division

(By VK5KL.)

Unfortunately, the two cricket matches mentioned last month did not blossom out in full bloom, owing to the lack of transport, and the ground being unavailable, in the second instance, nevertheless Mr. Vic. Chennel got busy, and by the time these notes appear the combined picnic with the Railway Institute Club 5RI will have been held at the Silver Lake, Mylor, on 21st March. Mr. Alf. Trager's talk on the Inland Mission proved very interesting to members who attended the transmitters' meeting on the 24th February. The V.H.F. Section is progressing favourably, and several new calls will be heard on the 56 M.C. channel in the near future. Already two of the members, 5ZU and 5HP, use xtal controlled transmitters. A scheme is in hand for holding a field day during the Easter holidays.

At the meeting on 10th March Mr. Barbier (Convention delegate) reported on the last Convention held in Sydney.

The 80-metre band is likely to return to its normal self after a few years of old man static. One night recently several VK5's, ZL's, and W1PES were heard at good signal strength. On ten metres conditions are holding well for American contacts. The Europeans seem scarce, but the last two nights (14th) their rigs have been audible around 11 p.m.

Tasmanian Division

The March meeting of this division lapsed owing to insufficient attendance, so there is no business to chronicle this month. We certainly hope to see a better attendance at future meetings, so look to it, boys, and put in an appearance on the first Tuesday of the month.

7YL.—Out of hospital and on the air. Going to spend her convalescence (and cash) in rebuilding.

7JH.—Piling up new countries to his list on 20 mx. Nearly qso'd an I1 (Italian), but had the misfortune to miss the call at first.

7KV.—Heard on 20 mx fone after many moons of silence. Using series

modulation with fair results on dx, working a VP9.

7HM.—Very active on 40 mx with a 3-stage crystal rig, and has worked several VK's and one W to date.

7PA.—Hard at it in A.R.R.L. contest, and about the only representative in the South in this year's contest.

7DH.—Using half a dozen power supplies in series and countless watts on a poor old 210.

7CT.—Busy servicing BCL sets and YL'ITIS.

7SR.—In working order, and worked two W's. We will hear quite a lot of this station, as the Club has several very enthusiastic members.

7BJ.—Breaks the ice occasionally on 40 mx fone. Hasn't broken his neck yet on the gas waggon!

7JB.—Not active in A.R.R.L. CW contest, but hopes to make a noise in the fone section. Busy with 7SR at present.

7AB.—Gone off the deep-end, and is now a married man. Congrats, Doug., om.

7LZ.—Busy installing a Faraday shield between his and 7CL's QRA. QRM a bit hot, I believe.

7CL.—Heard rattling the W's off in the contest.

7RC.—Missed again this year, Ron. Your W friends are getting quite anxious about your inactivity.

Have very little news this month, and would appreciate a few notes from the northern gang as to their activities.

(Continued from Page 17)

W3AIR. — During October and November all continents were heard nearly every day, but with lower signal strength than a year ago. Contacts with U, VO, ZE, YL, YU have brought the countries up to 47 for 28 mc. The J's have been the only code and phone signals readable on the Asiatic beam. On 16th October there were many, but I worked only three new ones (R7 and R6), while they lasted—about 45 minutes. On 10th November, J3FZ was R7, and for a few evenings J2IS phone held the S-metre up to R7-8. 17th November was rather poor, but permitted three contacts. Little or no sign of J's in late November, but VK2GU, who is sometimes up to RS, still affords good dx on phone.

(Continued from Page 18)

3C5 was down in the city for some days, but was so busy we had very

little chance of a yarn. He now has his new transmitter going, and with the 804 PA is putting out a great signal.

3C3 has returned to Callawadda after his holiday in the city.

3D4 is back on regular schedule after rebuilding the whole of his gear. A fire in the shack is not a nice thing to think about, but it is "an ill wind," because Thorburn has had the opportunity, in rebuilding, of bringing his gear right up to date.

3F1 is putting out a grand signal on schedule, but, strange to say, he missed contact with 3Z1 on the first schedule.

We are expecting a visit from 3F3, who is coming to the city this week. 3F2 met him in Camperdown on his way down here.

3A5 is entering the police force. We hope they see he is not on duty on Sunday mornings!

3D5 has just finished a new transmitter, and as 3Z1 is in sight of his antenna he is living in trepidation of the strength of the signal.

3Z1 finds the new QRA even worse than the old one for local QRM. A single 66' wire tuned has relieved the difficulty somewhat, but all hopes are pinned on a doublet, which will be erected as soon as the masts are put up.

From time to time we are compelled to go to press without waiting for all Divisional Notes to arrive, and complaints are received from the Divisions concerned that their notes are not printed.

All Divisions have been notified that copy must reach the Editor not later than the 18th of each month, and, if the magazine is to come off the press on the due date, it is not fair, either to the Editor or the printer, to expect us to wait for late copy.

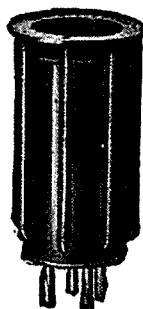
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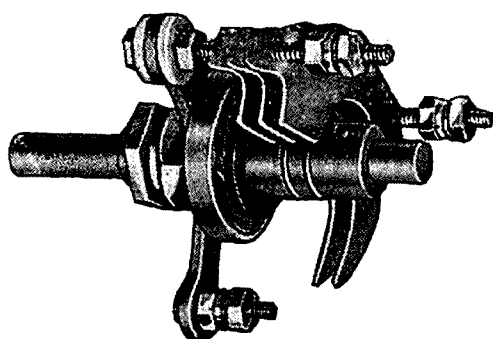
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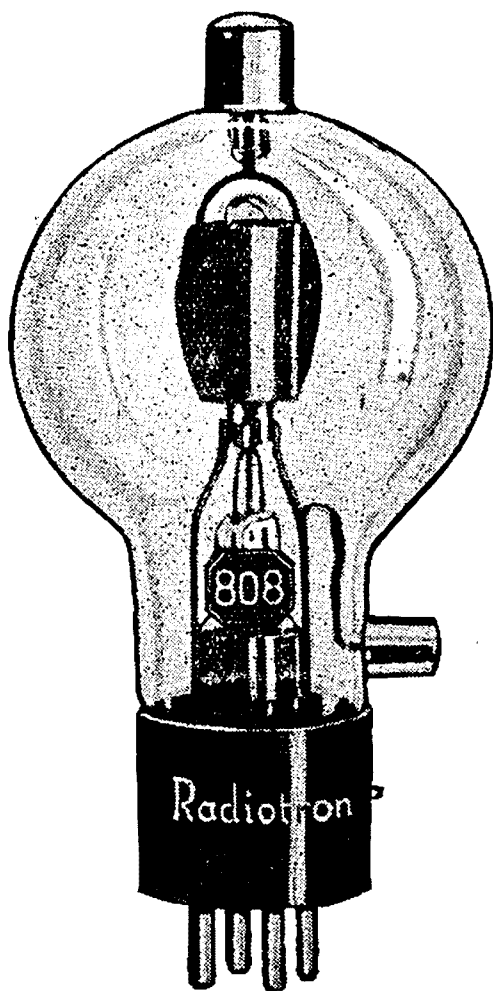
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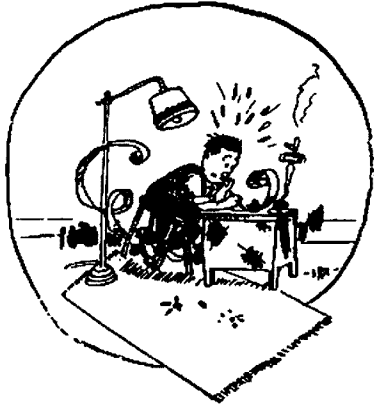
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EDITORIAL

It is interesting at this stage to review the proceedings, set-backs, and finally advances, that have occurred during the preparations by the I.A.R.U., and National Societies, for the forthcoming International Telecommunication Conference to be held in Cairo in 1938. It is there that the amateurs either rise or fall.

The barometer of success fluctuated greatly during the last few months, and the hope that the I.A.R.U.'s policy for Cairo would be accepted was very low.

The policy was chiefly concerned with the extension of the 7 MC band to 7.5 MC, and it was to this end that amateurs throughout the world were striving.

The first set-back was that of the A.R.R.L. in America, when their petition to the Committee controlling the allocation of wave lengths was refused. When this request was denied the league took four successive appeals to successively higher bodies, each time with similar results.

In New Zealand the authorities were approached, and they refused to sanction an increase in the 7 MC band.

The R.S.G.B., in England, have received no definite answer, but it is significant that the R.S.G.B. does not expect a favourable decision.

It can be seen that the outlook was not too promising, and it was only the arrival of General Letter 14, dated January, 1937, from the I.A.R.U., that gave the amateurs a lead. An extract would explain:—

“The R.E.F. (France) brings good news. It reports that, in contrast to the attitude expressed in other countries, it has secured the adoption

both by a sub-committee and by the entire French preparatory committee of the principle that the amateur 7-mc band should be enlarged. No specific figures for enlargement were urged, but it was stipulated that the enlargement should be in the high-frequency direction, and as far towards 7.5 mc as possible in consideration of other services.

“The second point of recognition achieved by the R.E.F. in its preparatory conference concerns the creation of harmonic bands in the ultra-high frequencies, i.e., 112-120 mc, 224-240 mc, etc., to be exclusively assigned to amateurs. It proved impossible to secure the adoption by the Committee of this position. It is, however, not the French policy to leave such allocations to chance, especially in recollection of the early situation created by the lack of international agreement concerning the frequencies above 1500 kc. Eventually, therefore, the R.E.F. secured this concession: The French delegation, while not desiring to initiate such a proposal, will support it if advanced by another administration.”

So much for Cairo, the amateur societies of the world see daylight, and there seems no need to cling to the “Status Quo.” which they were nearly reconciled to do. Matters remain in the I.A.R.U. hands.

Maybe member societies can influence their Governments, if not to support the proposal, at least not to oppose it. There is a lot to do yet, and it is activity during the next few months that will count.

WM. MOORE, F.H.Q.

Ultra Short Wave Receiver

66 MC/S—30 MC/S (4.5-10 Metres.)

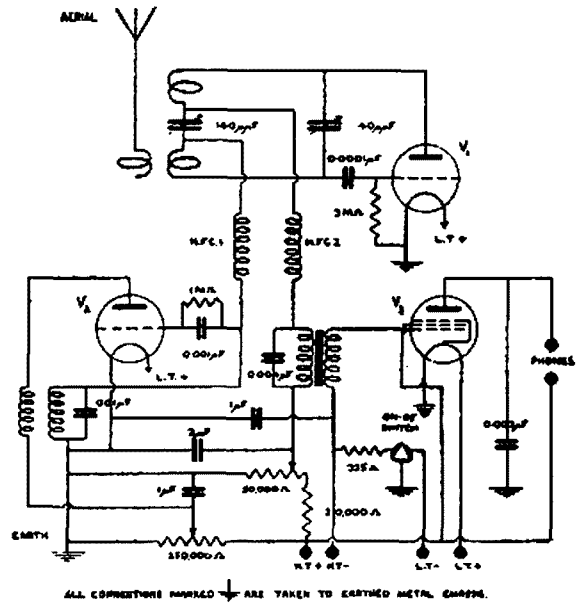
(By courtesy of the Manufacturers of
"Eddystone" Components.)

The ultra short waves are now becoming widely used for communication and television purposes, and amateurs all over the world are carrying out experimental work on the possibility of their further application. Results up to date show that the use of these ultra short waves is particularly adaptable for short distance telephony over what is practically an optical range. Within these limited distances, even small power gives a clear and strong signal. The general working distance seems to be about twenty to twenty-five miles, but this range is reduced in cities, due to buildings and other obstructions, or is increased up to fifty to eighty miles when the transmitter is taken on to high, hilly ground or two or three thousand feet up by aeroplane.

The designer of a receiver for ultra short wave reception can utilise most of the fundamental circuit arrangements in common use for broadcast reception. There are, however, difficulties as far as the amateur is concerned both in the design of the ordinary straight circuit and in the super-heterodyne circuit, and for the present conditions, the super-regenerative receiver appears to afford the most satisfactory solution for the experimenter who is commencing this class of work. In the super-regenerative arrangement, the frequency of the incoming signal is split up by a super-imposed frequency known as the quench frequency, which is generated in the receiver itself. This method renders the tuning comparatively flat compared with the other circuit arrangements, in which the tuning is very critical indeed.

In fact, with such arrangements, a weak signal can be completely overlooked or is very difficult to find. Further, unless the transmitter is crystal controlled, the slightest variation in frequency at the transmission end or any variation of tuning at the receiver

end will cause the signal to completely disappear. The super-regenerative method enables these weak signals to be broadly tuned, and slight variations at either transmitter or receiver end are by no means pronounced.



One of the characteristics of the super-regenerative receiver is the quench noise, which can be heard when the receiver is not in tune with any incoming signal and which diminishes practically to zero when a signal of sufficient amplitude is picked up. The smallness of the amount of quench noise which remains when weak signals are received constitutes the successful design of this type

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of set. It is common practice in super-regenerative receiver design to have the anodes of the detector and quench valves in parallel, and to use a common high tension supply. Although this works very well in practice, it has the disadvantage that if the amount of quenching in the circuit is reduced for weak signal reception, there is also a drop of voltage on the detector anode, so that the sensitivity and efficiency of this portion of the set suffer. In this present new design, the circuit has been modified so that both the quench valve and detector valve receive different high tension supply and the quench frequency is fed to the detector stage by grid modulation. Separate high tension controls in the form of variable potentiometers are arranged to control the anode voltages of both quench and detector valves, and this arrangement permits the detector valve to be always operated at the point of maximum sensitivity and efficiency while the amount of quench can be reduced to the lowest limit necessary for reception purposes. In this receiver, therefore, a weak signal can be received with maximum efficiency as far as the detector is concerned, and with the smallest possible amount of quench noise.

Constructional Details.

The receiver is built into a two-piece diecast metal cabinet, which affords perfect screening and absolute rigidity, in addition to which it is of a very suitable and convenient size for portable purposes. The top half of the cabinet should be taken off the hinges so that the receiver components can be more easily fixed and wired. Owing to the compact size of the set, some of the components need to be put in and wired first before the parts are placed in position. The dial and the two potentiometers should be mounted first, followed by the switch, 2 mfd. fixed condenser and the two 1 mfd. condensers. The rest of the components can then be mounted and wired. It is advisable to put in the coupling piece, the mounting bracket for the tuning condenser, and the tuning condenser, and get these correctly lined up, but for ease in wiring the components situated underneath the tuning condenser, this latter item can be temporarily removed. The spindle of the standard Microdenser needs to be shorter, so that it does

not protrude too far into the coupling piece, and if the condenser is purchased separately, a short length of the spindle may have to be cut off. With the low loss Frequentite valveholders used it is advisable to prevent any chance of fracture, and so lead washers should be placed under the small pillar feet of the valveholder before mounting to the pillars or down to the baseboard. The same lead washers should also be used under the head of the screw on top of the valveholder ring. Countersunk screws, and not round head screws, should be used for fastening the valveholders down. The actual wiring details are clearly given in the wiring plan, and point to point connections, but the following observations may be useful:—

The 140 m.mfd. reaction condenser is mounted underneath the Microdenser on two 2" pillars and H.F. Choke 2 lies under this condenser, with its highest end nearest the coil holder pillars, its bottom end being about 1" from the baseboard. H.F. Choke 1 is mounted under the Microdenser at the side of the 140 m.mfd. condenser, and slopes the other way, its bottom end being some $\frac{3}{4}$ " from the baseboard. Lead No. 3 is made to a soldering tag in connection with the baseboard of the set, this tag being clamped down by one of the 2 $\frac{3}{4}$ " pillars supporting the centre valveholder. Lead No. 4 runs down this same pillar and is joined to the tag at the bottom.

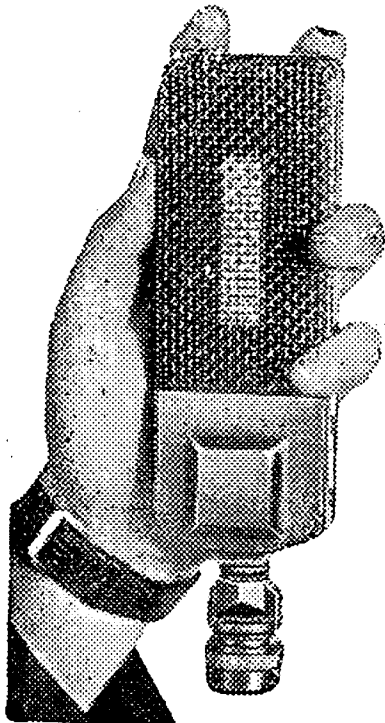
Lead No. 7 is made by actually placing the tag of the .001 mfd. condenser over the screw of the valveholder V2 terminal. The 3 megohm grid leak, the wire ends Nos. 14 and 15 of which are connected across the two legs of the valveholder, lies immediately under the valveholder ring. The .0001 mfd. condenser from this same valveholder to one of the coils is in a horizontal position just above the valveholder ring. The 20,000 ohm resistance connected to the 50,000 ohm potentiometer lies in a practically vertical position at the side of the potentiometer, its bottom end being about $\frac{1}{2}$ " from the baseboard.

Lead No. 33 from the centre terminal of valveholder V3 is taken under the valveholder. The .001 mfd. condenser from the anode terminal of the

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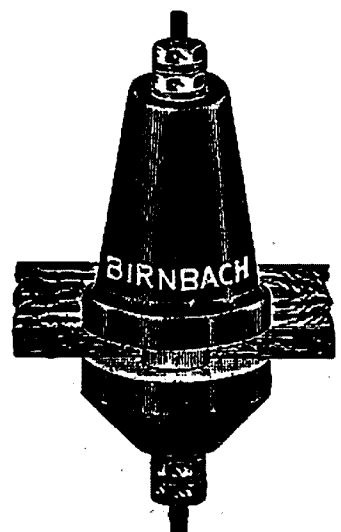
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Hypermite Transformer runs in a vertical position parallel to the side of the 2 mfd. condenser. The 325 ohm bias resistor runs level with the top of the switch, so that leads Nos. 45 and 46 are very short.

All the earth points of the circuit are taken down to the metal cabinet, and in making these connections it should be seen that the paint is scraped away, so that a good metal to metal contact exists. The cabinet is then earthed as a whole by means of the earth terminal attached to the back of the top cover of the cabinet.

Operating Instructions.

The set presents no difficulty in operation. Tuning is carried out by the main control, and the procedure is to set the right hand potentiometer which controls the detector oscillations to a point just past half way, with the quench control at minimum, which is when it is turned in an anti-clockwise direction. The detector valve is brought into a condition so that it is just oscillating by adjustment of the fixed reaction coupling afforded by the Cyldon 140 m.mfd. condenser. It should then be possible on all occasions to control the oscillation of the detector valve by use of the right hand potentiometer. The detector valve is always used in an oscillating condition, since these oscillations have to be broken up by the quench frequency. The oscillations of the quench valve are controlled by the left hand potentiometer, and the amount of quench necessary can be adjusted for each individual signal. It is possible to operate the set purely as a detector and L.F. stage if the quench control is turned right back so that it does not operate and the right hand potentiometer is then used as a reaction control.

Aerial.

The set can be used on an ordinary broadcast aerial, but better results may be obtained on much shorter lengths of wire. The usual methods of aerial construction for efficiency should be followed.

Valves.

Both the quench and detector valves in our trial receiver were Osram type HL2K, this being of the catkin construction, and the output valve is a

Mazda Pen 220A. It is important that this valve should be used, because the automatic bias has been calculated to suit its characteristics.

Power Supply.

The high tension supply should be 120 volts and the low tension accumulator 2 volts.

First Hungarian DX Contest

The National Union of the Hungarian Shortwave Amateurs organises a DX Contest during the five week-ends of May, 1937. Each period begins Saturday at 14 GMT, and ends Sunday at 24 GMT (Monday 00 GMT). Six figure control numbers are to be used, 1:52 report followed by the serial number of the QSO during the test, totalled to three figures with zeros before. (In fifth QSO: 005.) Every QSO between a HA and an oversea amateur will count two points, if the control numbers are received ok on both sides, and one point, if the number is received only on one side. You can work with the same station on the same week-end again on different frequency bands, but on same bands only on different week-ends. The overseas participants multiply their points by the number of the different HA hams worked, but each HA ham gives in each frequency band an extra multiplier.

The log, containing the data of the transmitter and receiver, the list of the communications with the HA hams during the test (time, call, control numbers, frequency band and counted points) should arrive not later than on 1st August at the Union. (Address: Mátyás tér 6, Budapest, Hungary.)

The third of the participants in every country (in U.S.A., Canada, Australia, New Zealand, and in the Union of South Africa, in every district), a least one, but not more than three, will get a certificate of their contest work, together with the QSL-s from the HA stations. We beg also the overseas participants to send their QLS-s together with the log.

The "Perfect" Station

(By Vaughan E. Marshall, VK3UK.)

The Perfect Transmitter! It would be reasonable to say that no ham could ever be so unimaginative not to dream of such an outfit at some time or another. But carrying the dream one stage further, why not the Perfect Station? Such a station, where each unit merely functions as part of a smoothly working whole. It has always been a mystery to us why no articles appear on the design of complete stations, but here will be set out the results of one attack at the "Perfect" station problem.

Before attempting any discussion of design, two factors must be kept definitely in mind. The up-to-the-minute outfit of to-day is out-of-date to-morrow, but provided regular station equipment does what is required of it the term out-of-date does not affect the issue. Secondly, station equipment must be looked on as a separate entity from experimental gear. This may sound entirely too ambitious for the average ham, but if one sets out with the definite object in view it is remarkable how little the additional cost hurts, because one's purchasing is spread over a period, and is done in consultation with the junk box. Finally, one other point must be kept in mind: A station is designed for the requirements of the operator himself, thus anyone who has different needs will find some considered necessities here superfluous, and also other needs left out of the reckoning. However, no ham ever builds anything by meticulously copying an article, but merely extracts the portions that will suit his individual taste.

Now proceeding to the actual planning, let us set down systematically the general requirements under the various headings or sections to see how any obstacles may be overcome, or if necessary the general requirements themselves modified to suit our demands.

General Requirements.—Station to work on 3.5, 7, 14, 28 MC. Rapid change from band to band. Minimum

of coil change. Break-in operation. The whole to be neat in appearance, so as to fit in to a normal room.

Sections.—Antenna, Transmitter, Receiver, Monitor, Frequency Meter. Taking these in turn, we endeavour to design the equipment, keeping in mind the two considerations—firstly, the general requirements, and, secondly, the fact that each section has to be part of a station rather than a disconnected unit.

Antenna.

The first point to dispose of is an easy one. We dislike throwing switches, and are close to a Diathermy plant, so both facts point to a separate receiving antenna, one of the doublet types. After some experiment we decided on two 33-foot sections for the flat top and 30-foot for the minimum height. It was interesting to note that at 26 feet the doublet made practically no difference over an ordinary type of antenna, but the extra 4 feet reduced the noise from R8 to R3. On 7 mc, where the antenna is peaked, and also on 14 mc, results proved all that could be desired, giving a greatly increased signal to noise ratio. As only intra-State contact is needed for 3.5 mc, it served the purpose there quite as well as an ordinary antenna, with far less noise. We tried a Faraday screen between the antenna coil and receiver, and also an antenna matching device for the various bands, but neither gave sufficient advantage to warrant inclusion in this case.

The transmitting antenna was a more difficult problem. Like so many hams, we have always favoured the Zepp type of antenna, but when one thinks of an all band affair, immediately thoughts of a 136-ft. flat top are conjured up, and that was out of the question for our location. VK3MR uses such a Zepp, with 45-ft. feeders, with results that are too well known to be mentioned. Again, our shack is located under the centre of the antenna, so centre-fed, we reluctantly

admitted, seemed the obvious method of feeding. We have always had a horror of centre fed Zepps, having visions of RF all over the shack, so turned attention elsewhere. The Collins seemed the answer in excelsis, but the snag was the copper tube feed system, with its cost and weight, to say nothing of the difficulty of obtaining tubing in lengths sufficiently long. Examination of the "Collins Bulletin" on antennas, part of which appeared in "Amateur Radio" a few issues ago, showed that 7/20 wire would present a greater surface area than $\frac{1}{4}$ " tubing, and the Loss graph showed that the reduction in efficiency would not be great. The main consideration would be to make the feeders as sound a job mechanically as the tubing would be, also to make the spacing somewhat closer in order to retain the desired characteristic impedance of the line of 300 ohms. Eddystone spacers were used as the spreaders, and were spaced along the line every 24". The feeders were strung out across the yard, with the spacers threaded on one end and then the wires were tightened until they gave out a note like a piano wire. Then the spacers were placed at the correct intervals, a twist taken around each feeder to spacer with some thin wire, and a liberal dose of "dope" applied. After 24 hours a careful examination of each spacer was made, and extra "dope" applied where necessary, and then next day the antenna was strung up. The result was a feeder system that closely approximated to the original copper tubing version. Reference back to the issue of "Amateur Radio" containing the description of the various systems of the Collins Multi-Band antenna will show a large number of suggested lengths. The one we chose was type E, which uses a 67-ft. flat top with 65-ft. feeders. This type is not designed for 3.5 mc operation, but test shows no alteration in signal strength over the State, and results on 7 mc and 14 mc would satisfy even the most critical. We have as yet had no time to try the results on 28 mc, but have no doubt that it would be quite as good as an ordinary antenna could be expected to be on that band. The method of coupling to the transmitter will be described in the next article, which will deal with the Transmitter section of the station.

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More Key Click Suppression

A Vacuum Tube Biasing Relay.

(By E. H. Cox, VK2GU.)

The efficiency of keying filters is something which is strictly relative. Quite properly, any impact suppressor may be judged by the results that it will give on the transmitter, but the results will depend in most cases much more upon the absolute power of the transmitter, the distance of the amateur station, and its immediate BCL neighbours from the nearest or most popular broadcast transmitter, and upon the vintage of the BCL sets in use in the block than they will on the efficiency of the filter that happens to be in use.

Any of the conventional condenser, choke-resistor networks can be depended on to deal fairly well with the clicks inherent in the average nominal 25-watt transmitter if the transmitter happens to be located in a town with several broadcast stations of its own, and if the operator does not have the bad luck to live next door to a particularly inefficient broadcast receiver. The picture changes entirely when the station happens to be operated under special power permit, and to be in the middle of a musically-minded community which insists on receiving its programmes at high noon from B class stations nearly 200 miles away. Canberra lies 170 miles airline from Sydnev. Those 170 miles offer many attractions to the tourist. They are replete with majestic mountain ranges and fine forests, and they represent about as bad a stretch of country as the groundwave from a low-powered broadcast station could wish to avoid. Mid-day reception of the Sydney programme is possible in Canberra on the average broadcast receiver only with the gain control screwed practically hard open, and those who maintain that the superheterodyne receiver is immune from clicks are quite evidently without experience of the variety without radio frequency pre-selector when operated at full throttle.

The problem which faced us was to build a filter which would genuinely

deal with the click problem in these circumstances. Starting from the simple centre tap-keying method, and graduating through it to a wide range of blocking and biasing systems, we built up many filter systems of varying degrees of efficiency. Nearly all would work well when the signal level was the equivalent of the darkness level of a fair to middling interstate B class station, but none of the conventional systems was really satisfactory when the level fell to the fractional microvolt which the distant stations present to the receiver input terminals about noon.

The gadget which appears finally to have done the trick was rigged up partly as a result of many trials of conventional filters, and partly to meet inherent features of the present 2GU transmitter. The chief of these features is that with the exception of the CO stage all stages in the transmitter are automatically biased over grid leak dropping resistors, and it was desired, if possible, to avoid the necessity for any form of fixed bias. In the second place, it was found by repeated experiment that the breaking of any part of the high tension circuit outside the valve it supplied was highly undesirable. If a purely mechanical interrupter was employed, it was quite impossible to develop a filter which would suppress clicks without adding a tail to the signals. No doubt, the solution might have been in the use of a valve interrupter, but a valve large enough to handle the plate current and the pressure used in the transmitter would have been expensive. When we buy expensive valves, we prefer to put them in the final stage of the transmitter.

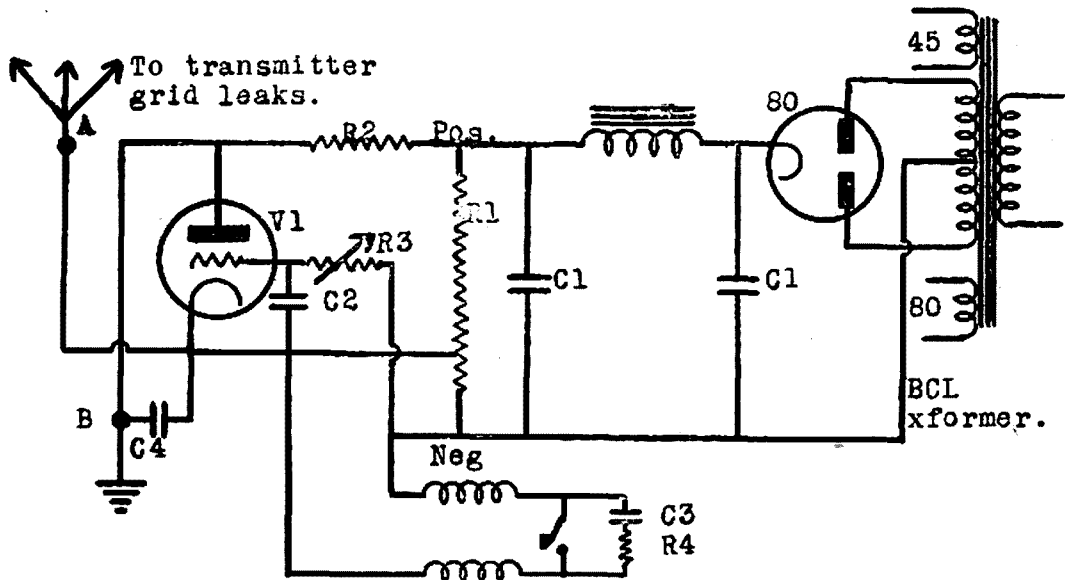
We found ourselves on the right track when we switched over to a grid-blocking system which swung a heavy negative bias on to the grids of all stages but the C O when the key was opened. Quite a simple system, in

which the necessary negative potential was developed over a bleeder on one of the sub-stage power supplies, gave really good results. This system would probably be a sure fire-click suppressor in any but an extreme case of adverse conditions. The level of broadcast signals here, however, is not quite great enough to make it really certain in all conditions, and it has now been replaced with the valve biasing relay shown in the diagram.

Requiring, as it does, the use of a power transformer, rectifier and filter, one or more triodes and a handful of resistors the relay may at first sight appear unnecessarily complicated. Actually it can be built entirely from junk box parts, and it should not cost more than a few shillings if one has

grids of the tubes, biasing them well beyond cut off. Moreover, it does this slowly to prevent any surges, and the time period of the relay can be adjusted with the greatest ease by means of a simple resistor in the grid system of the relay tubes.

In the diagram, the power transformer is of the ordinary broadcast variety, and it can be as old and inefficient as one likes. Its maximum output need not exceed about 20 milliamps in any circumstances, and all that it is required to do is to develop about 400 volts across the extremes of the bleeder R1. Any small broadcast transformer will do this with condenser input if the resistance of the filter choke is not quite abnormally high. The filter choke and



a few old receiving valves on hand. We can honestly say that in performance it is about as far ahead of the simple suppressor networks as an 803 is ahead of a 202, and while its chief value should be in the remote or QRO stations, we believe that it will prove a good investment in any CW station at all.

The relay is placed in a common lead through which all the grid leak return wires are earthed to the transmitter frame. When the key is closed, the valve V1 offers a path to earth for the grid current from the doubler buffer and final stages, which is of negligible resistance compared with that of the grid leak resistances, and which can be disregarded. When the key is opened, the relay opens this earth path, and at the same time swings about 300 volts of negative bias across C4, and thus on to the

the electrolytic condensers C1, C1 both came from the junk box. R1 is a bleeder of conventional broadcast receiver type. Our rig uses two 25,000 ohm voltage dividers in series with a tap about 150 volts from the negative end. R2 should be of approximately 50,000 ohms. Its dissipation capacity need be only small, and we use three 20,000 ohm IRC two-watt resistors in series. The type 80 rectifier in the power pack also may be aged. Ours ceased to perform in a power pack for the receiver long ago, but is satisfactory in its new role. The relay valve V1 must be chosen with a knowledge of the total grid currents which it will be expected to carry to earth. The total grid currents in the 2GU transmitter are about 70 mils, and, in addition, the valve varied something like 10 mils of leakage current from the power pack through R2 when the key is

down. Two type 45's (rejects from the modulator are excellent) have sufficient capacity for this job, and are connected in parallel. C2 and R3 form the network by which the charge and discharge period of the grids of V1 is regulated. In general, if C2 is very small, R3 will have to be of very high value. Our job uses an old quarter microfarad paper condenser and a 50,000 ohm potentiometer connected as a variable resistor. Nearly the whole of this resistance is in circuit. Depending on the accuracy of R3 and C2, and the leakage, if any, through the dielectric of C2, a little experimenting may be necessary with the valves of these two units. The grid leak returns are connected permanently to the filament of the relay valve V1, which is accordingly above earth potential, and the plate to which the positive side of the power pack is connected through R2 is earthed. The fact that the positive side of the pack is earthed should be remembered when assembling it. If the negative side is earthed also our results are not likely to be duplicated. The key is connected in over about 15 feet of lampcord in our case, and the impact suppressor—one of many we had built—was left connected. C4 is a 2-mfd. condenser of 400 volts working rating.

Full operation is easy to follow from the diagram. When the key is opened V1 is blocked beyond cut-off by the voltage drop across the tapped off negative end of the bleeder R1. This stops both the flow of grid current from the transmitter stages, and also the passage of current from the power pack through the plate-filament circuit of V1. Hence with no current flowing through R2 there is no voltage drop across it, and the full pressure on the voltage divider between the positive end and the filament tap (250 to 300 volts) appears across the plate-filament terminals of V1 biasing the stages in the transmitter strongly negative and cutting off all plate current. When the key is closed the bottom section of the bleeder is short-circuited, and the voltage drop it had established across C2 is "slowly" dissipated through R3 until grid and filament are both at the same potential. It is to be observed that the removal of bias from V1 is not sudden, but that the time occupied in the process depends on the values of C2 and R3. The restoration of a circuit between

the plate and filament of V1 is correspondingly gradual. As current from the power pack begins to rise through R2, a voltage drop begins to develop across it, and this voltage grows until when the grid of V1 reaches filament potential practically the whole pressure of the power pack has been transferred from the points A and B in the circuit to the terminals of R2. With the grids of the two type 45 tubes held at filament potential, and the full grid current from the transmitter flowing through them, the pressure across V1 in our case is only about 25 volts.

FEED-BACK IN FREQUENCY DOUBLERS.

(By VK2PF.)

The device of introducing feed-back into frequency multipliers is probably familiar to most Hams in cases where the stage is used as a quadrupler, but probably few realise what a difference it will make to an ordinary doubler.

Furthermore, it is usually said that the circuit to introduce feed-back should be the same as a plate neutralizing circuit, i.e., with the high tension feeding to the centre point on the plate tank coil.

However, being lazy, I tried it out by simply hooking a midget 23 plate, which I had double spaced from the cold end of the tank coil to the grid of the doubler valve in the already established F.D. circuit.

Results—reports from ZL which had never been better than R7 went to R9 in most cases, none being worse than R8.

It seems to be worth trying.

N.S.W. Exhibition

The Victorian Division desires to express its good wishes to the New South Wales Division on the occasion of its second Annual Amateur and Shortwave Radio Exhibition. We sincerely trust that the exhibition is a financial as well as an educational and social success.

Your D.X. Tally

Everyone in the past has had their own idea of the countries comprising a country's worked tally, so the latest list, as endorsed by the I.A.R.U., and published on the A.R.R.L. world-wide map, will be of interest.

The map is an Azimuthal map centred on the U.S.A., but is rather valuable, as it provides an accurate list of countries in the world besides the divisions for W.A.C. awards. The list of countries is published below, and should be accepted as a fair guide for a countries worked tally, and should satisfy the most caustic critic, as the A.R.R.L. have spent some months on this project.

The more forward members of the Australian Amateur Fraternity have been including Tasmania in their tallies of countries, and the list supports this. Some will find it hard to reconcile themselves to this point. However, the list is as follows:—

Time Zone.	Country.	Prefix.
14 & 15	Abyssinia, see Ethiopia	
15	Aden	
14	Aegean Islands	
16 & 17	Afghanistan	YA
1 to 3	Alaska	K7
13	Albania	ZA
15	Aldabra Islands	
12	Algeria	FA
18½	Andaman Islands	
12	Andorra	
14	Anglo-Egyptian Sudan	ST
13	Angola	CR6
14 & 15	Arabia, see Saudi Arabia	
8	Argentina	LU
11	Ascension Island	ZD8
20 to 22	Australia	VK
13	Austria	OE
10	Azores Islands	CT2
7	Bahama Islands	VP7
15	Bahreim Islands	VS8
12	Baleaic Islands	EA6
17½	Baluchistan	
8	Bardados	VP6
14	Bechuanaland	
13	Belgian Conga	ON
12	Belgium	ON
8	Bermunda Islands	VP9
17½	Bhutan	
22	Bismarck Archipelago	
8	Bolivia	CP
19½	Borneo, Netherlands	PK5

7 to 9	Brazil	PY
13	British Cameroons, see Nigeria	
6	British Honduras	VP1
20	British North Borneo	VS1
20	Brunei	
14	Bulgaria	LZ
18½	Burma	
13	Cameroons, French	FE8
3 to 8	Canada	VE
7	Canal Zone	
11	Canary Islands	EA8
10	Cape Verde Islands	CR4
22	Caroline Islands	
20 to 22½	Celebes and Molucca Islands	PK6
17½	Ceylon	VS7
8	Chile	CF
17 to 20	China	XU
21	Chosen (Korea)	J8
19	Christmas Island	ZC3
18	Cocos Islands	ZC2
7	Colombia	HJ
15	Comoro Islands	
1.22	Cook Islands	ZK1
12	Corsica	
6	Costa Rica	T1
14	Crete	
7	Cuba	GM-CO
7	Curacao and Netherlands, West Indies	PJ
14	Cyprus	ZC4
13	Czechoslovakia	OK
13	Danzig	YM
13	Denmark	OZ
7.20	Dominican Republic	HI
5	Easter Island	
7	Ecuador	HC
	(6.41 Guayaquil)	
	(6.46 Quito)	
14	Egypt	SU
15	Eritrea	
14	Estonia	ES
	(13.39 Tallinn)	
14 & 15	Ethiopia (Abyssinia)	ET
12	Faeroes, The	OY
8	Falkland Islands	VP8
1	Fanning Island	VR3
19.20	Federated Malay States	VS2
24	Fiji Islands	VR2
14	Finland	OH
20	Formosa, see Taiwan	
12	France	F
13	French Cameroons, see Cameroons	
13	French Equatorial	

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	Africa	FQ8			
	19 French Indo-China	F18		20 Manchukuo	
	2 French Oceania	FO8		22 Marianas Islands	
11 to	13 French West Africa	FF8		23 Marshall Islands	
	6 Galapagos Islands			8 Martinique	FM8
	11 Gambia	ZD3		16 Mauritius	VQ8
	13 Germany	D	4 &	15 Mesopotamia, see Iraq	
	12 Gibraltar	ZB2		6 Mexico	XE
	24 Gilbert and Ellice Islands			1½ Midway Island	K6
	and Ocean Island	VR1		8½ Miquelon and St. Pierre Island	FP8
	17½ Goa	CR8		12 Monaco	
	12 Gold Coast (and British Togoland)	ZD4	18 to	20 Mongolia	
	11 Gough Island			12 Morocco, French	CN
	12 Great Britain	G		12 Morocco, Spanish	EA9
	14 Greece	SV		14 Mozambique	CR7
7 to	11 Greenland	OX		17½ Nepal	
	8 Guadeloupe	FG8	12.20	Netherlands	PA
	22 Guam	K6		7 Netherlands West Indies, see Curacao	
	6 Guatemala	TG		23 New Caledonia	FK8
8.15	Guiana, British	VP3		8½ Newfoundland and Labrador	VO
8.19	Guiana, Neth. (Surinam)	PZ		21 New Guinea, Neth.	PK6
	8 Guiana, French and Inini	FY8		22 New Guinea, Terri- tory of	VK9
	11 Guinea, Portuguese	CR5		23 New Hebrides, British	YJ
	12 Guinea, Spanish			23 New Hebrides, French	FU8
	7 Haiti	HH		23½ New Zealand	ZL
14 &	1½ Hawaiian Islands	K6		6 Nicaragua	YN
	15 Hejaz	HZ		18½ Nicobar Islands	
	6 Honduras	HR		13 Nigeria (British Cameroons)	ZD2
	20 Hong Kong	VS6		1 Nieu	ZK2
	13 Hungary	HA		19.20 Non-Federated Malay States	VS3
	11 Iceland	TF		20 North Borneo, see British North Borneo	
17½ &	12 Ifni			13 Norway	LA
18½	17½ India	VU		14 Nyasaland	ZD6
	(17.53 Calcutta)			23 Ocean Island, see Gil- bert and Ellice Islands	
	8 Inini, see Guiana, French			16 Oman	
15 &	16 Iran (Persia)	EP		21 Palau (Pelew) Islands	
	15 Iraq	YI		14 Palestine	ZC6
	12 Ireland, Northern	GI		7 Panama	HP
	12 Irish Free State	EI		22 Papua Territory	VK4
	13 Italy	I		8 Paraguay	ZP
	7 Jamaica and Cayman Islands	VP5	15 &	16 Persia, see Iran	
	21 Japan	J		7 Peru	OA
	19½ Java	PK		20 Phillipine Islands	KA
	14½ Kenya	VQ4		1 Phoenix Islands	
	17 Kerguelen Islands			2 Pitcairn Island	VR6
	21 Korea, see Chosen			13 Poland	SP
	17½ Laccadive Islands			12 Portugal	CT
	14 Lativa	YL		17½ Portuguese India, see Goa	
	8 Leeward Islands	VP2		12 Principe and Sao Thome Islands	
11.16	Liberia	EL		8 Puerto and Virgin Islands	K4
	13 Libya			16 Reunion Island	FR8
	13 Liechtenstein			14 Rhodesia, Northern	VQ2
	13 Lithuania	LY			
	12 Luxembourg	LX			
	20 Macau	CR9			
	15 Madagascar	FB8			
	11 Madeira Islands	CT3			
16.54	Maldiv Islands	VS9			
	13 Malta	ZB1			

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14	Rhodesia, Southern	ZE	14	Transjordan	ZC1
11	Rio de Oro		8	Trinidad and Tobago	VP4
14	Roumania	YR	11	Tristan da Cunha	ZU9
11.37	St. Helena	ZD7	13	Tunisia	FT4
6	Salvador	YS	14	Turkey	TA
13	Sardinia		14½	Uganda	VQ5
1	Samoa, U.S.	K6	1	Union Islands, see	
1	Samoa, Western	ZM		Tokelau Islands	
1½	Sandwich Islands		14	Union of South	
19½	Sarawak	VS5		Africa	ZS-ZT-ZU
14 &	15 Saudi Arabia		4 to 7	United States	W (N)
16	Seychelles	VQ9	8½	Uruguay	CX
19	Siam	HS	7½	Venezuela	YV
11	Sierra Leone	ZD1	8	Virgin Islands, see	
15	Socotra			Puerto Rico	
23	Solomon Islands	VR4	23	Wake Island	K6
15	Somaliland, British	VQ6	8	Windward Islands	
15	Somaliland, French	FL8	24	Wrangel Island	
15	Somaliland, Italian		15	Yemen	
9.53	South Georgia	VP8	13	Yugoslavia	YT-YU
9	South Orkney Islands	VP8	15	Zanzibar	VK1*
8	South Shetland				
	Islands	VP8			
14	South-west Africa,				
	see Union of Sth. Africa				
14 to 24	Soviet Union	U			
14 to 16	European States	U1-7			
16 to 24	Asiatic States	U8-9-0			
12	Spain	EA			
13 &	14 Spitzbergen, see				
	Svalbard				
19.20	Straits Settlements	VS1			
18½ &	19 Sumatra	PK4			
8.19	Surinam, see Guiana,				
	Neth.				
13 &	14 Svalbard (Spitzbergen)				
13	Sweden	SM			
13	Switzerland	HB			
14	Syria				
20	Taiwan (Formosa)	J9			
15	Tanganyika Territory	VQ3			
12	Tangier Zone				
18 &	19 Tannu Tuva				
22	Tasmania	VK7			
17 &	18 Tibet				
20	Timor, Portuguese	CR10			
12	Togoland, British, see				
	Gold Coast				
12	Togoland, French	FD8			
1	Tokelau (Union)				
	Islands				
24.20	Tonga (Friendly)				
	Islands	VR5			

N.B.—Time Zones—The hour zones are number along the equator, Greenwich being 12, while Eastern Australia is 2 extra. The difference of times can then easily be arrived at.

*This is undoubtedly incorrect, and may be a misprint for 2K1.—(Editor.)

TRANSMISSION SCHEDULES. MAY, 1937.

VK2ME.

	Sydney Time.	G.M.T.
Sundays:	4 p.m.-6 p.m.	0600—0800
" "	8 p.m.-Mdt.	1000—1400
Mondays:	1.30 a.m.-3.30 a.m.	1530—1730

VK3ME.

	Melbourne Time.	G.M.T.
Nightly Monday		
to Saturday		
(inclusive)	7 p.m.-10 p.m.	0900—1200

VK6ME (9590 K/Cs).

	Perth Time.	G.M.T.
Nightly Monday		
to Saturday		
(inclusive)	7 p.m.-9 p.m.	1100—1300

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N.S.W. Amateur and Short-Wave Exhibition

This Exhibition is to be held in the Lower Hall, Sydney Town Hall, from Monday, 3rd May, to Saturday, 8th May, inclusive. The opening ceremony, at 9 p.m. on the Monday, will be again performed from America, through the courtesy of the General Electric Company, who have placed station W2XAF at our disposal for the occasion. We are also indebted to Amalgamated Wireless (A/sia) Limited, who are broadcasting the replies through VK2ME. It is hoped that Mr. E. T. Fisk, who is at present abroad, may be able to speak from Europe.

The opening proceedings will be relayed by 2BL over National Stations.

The Exhibition is more extensive than yast year, there being 14 extra stands, the exhibits being as far as possible of technical interest.

Stations will be active on both 7 and 14 mc under the call sign VK2WI, and all amateurs are requested to be on the lookout for this station during the Exhibition. When on 14 mc four different frequencies may be used—14036, 14140, 14260 and 14390.

COMPETITIONS.

1st Section.—Affiliated Radio Clubs compete for the "Wireless Weekly" Cup for the best complete stall exhibit. There will be prizes of £3 3s., £2 2s. and £1 1s., also donated by "Wireless Weekly," for the best pieces of apparatus on these stalls.

2nd Section.—(a) The best multi-band transmitter. Two prizes, first

and second, and one special prize for the transmitter best showing originality and economy in design. (b) The best amateur receiver. Three prizes. (c) The most compact and complete portable station (U.H.F. gear and transceivers eligible). First prize only. (d) The best U.H.F. receiver. Two prizes. (e) The best U.H.F. transmitter. Two prizes. (f) The best piece of apparatus not included in the above classes. (g) The best dual or all-wave receiver (open to short-wave listeners only). Three prizes.

The prizes will include:—1-808 and 2-866's, 7 receiving type Radiotrons, A.W. Valve Co.; £5 5s. order for Ducon condensers, Colville transmitting condenser, Hammarlund transmitting condenser, 2-6L6's. Open order for £5 5s. (Price's Radio), O—I M.A. Triplett meter, O—I M.A. Palec meter. Other prizes have not yet been announced.

A feature of the Exhibition will be the U.H.F. working exhibit. Two 5-metre stations in the hall will work with mobile stations in cars travelling about the city.

On the Tuesday evening (4th May) the final of the Competition for the Trophy presented by the Senior Radio Inspector (Mr. W. T. S. Crawford) will be held at the Radio Inspector's office, Haymarket Post Office Chambers, George Street, Sydney, at 8 p.m.

This trophy is for the best amateur operator in N.S.W., and a list of the finalists was published in the March issue.

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A Visit and Station Description

VK2YW—Wagga.

(By VK2IG.)

March 26 and 27 saw a miniature convention at Wagga, where VK2YW enjoyed (we hope!) a visit from 2AP, Parkes; 2OJ and 2IG, of Albury, and at the same time contacted 2IM, of Leeton, making a good Zone 5 round-up.

We visitors had a great time, and the cordiality and hospitality of YW's mafer, Mrs. Pitman, his sister, "Jess," and himself was wonderful, and so they have only themselves to blame if they have a repeat visit.

The transmitter is arranged on a rack and panel about four feet high by 20 inches wide, mounted on the operating table, and comprises a 59 E.C. oscillator, 59 doubler for 20 metres, 46 buffer to a pair of 10's in the final.

Antenna switches are mounted on top of the panel, and permit a choice of either the 66 ft. Zepp for general use or two half-waves in phase for 20 metres. Two fine sticks approximately 50 ft. high support these. The location is one of the highest in Wagga, and a nice view of the district is obtained.

For fone a separate operating table is used, on which are mounted the mike and electric turn-tables. A sloping panel contains the gain-control, switches and faders. The mike is a Reiss type, and the pickups are crystal jobs. This table allows complete station operation from the chair, and is very fine. The modulator incorporates a pre-amplifier and the line-up is 56 pre-amp, 56, pair 56's as phase changes, pair 45's choke coupled to a pair of 50's as final modulator tubes. Power is supplied from five packs from the A.C. lines for the various R.F. stages and modulator.

The receiver is a 3-tube converter fed into a 6-tube TRF job, and gives both fidelity and high gain. The output is fed into a dynamic

speaker mounted in the open fireplace with its baffle. Though the weather at the time suited this arrangement, we understand that the door comes off the ice-box in the winter, and the speaker goes in there!!

The house is equipped with an excellent workshop, where further amplifiers, speakers, and test equipment are installed. The rooms are wired to allow reproduction of music from the operating room and also for microphone connections to permit broadcasts from the piano in the drawing room.

The station is owned by Mr. D. H. Pitman, 49 Macleay Street, Wagga, and conjointly operated by himself and sister, who, by the way, has a very fine voice and manner for the microphone. Both "Doug" and "Jess" welcome any hams floating through their town, and one and all can be assured of a most cordial reception.

To finish up with, we saw a 5-metre job in the process, and YW expects to WAC with this soon.

VK2IG.

NOTICE.—VICTORIAN DIVISION, TECHNICAL DEVELOPMENT SECTION.

Applications are requested for members interested in the technical development of the Victorian Division, for inclusion on the Committee.

Don't be nervous; file your application right away!

We regret to announce that Jim Marsland, VK3NY, our Magazine Secretary, has been ill for a week or so. We hope to see him about soon.

R.A.A.F. Wireless Reserve Notes

Officer Commanding: Flying Officer R. H. Cunningham, 397 High Street, Glen Iris, S.E.6, Victoria (VK3ML).

District Commanders—

Second District, N.S.W.—A. G. Henry, Clareville Avenue, Sandringham (VK2ZK).

Seventh District, Tasmania—R. Cannon, Goldie Street, Wynyard (VK7RC).

Third District, Victoria—Pilot Officer V. E. Marshall, 3 Myrtle Avenue, Kew (VK3UK).

Fourth District, Queensland—A. E. Walz, Sandgate Road, Nundah (VK4AW).

Fifth District, South Australia—F. M. Gray, 52 Ormond Grove, Toorak Gardens (VK5SU).

Sixth District, West Australia—J. Mead, 111 Gerrard St., East Victoria Park, W.A. (VK6LJ)

3rd District Notes.

We have been living in the hopes that conditions on the 3.5 mc band would have begun to improve before this. The summer just past has given us the worst conditions we have experienced on this band since we started in 1929. In past years signals began to pick up by the end of March, but are still as bad as they were during the middle of January. In the meantime, it is impossible to incorporate R/T into our section working, and also the chances of running a successful portable exercise are remote. Thus we are more or less marking time awaiting the lifting of conditions. As most of the VMC stations have phone installed, there will be no hold-up in getting going R/T message handling when the time is right. As far as the suggested portable exercise is concerned, we intend to operate two metropolitan stations, which will consist of a control station and deputy. 56 mc R/T will be used between these two, so that the exchange of traffic and instructions may pass between them whilst handling traffic with the country men on 3.5 mc. It is proposed to work up a war situation, and then for the duration of the exercise handle the type of traffic that would be passing through such stations were the occasion the real thing.

Our congratulations go to 3C4 on his engagement. We are not unduly praising him when we say his future wife is a lucky lady. Murray is one of our original members, and through-

out has given of his best to the Reserve. We wish you every happiness, OM.

3A1 is managing to cover remarkably large slices of Victoria in very small periods of time, in the course of his business.

3A6 has settled into the section work very quickly, and is handling traffic like an old-timer already.

Our congratulations to 3B4 on the arrival of a brand new Junior Op. A future Reserve member, we hope!

3B6 has settled down in his new QRA, and will be back on the job in a week or so.

3C2 will shortly be moving, and so will be off the air for a period.

3C3 made a flying trip to town recently. These country men certainly seem to hate to be away in VIM. They can't get back to the country quickly enough! Alan's trip as an example. He arrives on the Thursday afternoon and leaves for home again the following afternoon. If any talking at all is to be done it has to be done mighty quickly!

3C5 has been having further trouble with his transmitter. Some obscure fault in his PA tube seems to be the cause.

3A2 has been trying out the Collins antenna as used at 3Z1, and is as delighted with the results as 3Z1 is.

(Continued on page 28)

Federal and Victorian QSL Bureau

(By Ray E. Jones, VK3RJ,
Qsl Manager.)



The Hungarian amateurs have organised a DX contest during the five week-ends of May. The contest periods are 1400 G.M.T. Saturday to 2400 G.M.T. Sunday. Six figure serial numbers must be exchanged with the HA station, the number being made up as follows:—RST report plus three zeros for the first QSO, RST plus 001 for the second, 002 for the third, and so on. Stations may be worked on each band each week-end. A complete exchange of numbers counts two points. Final scores are obtained by multiplying the points by the number of different HA stations worked on each band. Logs giving full QSO particulars should be sent to Mátyás-ter 6, Budapest, Hungary, by August 1. The three leading stations in each State of Australia will receive a certificate. Further particulars may be had from this Bureau.

ZL1LM, ex-VK3KO, is holidaying in Australia, and proved an entertaining visitor at the April meeting of the key section of the Victorian Division.

D. Randall, Ayre, VK3KP, is leaving for Europe on 25th May, and will be absent until February, 1938. In addition to being envious of you, OM, we wish you a most interesting trip and safe home.

The A.R.R.L. advise that they will no longer handle cards for stations other than in W, VE, K, KA and N.

Roth Jones, VK3BG, is contemplating a trip to VK5 during May. He

requests VK5 to look out for him on 7150 or 14300 KC.

SS2R is a Yankee cruiser stationed at Bermuda completing survey work. The operator is W6MZ, Qsl., via A.R.R.L.

The Air Force is becoming a popular hide-out for hams. Among those on the pay-sheet are VK3HB, EZ, HT, FX, OL, DD, BE, 2YB, and a couple of gopers.

Latest advice from Hartford indicates that the A.R.R.L. will no longer handle listener reports. The large volume of D reports have clogged the system, so it seems.

Cards for the following stations may be secured on receipt of stamped envelope at the Bureau, 23 Landale Street, Box Hill:—VK3AH, AD, AM, AP, AX, BJ, BL, BS, CA, CV, CW, DI, DJ, DS, EM, ES, EX, FA, FG, FJ, FK, FM, FN, FS, GB, GE, IL, JC, JK, KG, KI, KK, KP, KO, KY, LQ, LT, LY, NA, NB, NG, NU, OI, OM, PA, PG, PH, RL, RM, RQ, RT, SM, SO, ST, TG, TQ, UD, UF, UJ, UN, VB, XD, XG, XK, XT, XW, YL, YS, ZB, ZQ, ZW.

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Divisional Notes

CANDID COMMUNICATION TO OUR VALUED CORRESPONDENTS.

From VK3RX.

What I am going to mention in this open letter must not be taken as being directed personally to any one, but is the result of some six or eight months editing of these Divisional Notes.

Several pages of the total number received generally have to be re-written because of the too free use of abbreviations, and to make them sufficiently readable for the linotyper to set up. A little punctuation and capital letters now and then, where needed, would make things easier.

Please double space all typewritten notes if you can remember it, and, of course, one side only.

Now for a few "don'ts":—

DON'T use "es" for "and." "es" is the Morse abbreviation for "&," and should not be written.

DON'T write the Greek letter "lambda" for metres or wavelength.

DON'T write "wid" and "fer" instead of "with" and "for."

When mentioning calls, don't write V.K.3. RX., but put "VK3RX."

DON'T write more than we usually publish each issue. A glance over the back issues will show you. If you usually write a thousand words, and 500 is published, prune it a bit yourself before you send it to the editor, to arrive here before the 18th of the month. It goes to press the following day, hail, rain, or Sunday notwithstanding.

N.S.W. Division

New Members of the Council.

VK2UX.—New City Vice-President. Was President of this Division from the time the W.I.A. went into liquidation some few years ago. He successfully piloted the A.R.A. through a very stormy period, and was, among others, instrumental in again placing the W.I.A. in N.S.W. on the high peak where it is to-day. For that work he was unanimously elected a life member of the Institute.

VK2UV.—Assistant Secretary. A very keen amateur and just the man for the position. Takes a great interest in 5-metre work, and in between his DX-ing on that band manages

to find time for his work as an analytical chemist, holding a B.Sc. degree.

VK2RA.—Publicity Officer. For some years past has been in the country without any power supply, but has now settled in Sydney, and is active on 7 and 14 mc. With a B.E. degree, is engaged in structural engineering and University lectures.

VK2ZR.—Is President of the Lakemba Radio Club, and an enthusiastic member of the Institute. Owing to changes of address he has not been on the air much lately, but hopes to be active again before long.

VK2VN.—Secretary of the U.H.F. Section, which recently held a very successful Field Day, the success being largely due to his organisation. As Traffic Officer for the Division he has been handling traffic with U.S.A. in connection with the opening of the Radio Exhibition.

W/VE DX CONTEST.

Information with regard to scores in this contest has been very meagre. The outstanding performance in this State was that of VK2LZ, who had a score of 41,000 points, including 256 contacts on 28 mc. VK2PN, of Tumut, scored 12,500, and VK2RA 10,400. It is believed that VK2GU also did well. VK2NQ, working on 7 mc only, had 170 contacts in 30 hours.

In the phone section indirect information is to hand that VK2GU had in the vicinity of 300 contacts on 14 and 28 mc. A truly remarkable performance.

ZONE NOTES.

Zone 5—VK2IG.

DX is rolling in on 20 metres, and is easy to raise. 40 metres is improving, and W's are reaching peaks on all bands.

Old 2QD is now improving, but still in hospital after his bad mo' bike accident.

2EU now has 3-stage xtal, 47, 46, pair 46's, and is getting some DX now on 40 m.

2QE worked plenty W's in contest, and has been getting general DX, but oscillator playing up, and now talking xtal.

2OJ trying fone on 20, but rather busy. Changed to Johnson Q antenna, which should be directional for Asia. Fb for Europe, but only fair for U.S.A.

2AFD back in Albury, but too busy to get transmitter perking. Has no AC, and brought new vibrator unit back for power supply.

2IM on fone trying mikes. Crystal mike best fidelity, but "Harley" not far behind, and has more punch.

2YW building new amplifier. Getting out well, and reproduction good.

21G perked up transmitter, and getting some FB DX, including OE, SP, OZ, HP1, MX for new countries. Conditions peculiar on 20. At Easter Europeans were R6, and better in the afternoon, and one evening at 10 p.m.

for about an hour. All stations called except YR5CR were raised. Countries heard were FA8, YR5, OZ, OE, MX, SU, F, D, G, SP, VP2, PY, LU, J, HP1, HR1, etc., showing conditions generally good. Though PY and FA8 were not called, other VK's contacted them, and HR1 was missed through QRM. At present few Europeans are heard at night, but coming through in mornings and afternoons.

LAKEMBA RADIO CLUB—VK2LR.

(Affiliated with the W.I.A.)

(By 2DL.)

The following is the latest revised list of transmitting members of the above club:—VKs, 2LR, 2ABI, 2ABT, 2ACE, 2ACK, 2AFK, 2AS, 2CL, 2CY, 2DL, 2ED, 2EH, 2EV, 2FD, 2FG, 2GM, 2HE, 2IC, 2IO, 2JT, 2KS, 2LW, 2MH, 2NJ, 2OD, 2OI, 2OW, 2PX, 2QP, 2QX, 2TG, 2TQ, 2UB, 2UC, 2VA, 2WB, 2XD, 4XM (ex 2XM), 2XZ, 2ZR. Non-transmitting members number 25, two of whom appear to have been successful at the recent A.O.P.C. exam.

General 5-metre activity appears to have showed a marked dropping off in this district. However, a report by our secretary at a recent meeting to the effect that two-way communication had been established between America and Europe may assist in the renewal of past interest.

Members are all looking forward to the annual reunion, which promises to be better than ever; full details will appear in these notes next month. Then there is the amateur exhibition being conducted by the W.I.A. A special club committee has been elected to handle the arrangements for the Lakemba Stall. It is interesting to note that of the committee of four elected, each have either a car or truck, so that the problem of transport of apparatus, irrespective of size, will be a minor detail.

ULTRA HIGH FREQUENCY SECTION (N.S.W. DIVISION).

(By VK2VN.)

As has been noticed in the past, activity in this State on the ultra highs continues to increase.

Several test have been conducted during the past couple of months, and

some very interesting facts established.

Most important of all possibly was the big 5MX Field Day, held on 14th March. Details were not available for the last issue, but have now come to hand. The longest distance contact was established between VK2JU, located at The Gib, Bowral, and the official station, 2WI, at Kurrajong Heights, the distance being about 70 miles airline. The previous best contact was made a few years ago between Mt. Victoria (3,400 ft.) and Sydney, the distance in this case being 50 miles.

One of the highlights was 2ZC's report from Mt. Sugarloaf (1,450 ft., near Newcastle) of 2NO and 2EM in VIS. As far as can be made out the only stations to hear 2ZC were 2EM and 2BP, at Hazelbrook.

Unfortunately, no contact was made by 2ZC, who incidentally was using as an antenna 6 half waves in phase, in the Bruce form, the directional effect of which may possibly account

for the signals not being audible in the southern city.

2ZC was the only mobile station using a beam antenna, but it is agreed by most that by using some very directional array, such as was used by the former, and a fair amount of power, that signals could be put into Newcastle quite consistently.

Those stations reporting 2ZC noticed that at intervals the signals disappeared completely.

Other gear used by 2ZC was as follows:—Transmitter PP 45's T.N.T. Circuit with 350 V Carter Genemotor, Modulator 76-42, Receiver 3-tube super-regenerative.

2UV, at Hawkesbury Lookout, was using a 2-tube Transceiver, whilst 2JU's signals came from PP 42's in TPTG.

The control station, 2WI, got quite good results with a PP6A6 T.N.T., the receiver being a super-regen. 76-42 and a half wave doublet antenna.

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Our 1937

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All those stations which participated are looking forward to the next test, which will be held very shortly, and some excellent suggestions regarding the form it should take are to hand.

On the evening of 23rd March, members were the guests of Mr. Knock, VK2NO, at his home at Bronte, and were very interested in the high-power 5MX transmitter installed, and also the fine rotational beam system controlled from the operating position.

Schedules are being arranged with W6KIP in Los Angeles, and full details will be available within the next few weeks. The gear used at W6KIP is as follows:—Transmitter 6L6 osc., 802 doubler, 35T doubler, and 150T final with an input of 600 watts on 56 mc!! The receiver is a 7-tube superhet, while several different antenna systems are available, the best of which, we are told, is the Diamond.

W6IOJ has received a report on his 56MC signals from F8VQ, while W3SI reports numerous 10-metre harmonics from European stations.

Speaking of harmonics brings us back to Canberra—VK2GU and 2AFB—both of whom have heard harmonics on 56 Mc from 28 MC W stations. 2GU is still using PP 800's, although a change is being made to 808's. 2GU's frequency, by the way, is 56224KC, and he uses a superhet for receiving.

2AFB is using PP45's, but the only station to be qso'd by him is 2GU.

This will not be the case for long, as 2PN, at Tumut, about 60 miles from 2AFB, is well established, and is just completing a superhet.rx.

Schedules have been kept between 2GU, 2NO and 2LZ, but so far no signals have been heard by the three stations.

2HZ has recently moved up the North Shore line to Lindfield, where a very fb. dx location has been selected, and we can expect to hear some good results from Bill on 5MX.

2NO spends most of his spare time—what little there is—in trying out various beam arrays.

2AZ still putting out nice crystal-controlled signals from what would seem to be a rather poor 56 MC qra. However, results obtained are contrary to that belief.

2LZ is just recuperating from the strain of 88 hours in the recent W/VE contest.

2XK is heard quite frequently, and seems to be getting out excellently, being heard at remarkable strength by most of the mobile stations on the Field Day.

2AFE is a newcomer with good ICW signals.

2ZH and 2ZN are heard periodically, but no word has been received from them lately.

That practically covers all the activities in this division during the past month, and we are only waiting for the word that Australian stations have been heard in the States, or vice versa, with fundamentals on 56 Mc. No doubt the exertions of the real enthusiasts will be rewarded in the near future.

Victorian Division

MALLEE AND NORTHERN DISTRICT.

(3ZK—3HX.)

3KR has put up a beam for 28 mc, but reckons that it gets monotonous working Yanks on 14 mc.

3TL made a debut on 28 mc, and succeeded in getting R6 from 3KR. Treb is going to put in high-power modulators, so as he can work some DX fone.

3CE made a trip to Kerang last month, and between himself and the junior-op took home a lot of gear. Roy doing good work on 14 mc.

3EP has at long last built his new rig, 53 Jones exciter, 45 buffer, and link coupled to ??? 210 soon.

3FF inactive waiting for an AC generator, and meanwhile building power packs, etc.

3TS still working low power rig with a very nice T9x signal.

Amateur Radio

3BG, we understand, has turned his hand to fone, but have not heard him as yet.

3IH is still plugging away with his rig, and is building a speech amp in preparation for fone operation.

3WN is putting out a very nice fone signal now.

3HN heard now and again on fone. Mac is building a new shack, when he will install a 400-volt generator.

3HR still working QRP, but threatens to rebuild the rig in the near future.

3OR active on 3.5 mc with an R50 signal. The reason is that Murray has a new Osc. tube, which made all the difference in his sigs.

3NN has not been heard for some weeks.

3BM is on the job with a 6A6 PP xtal osc. with an 801 in the final, making a big noise.

3ZK mostly on 3.5 mc with a very strong signal; threatens to give 14 mc another go.

3HX also mostly on 3.5 mc, and playing round with a speech amp.

WESTERN DISTRICT NOTES.

(By 3HG.)

3PE is a new ham at Camperdown. Has not been heard yet.

3PG, once VK's most consistent QRP DX station, is letting his licence expire and is selling his gear.

3CK heard on 7 mc occasionally.

3BG worked ZS, using the 6L6 tritet described last month.

3RG keeps the ball rolling on 250 metres in Castlemaine.

3SE seems to be the only Ballarat ham active at present.

3XG is another who has been and gone and done it! Congrats and best wishes to you both.

3NQ put in a re-appearance on 3.5 mc the other night, and says he will be on now and again during the winter.

3OW fairly quiet, but works a little DX when inclined.

3HG testing single stage transmitter with quite good results, reports of R8 phone from ZL. Intends installing a 6L6 in the new Jones regenerative C.O. Also rebuilding receiver very soon.

3HL is building the Jones Ultra-gainer receiver.

28 AND 56 MC NOTES.

(By A. Pritchard, VK3CP.)

5 mx DX at last! VK2GU has broken the ice at the receiving end. Harold is still waiting for his 808's, and at present is concentrating on the RX. On the 7th March, during a sked with 2LZ and 2NO on 5 mx (both inaudible at 2GU) ZL1CK's 10 mx harm. was fb on four occasions between 11.15 and 11.45 a.m. The following Sunday morning, 2GU hrd harms. from 4ZL's a K6, and between 15 and 20 W's, all at good strength. VK2GU has put up a wonderful score in the W— phone contest also. During the w-cw contest we hrd LU7AZ r8 hr at 9.30 a.m. on the 11th March. 3BQ hrd him the day before, and 3YP the day after. Max said he was

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To ensure insertion all copy must be in the hands of the Editor not later than the 18th of the month preceding publication.

r6 on the US beam and r9 + on the European beam. Unfortunately for us, he was very busy qso w's—hi! On the 17th March OA4J was back on 10 again, and 3YP had a long qso at 1 p.m., and at 1.45 p.m., qso hr. OA4J was r5-6, but gave us poor reports. The Europeans have been scarce. G5QY qso on 21st March at 10.50 p.m., r5 both ends; VK3BQ on the 4th April, at 7 p.m., hrd VU2CQ r8, also r6 at 8.30 p.m. during qso with ZS6AR. At 9.30 p.m. YL2CG clg F3BJ—ng for qso though. Stations from the States have dropped off, and the best times for cw qso's are 7.30 a.m. and 1.30 p.m., although some phones are OK between those times. W5FVA, with PP 807's, 70 wts input, has excellent phone. W6KEi is the most outstanding signal from the States. His antenna is the berries, for 6KEi only uses app. 100 wts into a WE261A, mod. by class B, 801's. His antenna is a diamond, hung on 40 ft. telegraph poles, 150 ft. between each, and having $4\frac{1}{2}$ waves on each leg, fed by a $\frac{1}{2}$ wve matching stub. There are angles of 80 deg. at feed end and 100 deg. opposite. From Asia J2KJ, on cw, and J2CF, now using phone (fair English!), about 6.30 p.m., keep the band interesting. The best phone on the band is K6LCV, the RF line up being 3-53's in a P. Push exciter, 802, T55 and PP T55's. VK5KO keeps VK5 on the map, and also uses the Taylor T55 in his final—with his beam antenna most reports from the

States are r8. VK3BW, in Portarlinton, has been re-building most of his rig—new 8-tube super fb on 5 and 10. Archie has a rotary beam under construction, and at present is exper. with the Johnson Q feed. The TX line x up is 53 7 mc xtal, 802 doub, 807 buff, 834 final—800 reg doub on 5 mx, mod by class B 210's. At VK3YP Ingram has been at it again—more improvements!!—802 tritet, 807 doub, 800 buff or doub to 5 mx, 808 final on 10 and 5 mx. The Super hr at 3 CP seems as good on 5 as on 10 mx, but is extremely selective, having 2 iron cored i f stages. VK3JO is r9, with perfect phone. 3JO has started the ball rolling, with controlled (non-xtal) rigs on 5 mx. With the beat note on, there is no sign of freq. shift or freq. mod. The line up is 6P6 Electron coup. osc. from 20 mx, 6L6 doub, 6L6 neut final—mod. by class AB 42's. VK3MR has an Eimac 50T in operation now, but Snowy has had trouble with neut on 10' mx. VK3CZ is completely re-building his xmitter, Philip EL3 as tritet, from 40 mx xtal, '46 buff on 20 mx, 210 reg doub to 10, driving the 800's. Sunday, 11th April, was fb for South Africa, although there were not many on either end. VK3XP had a long chat with ZE1JU around 5 p.m., and VK3BQ had an hour qso between 7 and 8 p.m. ZE1JJ was qso hr at 5.30 p.m. and ZE1JU at 6.30. At 7.45 p.m. ZS1C qso'd VK3BW and 3CP at

HAMS

EARLY Application is advised for the 60-watt Pentodes which were announced in the March issue of "A.R." These valves are a first-grade product, and are made by the 362 Valve Co. Ltd., London.

Further Technical information can be obtained from the January, 1937, issue of "Television and Short-Wave World."

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Norm. GUNTER

VK3NG

7 Harrison Crescent, Hawthorn

8 p.m. ZE1JU called VK2BX, also qso'd ZL1AR. There are many ZL's on the band at present, ZL1CD, 3DJ, 4FW, 3AB, 1FT, 1GX, 3KZ and 1BC, the last-named is outstanding, and using an RK20 as final amp with 100 wts input. The ant. has a flat top of 67 ft., fed by 40 ft. feeder; lower end of feeder is a brass tube—Lecher wire system—tuned to 20 mx—on 10, the untuned lead is clipped 4 feet from the bottom. Say, chaps, in the other States, I'm not a mind-reader. Please send along the dope re your 28-56 mc experiments.

opportune time to foster a few local contests to create interest during the winter months. Some chaps don't realise the benefits gained by entering for such contests, which calls for good operating procedure. Very little has been heard from our country stations, but no doubt in the next few months they will be heard in Adelaide on 80 or 160 metres. The latter band is one which is not exploited enough by chaps nowadays.

South Australian Division

(By VK5KL.)

During the latter part of March, VK5 hams were well represented in the "Matrimonial Stakes." 5MV, 5WP, and 5JR all lined up to the barrier, and now, whatever they may have to repent for after, everyone wishes them the very best of luck in their new sphere, and may all their troubles be little ones. Another contender was 5XA, who performed the deed on 10th April. April is a busy month in W.I.A. circles for VK5, due to elections, and next month will see a lot of new faces on council, also in the chairs presiding at meetings.

At the present moment the activity on 5 metres is amazing. Never during the writer's three years' experiments on this band have so many stations been heard on. With more turning their attention to 5 metres, some very interesting results should be produced. 5FM, after twelve months' absence, returned with a nice signal from a 45, mod. by a 2A5. 5HD is still the highlight when on. 5ZU, with xtal rig, was heard by 5GF at Mt. Barker recently in a 5-metre field day test. At present 10 mx has gone off slightly, but 5KO and 5LJ, using directional antennas, are getting over to W, OK. During the Yank fone contest few VK5 stations took the opportunity to qso some DX fone. 5AI reports over a 100 contacts.

Now DX contests are over until possibly October, it would be an

Tasmanian Division

At the April meeting of this division a letter was received from Mr. Hooker (7JH), resigning as president of Tasmanian Division W.I.A.

Mr. Hooker's resignation was accepted with regret, and we extend to him our sincere thanks for his untiring work to the division in the past two years.

Owing to outstanding subs. and rental costs of the club rooms, the Council is considering the hiring of a room at the Y.M.C.A. for meeting nights only until such times as our finances permit the renting of permanent quarters again.

The lecture for the night was delivered by the secretary, Mr. H. M. Moorhouse (7HM) on the "Cosmic Ray," including a description of the apparatus installed on the S.S. "Lanena" for recording the intensity of the ray in different latitudes. Members hope to be able to inspect this gear when the "Lanena" arrives back in Hobart.

The 200-metre gang have received notice of shortened hours on Sunday owing to the new "B" class station 7HT operating during the mid-day sessions.

Members' Activities.

7YL.—Has the "dx itch," and opened the account with a PA and a K5. Hopes to reach a total of 76 countries in a year.

7KV.—Landed the elusive European on 10 metres to complete his WAC on ten. Two half-waves in phase did the trick. FB, Keith.

Amateur Radio

7JH.—Very consistent on 20 of late, and working plenty of dx with QRP. Tried loop modulation on his receiver to 7LJ with good results.

7HM.—Heard regularly on 40 metres. Working VK's and a few W's with three-stage xtal and 17 watts to final E406.

7DH.—Finished six months' CW probation, and hopes to put out quality fone soon.

7CM.—Heard occasionally on 20 mx working a fair amount of DX.

7PA.—Regularly on 200, occasionally on 20.

7JB.—Still waiting for 5 mx skeds. Wat sa, boys? Active on 20 mx fone skeds with W2IXY, HKIZ.

7AB.—Honeymooning in VIM. Has a 35T ready for installation in final.

7LZ.—Working plenty of DX on 20 when local QRM permits.

7CL.—Active in A.R.R.L. fone contest.

7BQ.—Using a 3-stage xtal rig on 40 mx with a TC04—10. Also active on 200 and 5mx.

7RK.—Re-building at present, but promises big noise when completed.

7HY.—Re-builds his rig if he gets an R4 or under report. Be home next time we visit, Henry!

7KR.—Active on 40 and 20 metres with fair amount of DX on the latter band. Has BCL troubles on 40 mx fone.

7RC.—Little heard of on S/W. Grinding out canned music to B.C.L.'s on 200 mx.

7DR.—Closed down and all the gear purchased by 7LR.

7RY.—Recently visited VIH, but did not have time to visit all the hams in Hobart. Active on 40 and 200 mx.

7CK.—Hope to hear you again on 80 mx during the winter, Poley.

P. & L. Wireless Supplies Pty. Ltd., who are making radio history at 31 Hardware Street, Melbourne, announce that they have been appointed agents for the famous EDDYSTONE components. Eddystone has been on the English market for many years, and specialise in short wave and transmitting parts. P. & L. have no hesitation in saying that these components are the best procurable.

The range consists of over 50 pieces, and listed below are a few lines:—Ultra short wave coils; Short wave chokes; Stand-off insulators; Short wave condensers; Flexible couplers; Extension outfit; Precision Dial; Quench Coil, etc. A fine illustrated catalogue is available free on application, also the Eddystone Short-Wave Manual, describing all the latest short wave circuits, is available for 1/6.

Hams are being well served with any amount of courtesy and attention at the P. & L. Hardware street store, and this fresh venture should undoubtedly prove of additional interest and prestige.

Important Announcement!

We have been appointed Victorian Distributors for Eddystone Short Wave Equipment, a full range of which is now on view. An invitation is extended to Hams to inspect.

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Amateur Radio

CORRESPONDENCE SECTION.

(To the Editor "Amateur Radio.")

Dear Sir,—I read with interest your sub-editorial in the March issue relating to an "Experimenter's Section" in our magazine. I appeal to you boys one and all to help this section, which I hope will be started immediately, and a wealth of information will be gained. No matter how small or trivial the thing may sound to you, it may be the means of helping someone else. And remember, one and all, you cannot do too much to help this magazine of ours, it is ours, so everyone of you should put all you can into it and make it a magazine which will hold its way with pride for many years to come.

ROTH JONES (VK3BG).

We need more support, OMS, before we can start—come in, please.—
(Editor.)

East Vic. Pk.,
W. Aust.,
March 30.
The Secretary,
"Amateur Radio."

Dear OM,—Just like to ask all VK hams to pse qso W3FKB should they have the opportunity. John Seaman has been confined to a special chair as the result of an auto. accident, and Ham Radio is the **only** thing he is able to do. We are all extremely lucky when it is considered, and it must be an absolute God-send to have Ham Radio to a chap like that.

It is for this reason that I ask this favour, to put a lil memo. in the Hams' Magazine, and to try and cheer our brother Ham.

Thanks a lot, and for now, vy 73 and cheerio,

I remain, yours fraternally,
JACK MEAD (VK6LJ).

(Continued from Page 18)

3F9 is still without his genny, which burnt out some time ago. He will be back on the job again shortly.

3D3 has just installed a wind-driven generator.

3D4 has his new transmitter going well now. Tube line-up is 53-6P6-830B.

3D5 is having trouble in eliminating parasitic oscillations from his PA.

3F2 is settling down in the training section, and is beginning to get the hang of procedure very well. The first couple of schedules are always rather confusing when one is wondering what it is all about.

During the month we received from the Amalgamated Wireless Valve Co. Ltd. a copy of their Radiotron Map Folder, Mileage Chart and Cavalcade of Communications. The Map Folder and Mileage Chart are particularly useful to hams in long distance work, as it is possible to compute from them the mileage of overseas cities from Australia and their local time as compared with E.A.S.T. A request accompanied by the usual penny stamp for mailing should be sent to the Amalgamated Wireless Valve Co. Ltd., 47 York Street, Sydney, when the company would be only too pleased to send on a copy of each of the above. We are also informed that the Radiotron stand at the Wireless Institute of Australia Exhibition at the Sydney Town Hall in May will be of considerable interest to all experimenters as this company is specially catering for Australian experimenters. Those having the opportunity should not miss the display.

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Hamads

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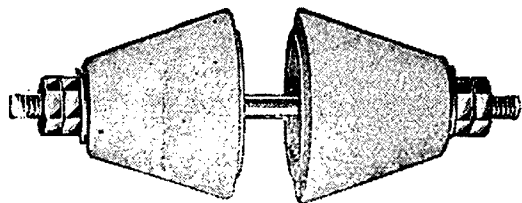
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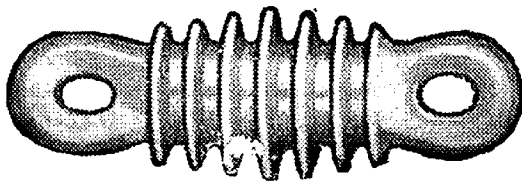


I have written previously on the value of high-grade insulation used in Eddystone receiving and transmitting components. The efficiency of any RF circuit depends very largely on the HF resistance offered by insulation leakage and circuit connections. In these days we are becoming Frequentite, Steatite and Isolantite minded, and have been quick to realise that ebonite and similar materials are "taboo" on the H.F.'s. As the frequency is raised so must the quality of insulation be bettered; ask the ham who has used ordinary sockets and condensers on 28 and 56 m/cs! As well as being built around the best insulation possible, Eddystone parts are solid, rugged, and precision made.

Often a little bit too much overlooked is insulation of the antenna. It is rather useless building up high efficiency receivers and transmitters and then to lose much of the power in the feeder and aerial system. The Steatite strain insulator, tested to 400 lbs., is 3½ inches long, and has an exceptionally long leakage path, ensuring protection against losses in damp weather. Feeders may be held rigidly apart with the aid of the Frequentite Bar Insulator, which allows spacing of 2 inches, which is ideal for Multiband transmission lines. All other insulators, such as Stand-Offs and Lead-Ins, are fully described in the Eddystone catalogue, which is available free for the asking.



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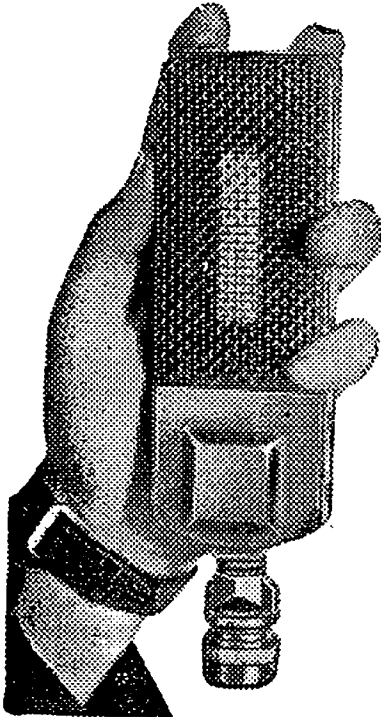
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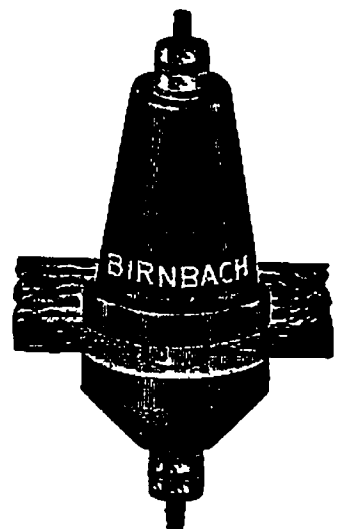
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Vol 5 No. 6

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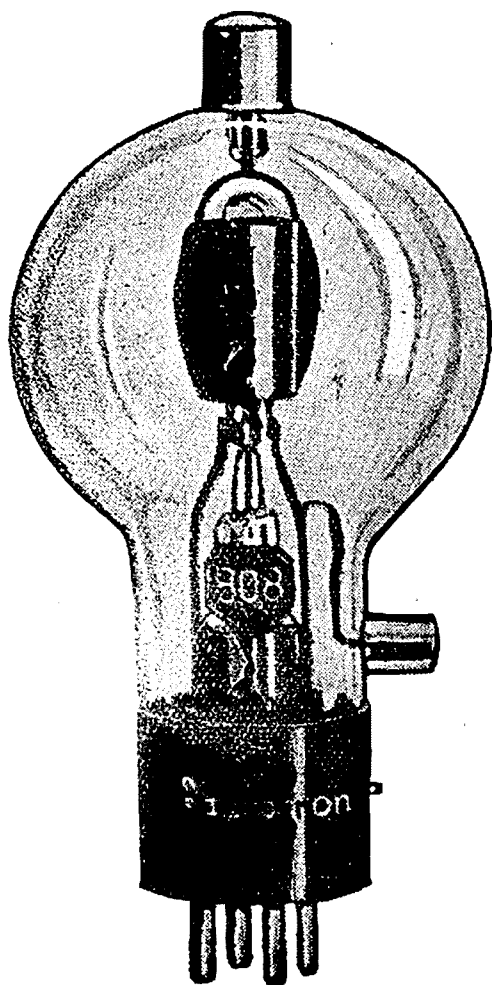
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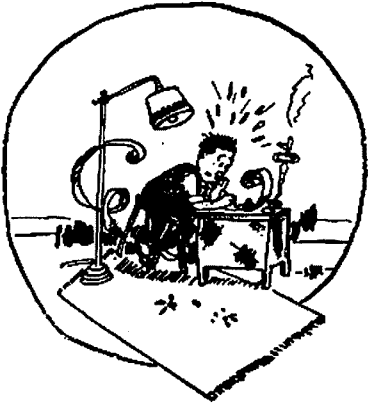
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The Country Ham

The recent convention at Charlton Victoria brought home very forcibly to us the tremendous value that can accrue from such a function. No matter how enthusiastic and hardworking are the members of an organisation, differences of opinion must arise over matters of policy, administration etc. As we are not all cast in the same mould this is easy to understand, but when the people concerned are not in personal contact, appreciation of the other man's viewpoint becomes correspondingly more difficult. If their environment is different then the gap becomes wider still. In a huge continent such as this, the task of Federal Headquarters to maintain a unified outlook is an unenviable one. From the State viewpoint a closer liason between Metropolitan and Country Hams must react to the mutual advantage of all. Some States foster this, others for various reasons are not able to, but one fact stands out clearly on this subject, the growth of Ham radio in the country districts over the last few years has been positively amazing and the catering for these men adequately, is inseparable from a successfully run Division.

There can be no doubt, further, that the country men are the cream of Ham radio, they are genuine experimenters, for one reason amongst others, because they HAVE to be. They have no Ham just around the corner from whom they can obtain information at any hour of the day, they have no radio shop at hand from whom they can obtain just the part they require for that new piece of gear. Often the urge to build it is almost gone before the component arrives. They cannot just lift the plate voltage to endeavor to increase excitation that is deficient because of inefficient design, but have to work and strive to get the maximum possible output from, in most cases, a very modest input. Naturally

we are speaking in generalities, ALL country men are not of the type we mention, nor on the other hand are all Town men. Maybe we shall receive abuse for saying so but the average country man does more genuine experimenting in three months than his city counterpart does in a year. That statement is made by one who has experience of both types covering three States of the Commonwealth.

Where is all this getting us? Simply to our original statement that Country Conventions are one of the finest possible means of establishing a necessary understanding between Town and Country members. Not only does it provide a means of interchange of ideas in which the best of the town can be added to the best of the country thoughts, but also many little differences can be straightened out in a few minutes in a manner that two months of letter writing could never do.

One of the finest ways in which a closer liason can be maintained is through the medium of the RAAF Reserve Wireless Section. Although this organisation is not a WIA section, in Victoria it is totally composed of WIA members and provides a much needed channel for the exchange of Institute ideas. It enables all to be abreast of happenings at all times. Again the Reserve has, as part of its objective, an essential organisation that is not undertaken by the Institute officially and which is, if anything, more a country man's responsibility than the city. That is the establishment and maintainance of an emergency network of stations embracing the State for use in a time of national disaster. Thus although the Reserve is no official part of the WIA it can serve, through the members as a very helpful adjunct and, if for no other reason, should receive the wholehearted support of the Divisional Councils.

This issue is one dedicated to the Country Ham and for that reason we have endeavored to put forward a side of our organisation that receives little publicity, even if everyone feels it is purely a domestic matter.

More power and honor to you, Country Amateur!

A Regenerative Super

By R. Anderson VK3WY.

When building the receiver to be described the primary objects were selectivity and sensitivity to weak signals. To obtain the selectivity required it was decided that a super of some kind would be necessary.

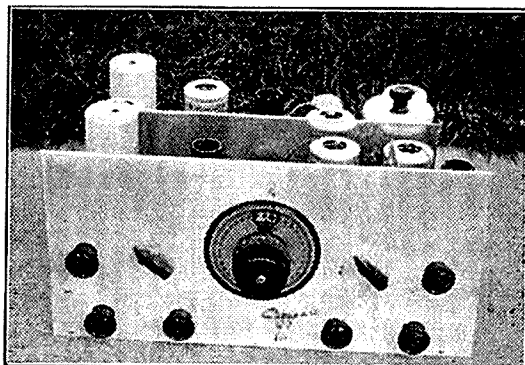
To obtain maximum selectivity from a super two different methods have been widely used. One is by the use of regeneration and the other by the use of a crystal filter. The crystal filter undoubtedly gives the best results but the use of regeneration may be made to give all the selectivity normally required without the financial outlay that a crystal filter entails. Regeneration has the added advantage that it increases the sensitivity very considerably, the limiting factor usually being the noise level.

The final circuit used contains the following stages: regenerative RF stage, regenerative first detector, HF oscillator I.F. stage, second detector, B.F.O., and one stage of audio.

It is, somewhat unusual to use regeneration in both the R.F. and first detector stages and according to the majority of the literature on the subject it is not considered to be very good practice. In this case however actual trial showed it to be decidedly worth while. When the set was first built, regeneration was used in the R.F. stage to obtain sensitivity and in the I.F. stage to give selectivity. Although the selectivity was obtained the regeneration in the I.F. stage brought up the noise level to an extent which definitely lowered the overall sensitivity of the set to weak signals. It is an unfortunate fact that the point of maximum selectivity coincides with the point of maximum noise level. When this regeneration was shifted to the first detector selectivity was not quite so good but was still adequate, while the overall sensitivity of the set was increased. Incidentally it was to avoid a high noise level that a second stage of I.F. was omitted. In practice no difficulty has been experienced in controlling the regeneration provided the stages are reasonably well shielded.

Both stages should be kept below the point of actual oscillation.

It is essential that the panel and chassis should be of fairly heavy gauge and sturdily built. It is hopeless to expect stability from a receiver which has a flimsy chassis. Aluminium $\frac{3}{8}$ inch thick was used for the panel and the chassis is constructed of 16 gauge sheet aluminium supported with $\frac{1}{4}$ inch square brass rod. The panel is 16 inches by 12 inches and the chassis is 15 by 11 by $2\frac{3}{4}$ inches. The shield partition between the first



detector and the oscillator is of 16 gauge aluminium and runs across the center of the chassis. There is also a shield partition between the R.F. stage and the first detector.

The layout of the chassis travels across the front from right to left and then across the rear section from left to right. The R.F. stage is at the front right hand corner, the first detector at its left and then the first I.F.T. The I.F. tube and the second I.F.T. are at the left rear corner and are followed along the rear of the chassis by the second detector, the oscillator and audio tube and finally in the rear righthand corner the B.F.O.

Although there appear to be a rather large number of controls they are no more than are required to get maximum results from a modern set, and in actual operation it will be found that the majority of them only require an occasional touch after they have been once set for the night. The con-

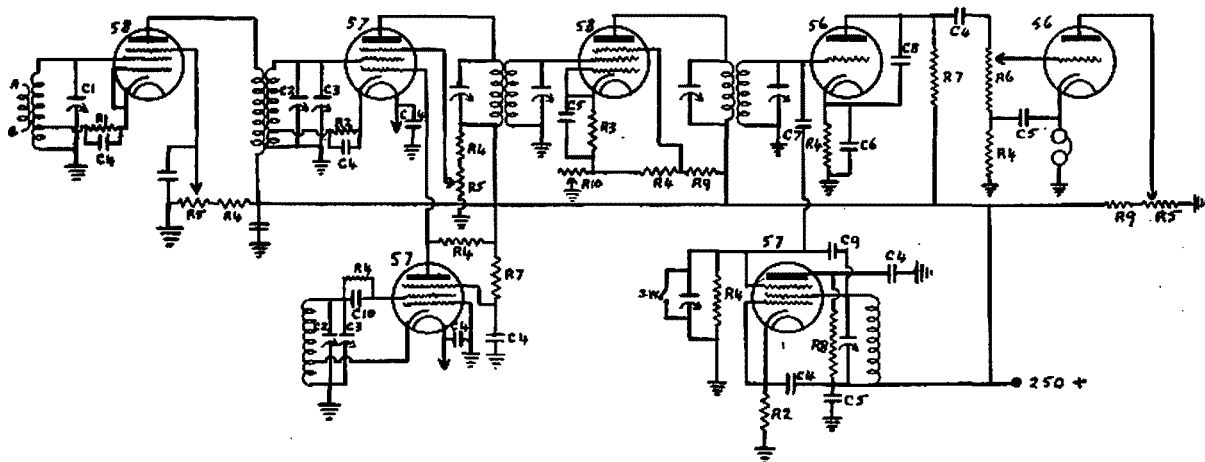
Amateur Radio

trols on the front panel reading from left to right are: Top row, first detector regeneration, first detector padder, main tuning control, oscillator padder, and R.F. stage tuning condenser. The bottom row are audio volume control, I.F. gain control, B.F.O., and R.F. stage regeneration. The audio volume limiter control is situated at the rear of the left side of the chassis.

The R.F. stage uses a type 58 tube and obtains its regeneration by tapping the cathode onto the coil at a point above ground. The tuning con-

siderable positive potential on it, but this has been found to be rather an advantage as it helps the sensitivity of the first detector.

One I.F. stage is used operating at 465 kc. Only one stage was used as it was found that a second stage brought up the noise level more than it brought up the signal. If a crystal filter were used, the second stage would undoubtedly be useful. The transformers used are the Radiokes laboratory type. These transformers are litz wound and air tuned. They have proved very satisfactory giving both good gain and



C1—50 m.mfd.
C2—100 m.mfd.
C3—20 m.mfd.
C4—0.01 mfd.
C5—0.1 mfd.
C6—0.5 mfd.
C7—See text.

C8—0.002 mfd.
C9—0.00025 mfd.
C10—0.0001 mfd.
R1—1000 ohms.
R2—2000 ohms.
R3—300 ohms.
R4—50.000 ohms.

R5—50.000 ohms pot.
R6—500.000 ohms.
R7—100.000 ohms.
R8—25.000 ohms.
R9—20.000 ohms.
R10—2000 ohms.

Band.	R.F. Stage		1st Detector.		Oscillator.	
	Turns.	Tap.	Turns.	Tap.	Turns.	Tap.
28 MC	4	$\frac{2}{3}$	4	$\frac{1}{3}$	4	1
14 MC	10	$\frac{1}{3}$	9	$\frac{1}{2}$	8	2
7 MC	20	$\frac{2}{3}$	18	$\frac{1}{3}$	17	5
3.5 MC	36	1	36	1	35	6

All coils are wound on $1\frac{1}{4}$ -inch formers, and taps shown are the number of turns from ground.

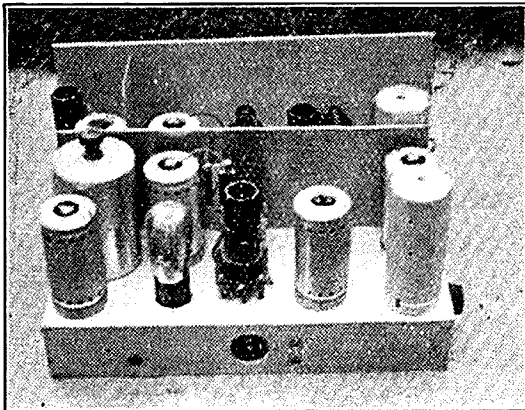
denser for this stage is not ganged with the oscillator and first detector condensers but a 50 mmfd is used for separate tuning of the stage. In practice it is found that the condenser may be set for the center of the band and then only requires slight adjustment to peak a signal anywhere in the band. This stage is inductively coupled to the first detector which uses a type 57 regeneration for this stage is obtained in a similar manner to the R.F. stage. The plate of the oscillator is coupled directly to the suppressor of the first detector. This means that the suppressor must be worked with a con-

selectivity. These could be replaced with iron core type transformers provided they are designed to match the tubes and to give good selectivity. A 2000 ohm variable resistor is used in the cathode circuit of this stage to provide an I.F. gain control.

The second detector uses a type 56 as a power detector and the B.F.O. is coupled to the grid of this detector through a small condenser consisting of two copper plates each a quarter inch square and separated about $1/16$ inch. This gives a very small capacity but it is found that very loose coupling

of the B.F.O. to the second detector aids the reception of weak signals. The B.F.O. uses a type 57 as a "relaxation" type of oscillator. This is a very stable oscillator and gives less harmonics than the usual E.C. oscillator. The whole of the B.F.O. stage should be carefully shielded so that the only coupling to the rest of the receiver is through the small coupling condenser.

One stage of audio follows the second detector. This stage uses a type 56. The input to the stage is fed from a 500000 ohm potentiometer which acts as an audio volume control. The plate voltage to the audio tube may be varied by a 50,000 ohm potentiometer which



acts as a volume limiter and is very helpful in the reduction of car QRM. (see articles by VK3YP in Amateur Radio for November, 1936).

When lining up this receiver the regeneration controls should be turned well back. If possible a modulated oscillator should be used to assist in lining up but if this is not available the set should be hooked to a large antenna and the I.F.T.'s tuned for maximum noise level. The front end of the set can be lined up either from a steady incoming signal or from the station frequency meter.

If care is taken in the construction of the set it will be found to have an excellent signal to noise level ratio and to have excellent weak signal sensitivity.

Attempt on 56 MC Record

The introduction of 56 mc activities to many of the country stations in Victoria on the King's Birthday week-end (14th June) will be celebrated by a demonstration at VK3HL's at Callawadda and VK3RH's at Glenorchy, by VK3ML and VK3UK. Vast interest was taken in the talks given by the city boys at the recent country convention on the possibilities of this band, and an invitation was immediately extended to the visitors to display their gear and show just what could be done in the bush.

Serving this purpose, and at the same time offering possibilities for record-smashing, a crew of city fellows will leave Melbourne on 11th June, and operate with the following schedules throughout the week-end. All times are E.S.T.:—

June 12th: 1400-1800.
2000-2200.

June 13th: 0900-1200.
1400-1800
2000-2200

June 14th: 0900-1200.

Being in line with Melbourne and Adelaide, Callawadda presents an opportunity for 5-metre enthusiasts in both States to put a signal out over the present 100-mile range, and with the close co-operation of both parties something should eventuate. Rotating Bruce aeriels are to be used, with powers up to 25 watts input. Phone and ICW will be employed in conjunction with superhet receivers. All States are invited to co-operate whenever possible, and any further particulars can be obtained from VK3ML & VK3UK

A recent issue of the Kerang (Vic.) "New Times" contained the following gem:—

Apex Dinner.

"The harmony was supplied by Mr. Ken Rankin with his recently constructed high fidelity gramophone amplifier, which is capable of an output of 20 watts of undisturbed volume."

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Five Metre Aerials

(By E. B. Ferguson, VK2BP.)

For those of the "hams" who are still experimenters, the ultra high frequencies provide an admirable outlet for their activities.

The gradual exodus from 200 metres to the present day frequency bands has been filled with interest. Perhaps the greatest interest to-day rests with "Five and Below."

There are many who say practical communication over any distance is not feasible; others will assert that high power is necessary, and still others cannot be bothered with anything else but QSL cards and DX, but, for all this, many interesting facts have been established.

For all our enthusiasm, the "addicts" in the various parts of Australia learn little of the doings of their fellows in the other States. This is rather a pity, as, if all our ideas and the results of our experiments, etc., were made known to each other per medium of such a magazine as "Amateur Radio," our rather vague knowledge of the ultra highs would be greatly advanced. With this in view, this article is intended to make known a few of the discoveries relating to some of the antenna systems used at VK2BP in days gone by.

When 5 metres was first investigated by the writer, results were very disappointing, mainly because insufficient thought was given to the antenna system. After many unsuccessful attempts were made to contact Sydney stations, of which there were but three or four, 5 metres was "put on the shelf." Perhaps it is as well here to mention that VK2BP was situated 48 miles west of Sydney, and at an elevation of almost 3000 feet, with a clear uninterrupted view of the city and its environs.

One evening, on returning home from work, a message was received to the effect that a party, including 2NO and 2WD, had heard Syd-

ney stations on 5 metres outside the shack. At about this time details were available regarding directional aerials as used in America, so it was decided to erect a similar array. Success was immediate. The first two-way circuit over any distance in Australia became an established fact. From then on 5 metres became an almost exclusive amateur interest for the writer.

Our early experiments definitely showed us that the aerial system was by far the most important factor in communication over any distance, and so I decided to concentrate more on the "Sky Wire" than the other essential apparatus.

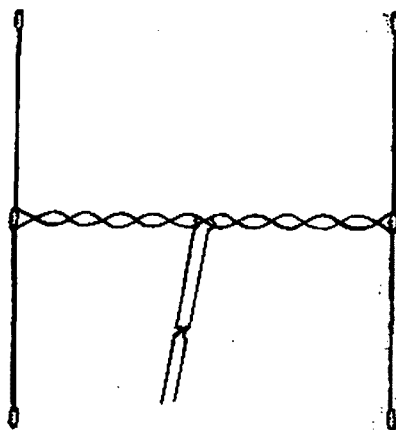


Fig. 1

A certain degree of efficiency may be obtained with tuned feeders; but from results obtained it was definitely established that far greater antenna power could be obtained for a given input when using untuned transmission lines between the transmitter and the antenna array, and so the idea of tuned feeders was put to one side after a primary test.

Without delving into technicalities, the following is a brief resume of the various types of aerials tried:—

The first successful contact with 2NO was obtained with an array having four vertical radiators half wave apart, backed by four reflectors. The feed system was the conventional two-wire tuned arrangement, and the transmitter consisted of a single 46

type tube in a TNT circuit, with 12 watts input. The first report from 2NO Sydney was R7. 2NO had a similar array in operation, and his signals were an excellent R8 whilst using the beam antenna for reception at 2BP, and only R4 on a single dipole antenna. Later, when a T.P.T.G. Push-pull transmitter was installed, and the power raised to 25 watts, the best report obtained from Sydney was R8 with this array.

This eight wire beam was rather bulky, and could not be erected conveniently in every back yard, so it was decided to try out other types taking up less space.

Fig. 1 illustrates a very efficient type of antenna, which compares very favourably with larger arrays fed in the conventional two wire tuned manner. An antenna of this type is in use at 2NO, and excellent results are obtained therefrom. At a recent field day, held in N.S.W., 2NO was heard at R8 by portable equipment operated by 2ZC, well over 100 miles away. The only other station to be heard by 2ZC was 2EM, who was using a "Bruce" type array. (More about the Bruce later.)

Fig 1 represents two vertical dipoles spaced half wave apart. These two dipoles are connected together at their centres by a twisted pair line. The feeders are then attached to the centre point of this twisted pair. The feeders are untuned, and consist of an ordinary transposed line as used in doublet antenna. An important item to watch when erecting this array is the connection of the twisted pair between the radiators. If the two top halves of the antenna are connected together by one leg of the twisted pair, and the two bottom sections connected by the other leg, the directional properties of the antenna will be effected so that radiation takes place at right angles to the plane of the array. If, on the other hand, the top sections are connected to the opposite bottom sections as in Fig. 1, the direction of radiation will be in a line with the array as shown by the arrow. Greater gain is obtainable with this connection. In actual practice this has been proved to be about 80 per cent. as efficient as the large eight wire array previously mentioned. The method of connecting the feeders to

the transmitter may be by the use of a single turn loop at the point of lowest R.F. potential in the tank coil, or by clipping the feeders directly on to the tank itself. Or, if a resonant line transmitter is in use, the feeders may be tapped on to the plate lines at a suitable place, which imposes a correct load on the transmitter. The point of maximum R.F. transfer must be determined by experiment. Starting an inch or so each side of the centre tap of the tank coil, the feeders may be worked outwards until maximum antenna power is obtained for a given input.

Fig. 2 illustrates the methods of coupling. That shown at "b" appears to be more versatile than "a," as provision is made to place the correct impedance across the tank coil.

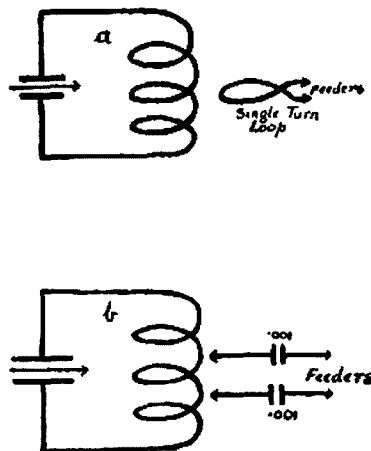


Fig. 2

Perhaps the most efficient of the smaller types of arrays experimented with is that shown in Fig. 3. This consists of two vertical radiators R spaced half wave apart and backed by two reflectors R1 spaced a quarter wave behind the radiators. The feeders between the radiators are transposed mid-way between, and are continued a quarter wave beyond one of the radiators to form the stub line, or linear matching transformer S. This stub is shorted at the outside extremity by the shorting bar B. The feeders F are untuned, and should have an impedance of approximately 600 ohms. A convenient line may be constructed of No. 14 s.w.g wire spaced $4\frac{1}{2}$ inches, or No. 12 wire spaced 6 inches. The point of attachment of the feeders to the stub line will vary with the impedance of the feed line, which may not be exactly 600 ohms. If the half wave radiators are exactly 8 ft. long, the spacing between them will be 8 ft.,

the length of the reflectors will be 8 ft. 4 in., and they will be spaced from the radiators a distance of 4 ft. 1 in. The length of the stub line will be 4 ft., and the feeders, if exactly 600 ohms, will be attached one foot and half an inch from the shorted end of the stub line. However, an absorption wave-meter attached to the centre of one of the

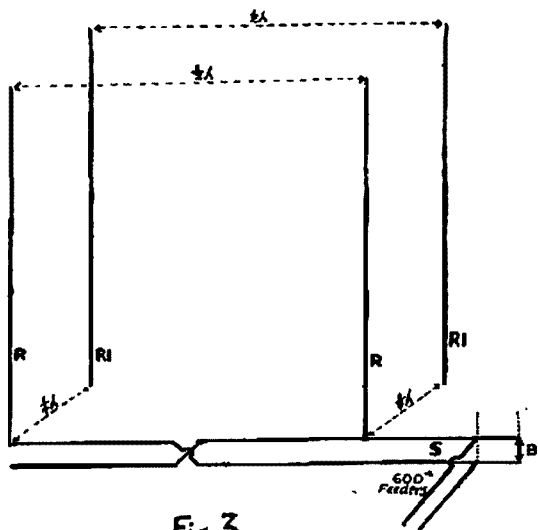


Fig. 3.

radiators will be a good guide when ascertaining the correct point of attachment for the feeders. Maximum brilliance in the wave-meter indicating the correct position.

This array, when properly adjusted, gave better results than the big 8-wire uni-directional beam with tuned feeders. With 25 watts input, a wave-meter could be made to glow when held a foot away from one of the radiators. At a conservative estimate, the actual gain of this array would be about 5 db.

A single radiator and reflector, as in Fig 4, fed in the same manner, has a gain of about 2 db. This is most convenient to erect, and is far more efficient than the single dipoles, doublets and Pickards one notices in the average back yard.

The last, and perhaps the most versatile, array to be tested at 2BP was the Bruce type. Although the adjustment of this system is not simple, results are well worth the time spent.

Fig. 5 illustrates the antenna. The sections (a) are each quarter wave long, and sections (b) one-eighth wave long, plus 5%. That is, if the theoretical length of a half wave

section be 8 ft., the actual length of a half wave section of the Bruce will be 8 ft. 5 in., or 4 ft. 2½ in. each quarter wave section, as shown at "a." The feeders should be of the Matched impedance type, preferably 600 ohms. One feeder is attached directly on to the centre point of the antenna, and the other feeder is for the moment left free. The stub or matching line is a pair of parallel wires spaced the same as the feeders, and of the same gauge wire. The length of this stub should be 4 ft. 6 in., and it is supplied with a shorting bar which can be moved along the wires of the stub whilst maintaining contact with them.

To adjust the array, an absorption wave-meter or field strength meter is essential. If using the absorption meter attach it at a centre point of one of the vertical sections. Next attach the free feeder to the centre point of one of the stub lines by a clip or some arrangement easily adjusted, then similarly attach the other leg of the stub line to the centre point of the antenna, where one of the feeders is also connected, then clip on the shorting bar across one of the ends of the stub line (see diagram). Switch on the transmitter, and note the antenna radiation

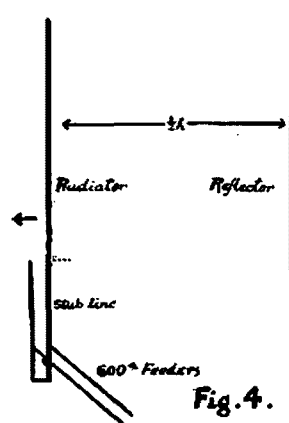
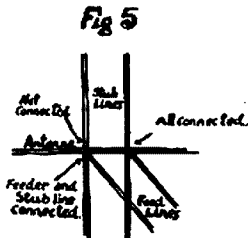
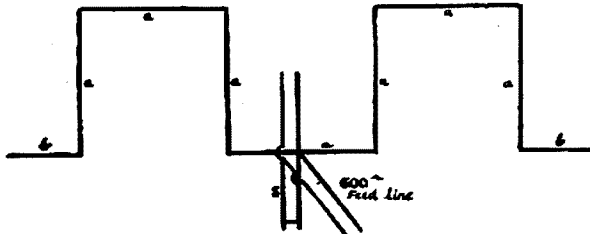


Fig. 4.

as shown by the wave-meter. The next step is to move the shorting bar further toward the centre point, at the same time noting any difference in the wave-meter. If it becomes duller as the shorting bar is moved, return it to the end of the stub and make the point of attachment of the stub lines to the antenna and feeders a few inches off centre toward the open end, then again slide the shorting bar toward the centre. If the antenna and feeders are still attached too near the centre point of the stub line, the pea lamp

will again tend to become duller. If, however, the correct position has been arrived at, the lamp will glow brighter at one setting of the shorting bar. It can now be assumed a near match has been obtained. With the apparatus at VK2BP, it was found that the stub was attached 6 inches off centre toward the open end, and the shorting bar was $3\frac{1}{2}$ inches from the other end of the stub line.

After obtaining this "near match," the transmitter should be adjusted

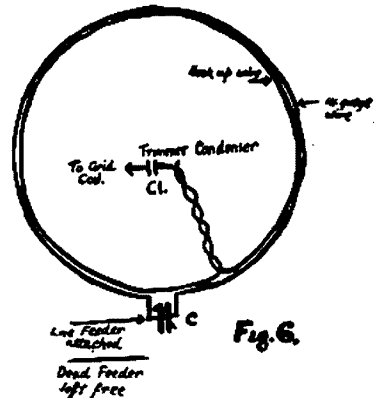


for maximum output, as shown by the wave-meter in the aerial field, not by maximum feeder current. After this, the shorting bar should again be adjusted for maximum output and the array can be considered matched up. The Bruce, if properly constructed and matched up, will have a gain in excess to 6 db. in two directions, with a radiation pattern covering about 30 degrees both before and behind the array. With this array, stations inaudible on an aerial, as in Fig 4, were QSA5 at 2BP, which brings us to receiving practice.

Attention should be paid to antenna coupling to the receiver just the same as coupling the transmitter. Fig. 6 illustrates a highly efficient coupler, which can be adapted to any receiver and any antenna. The essential parts of this coupler are two

five or six inch single turn coils, one of which is parallel tuned by a 5-plate midget condenser, as shown in the diagram. This coil may be No. 14 gauge wire, and the other coil may be made from "hook-up" wire tied with cotton to the first coil right round its circumference. The two ends of this second coil are twisted together for about 6 inches, and one end of this line is coupled directly to the grid circuit of the R.F. or detector tube through a small trimmer condenser. The other end of the line is left free. The adjustment is quite simple, and may be done as follows:—

The antenna tuning condenser C is left at its minimum setting, and the "live" feeder is attached to the stator plates of C. Next tune in a station in the ordinary manner, and then increase the capacity of C until perhaps the detector is pulled out of oscillation, in which case the capacity



of the trimmer condenser C1 must be decreased to a position where the detector will oscillate over the whole of the scale of C. When this state is arrived at the antenna may be tuned to resonance with the received signal, and a decided increase in signal strength will be noticed at a certain point when the condenser C is rotated.

If an R.F. stage is used, the coupling may be made much tighter than if the tuning loops are coupled to a detector.

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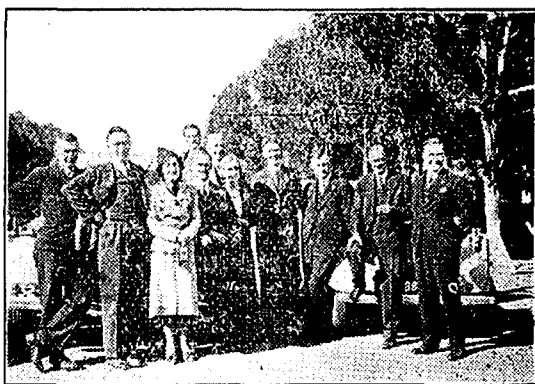
Country Convention at Charlton, Vic.

By Vaughan E. Marshall VK3UK

The average Ham requires very little excuse to stage a "get-together," but the Convention at Charlton, Victoria on May 1st had a very sound reason for its organisation. Murray Orr VK3OR had announced his intention of taking unto himself a wife and so his fellow country Hams made that event the very good and very happy excuse for staging a "get-together." And what a function it proved to be! For once the eager anticipation was far exceeded by the realisation. Two cars went up from Melbourne, 3ML and 3WG with 3UK and 3BQ with 3YP. On arrival at Charlton a crowd of over thirty Country Hams and second Ops was greeted, some of whom had journeyed nearly 200 miles to be present. If one needed any practical expression of the Ham Spirit that, in itself, should have been enough, but the whole occasion, the feeling of camaraderie, the sincerity of the toasts and the spontaneous enthusiasm with which the whole proceedings were gone through made one deeply conscious that one was privileged to be a Ham.

The arrangements were in the hands of Ken. Rankin, VK3KR R. E. Trebilcock, VK3TL and Tom Hogan, VK3HX. The smooth manner in which every part of the function was carried through was a tribute to their capable organisation. On the Saturday afternoon 3HX's mother provided refreshments for any who desired them (and that meant everyone!) and then at about 6 p.m. all went around to Flockhart's Hotel, where the dinner was to be held. During the few minutes after a tidy up and awaiting dinner it was a unique opportunity to stand in the Hall and look around the gathering. How often many of us have awaited some function standing among people we either knew only slightly or not at all and felt the wait interminable. Here how different, although some had never met, some had not met for many months there was no barrier of reserve to be broken down, all had one great thing in common and through the hub-bub of conversation could be picked out such words as 6L6's, Diamond

antenna, DX, 28 mc. Ham radio is no respecter of person or station in life, one is a Ham, that is sufficient. But it is an occasion such as this that one has brought home so clearly what a grand Hobby ours is.



3OW, 3WG, 3HQ, 3HL, 3HW, 3UK, 3HG.
3BQ, 3ML. Back Row 3RM, 3YP

Tom Hogan 3HX, on whom the Charlton end of the arrangements had fallen was appropriately made Chairman and proved as capable in that position as he had as an organiser. He had had printed the Menu and Toast list in an attractive manner and, with the autographs of all present on the back, will serve as a grand remembrance in the years to come of a wonderful evening. As the central decoration in the Dining room a large WIA badge, in colors, was above the Guest of Honor's head. All the visitors were standing at their places before Murray Orr appeared and he entered to the strains of "For he's a jolly good fellow" with E. Perkin VK3EP supplying the piano accompaniment. An excellent dinner was concluded before the comprehensive Toast list was "broken into" After the Toast of the King was honored E. Perkin 3EP proposed the Toast of the WIA. He explained the Countryman's attitude to the Institute, how everyone of them realised the necessity of being a member and, sensibly, took the opportunity of suggesting some ways in which the Institute could better help them in return. Bill Gronow 3WG, the Vic, Div. President responded and after thanking the Organisers for enabling the Melbourne Hams to be represented he explained the Council's

attitude to the various points brought up. He emphasised how ideal the occasion was for gaining a greater appreciation of the country members needs and hoped that the Convention would become a regular event. He explained something of the inner workings of the Magazine and how dependent each issue was on the Hams themselves, for the quality of the material within the pages.

The next contribution to the evening's entertainment was a talk by Max Howden 3BQ on 28 mc work. He pointed out many reasons for the failure of some Hams to achieve good results. He gave examples of the comparative results that could be expected with different types of antennae and made a plea for continuous activity throughout the winter months in order to dispel the 28 mc "close period" bogey.

Then came the hilarious item of the presentation to Murray Orr of the Universal Exciter, a detailed description of which will be found in this issue. This was in the hands of Vin. Trebilcock, 2nd Op at 3TL, and Ken. Rankin 3KR. The serious manner in which Vin. put over the description made even finer an extraordinarily clever piece of work and all credit must be given to the authors. It will be remembered when many other incidents of the great night will have been forgotten.

The RAAF Reserve Wireless Section was the next Tcast and it was proposed by Ken. Rankin 3KR. He expressed his delight at having the opportunity of speaking of the organisation of which he was so proud to have belonged. He illustrated the value of the Reserve to Hams in increasing their operating ability by stating how easy it was, during an ordinary Ham QSO, to tell if the other Ham was a Reserve member. From his personal experience he could recommend the Reserve to every Ham. Vaughan Marshall 3UK replied on behalf of the Reserve and said that a member would gain in ability naturally as he worked in the Reserve. That was one of the returns for his work. However a man would not be a first class-member unless he held ever before him the ideal for which the Reserve stood, of Service to his Country through his Hobby.

There were two objectives behind this ideal of service. Firstly to train

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ourselves as RAAF W/T operators and secondly that our organisation would form an emergency communication system in a time of National disaster such as a Flood or Cyclone. Those objectives were worthy of every man's wholehearted effort.

Max. Howden 3BQ, who had brought his flute with him then rendered two items, accompanied by E. Perkins 3EP on the piano with Vin. Trebilcock acting as a human music stand in the absence of the real article. These items were followed by a brief talk on Noise Suppression Tubes by C. I. Patterson 3YP.

The Chairman wisely coupled the presentations to Murray Orr with the Toast. Vaughan Marshall 3UK presented him with two Silver Entree Dishes on behalf of the 3rd District of the RAAF Reserve Wireless Section and outlined Murray's life in the Reserve which extended back to its earliest days. His remarks were ably seconded by R. H. Cunningham 3ML. R. E. Trebilcock 3TL presented him with a leather armchair on behalf of the country Hams and also a present for his future wife, "given in the Spirit of brotherhood which unites the Knights of the key." He said Murray was one of the old timers and had always been one of the most active Hams. He was delighted as the oldest Ham present to be able to make the presentation on behalf of them all and to convey their very best wishes for his future happiness. Alan Hutchings 3HL proposed the Toast of the Guest of Honor and said in all respects Murray typified all that is best in a Ham. He was interested in all phases of the game and was always only too willing to help newcomers over the hurdles in their first few months on the air. He congratulated him on the step he was taking and wished him the very best of luck.

Murray Orr was greeted with prolonged applause and it was some time before he was able to speak. "This is one of the most memorable nights of my life," he said. Taking the speakers in the order in which they had spoken was the only way in which he could hope to express any thanks for all the nice things that had been said about him. "Regarding the Reserve, I can assure all members that I have got considerably more out of my association with it than I have ever put into it and I am, and always will be, proud

to belong to the organisation which, truly, contains the cream of Ham Radio. It is difficult to thank everyone for having come such long distances just to be present for this night," he went on, "Ham Radio indeed was a wonderful bond to make men drive hundreds of miles to honor such an occasion and this chair which you have given me will ever remind me of you fellows. It will have the place of importance in my shack so that it will for ever be a constant reminder of what you have done for me tonight. In particular I want to thank those who made this evening what it has been, especially 3HX. I had an idea that something was in the wind but never imagined anything like this. My thanks also to 3KR, 3EP, 3TL and 3UK. 3HL's proposal of the Toast was particularly apt as, next to 3KR, he is my oldest Ham friend. I find it impossible to try and thank you all but can assure you that my future wife and myself will always be delighted to see any of you whenever you are able to get up to Lake Meran."

A flashlight of the crowd, was then taken with the Guest of Honor seated in the centre in the armchair. R. H. Cunningham then gave an interesting talk on exciter units, everyone's appreciation being shown by the number of questions asked him at the conclusion. He emphasised the use of good RF chokes, the value of the new Beam type tubes, the fact that a big drive was not only handy but essential because of the rise in losses and drop in efficiency as frequency was increased and finally suggested the ideal combination for average use was 6L6 as a Tritet followed by 807 as Buffer/doubler.

The Toast of the Country Hams was proposed by Max. Howden 3BQ. He said that he had had the pleasure of visiting most of the older Ham's shacks in the country and the fact that stood out above all others in connection with their work was the ingenuity that all displayed in getting the maximum possible output from their very limited input. R. C. McNally responded and declared that one of the finest points of the Convention from his point of view was the fact that he had been able to meet so many men whose signals he had known before. He was supported in his remarks by J. M. McFarbart 3WN and H. Brown 3NN.

Station Description

3HX

Owned and operated by T. D. Hogan, VK3HX is located in Charlton, in the central north-west of Victoria, a town blessed or cursed with a D.C. supply. Although only licensed in 1935, a progressive policy has been maintained.

Starting off with a TNT oscillator, with 10 watts input, the transmitter has progressed to a multi-stage crystal controlled rig. Most of the work has been done on low power fone, with excellent results.

The rig pictured in the foto was the low power rig, and consisted of a 53 Jones Exciter on the middle rack, which was link coupled to an E406,

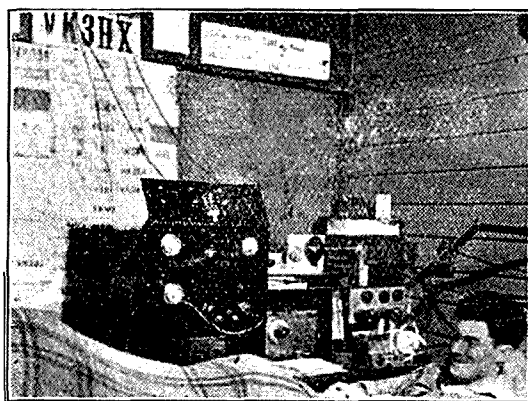


plate modulated with an input of 4 watts, with which consistent fone was worked with ZL. The top panel is the antenna tuning unit, with provision for switching from parallel to series tuning.

Considerable experiment has been made in the receiver line, and the one pictured in the foto is a 4-tube TRF, but at the moment a super is being considered.

The xmitter at present is a 53 Jones Exciter, 45 buffer, link coupled to a 6P6, which is link coupled to a half-wave 80 metre Zepp. The input to the final on fone is up to 20 watts, and on Cw anything up to 40 watts if necessary. The 6P6 is suppressor Grid modulated, and the power supply for the rig is drawn from a rotary converter.

14., 7, and 3-5 mc bands have been the hunting ground of 3HX, although he likes 3.5 mc best. Xtal frequency 3564 or 3685 kc.

The return toast of the City Hams was proposed by I. R. Hodder, 3RH. "This night has been such a wonderful one," he said, "that it seems impossible that we should have to wait another happy event such as this, in order to stage another." It was a coincidence that eleven years ago to the very night he himself had been married and he trusted that Murray would have the same happiness that he had experienced. After honoring the Toast of "the fraternal relations of the city and country Hams," R. H. Cunningham was called on to reply. He told how he had looked forward to this, his first Country Convention, and said that he looked on them as the cream of the experimenters. On behalf of the City Hams he expressed their appreciation for the opportunity afforded them to be present.

The Chairman suggested that a definite social side of our Hobby should be fostered and almost before he could sit down, amid applause, Murray Orr, 3OR had moved and C. I. Patteson, 3YP had seconded a motion that the present organisers be called upon to run another such Convention. The motion was carried with acclamation.

Murray Orr, 3OR then proposed the Toast of the Chairman. In reply Tom Hogan, 3HX said that he appreciated the remarks made but that without the able assistance of his co-organisers the night could not have been as good as it undoubtedly had been.

Just before the evening concluded Vaughan Marshall presented the Crack Station Cup to Alan Hutchings, 3HL. Each year the Trophy which he donated for annual Reserve Competition was handed on to its successor and a Cup is presented to its former holder as a permanent memento of his win.

The party then broke up and some of the Hams left immediately for home, the remainder went around to 3HX's shack and worked some of the boys who had not been able to be present and gave them a detailed account of all that had happened. Next morning after many photographs, they departed in two parties. 3ML, 3WG, 3BQ, 3YP, 3HG, 3OW and 3UK going to Callawadda to 3HL's for lunch and most of the remainder going towards Kerang.

It certainly was a memorable occasion and one that will be long remembered. The hope of everyone that was present is that it will not be long before it is repeated.

The Universal Exciter

A Unique Three Stage Rig Using Well Known "Bottles."

(The universal exciter described below was presented to Murray Orr during the dinner at Charlton. The presentation was one of the cleverest we have ever witnessed and will warrant it will be a cause for merriment for many a day amongst those fortunate enough to have been there. Each stage was assembled and described one by one thus sustaining the farce and causing continuous laughter right to the end. —Ed.)

The Oscillator. This (indicating a gin bottle) is the L4U type and is an excellent Master Oscillator. It may be either sensibly excited or crystal (tumbler) controlled. Its frequency is variable as far as KC's and other celebrities are concerned, but usually several times a day. This bottle cannot be too highly rated as an exciter. The Jones exciter is well known but this is a Smith, Brown, Robinson exciter in fact a universal exciter. You are cautioned not to over-excite from this stage as it may lead to general instability of the rig. By abusing it many fine crystals have been shattered. Therefore resistance is recommended in the input circuit to limit the flow. When using this bottle as an amplifier the best method of coupling is from the condenser of the distiller. This bottle is ideal for the buffer stage, thus it is most frequently used by the more elderly Hams.

The Doubler. The next bottle (a lager bottle) is known as the IC2 type and is an efficient doubler, in fact if properly used you can actually see double by using it. Its doubling efficiency is also increased by the harmonic distortion which you have probably noticed in the users voices and

through the fact that it is extremely easy to operate off the straight line characteristic. This bottle is more often used as a doubler than the first as it is less expensive and easier to obtain. It is interesting to note that bottles of similar type are now on the market in U.S.A. The elements however, are of weaker construction than the former but when run at full strength the plate does not exhibit that degree of heat as the former type. It is necessary to keep the elements



cool otherwise there is an emission of gas and the bottle emission falls off. Thus thermostatic control is advisable.

Now for the tank circuit. Some amateurs have better tanks than others, and it should be noted that a fairly good capacity is desirable as it assists stability and prevents the tendency to go off into self oscillation.

However too large a capacity must be guarded against when the bottle is

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required as a doubler. According to the advertised rating of a bottle of similar type the frequency is one at eleven. That applies to single phase operation, but if you recognise two or three it is usual to shout for them. Too much shouting should be guarded against as it results in heavy side bands frequency flutter and other undesirable instability as well as being apt to cause interference to others. One final point should be mentioned. Neutralization is desirable and this method (peppermints) is cheap and always effective.

This brings us to the third bottle which of course is given to you in anticipation of your getting a licence. We appropriately show this bottle in the final stage as it is often sadly true that it is the last bottle used. But it were better than that the married Ham were driven to excessive use of the first two. We therefore hope that you will use all three in modulation. In this stage the amplification is usually three or four but in Italy and Germany a higher ratio is advocated. As to the bottle itself, it is the most reliable of all, it works when all others fail. It has certain unique characteristics, for instance an external heater, because for best results the operating temperature should be close to 98° F. Apart from that the construction is ideal as the only element in the bottle is the emitting material, the white coating which is always associated with this type. In accordance with modern practice this element is replaceable so that the bottle can be used time and time again. Every care is taken to strain out filaments as these, paradoxically retard emission. No grids or plates or other culinary utensils are required so there is no plate dissipation and no 'eating. However several precautions are necessary for the correct operation of this bottle, which incidentally is known as the 1TT type. The frequency must be carefully regulated by attention to the watt hour meter and the current rating should be carefully adhered to. Observation of those points will completely eliminate howling in this stage. The bottle is equipped for single hole mounting but some auxiliary support is usually necessary. The output is closely coupled and end fed.

The last section to be described is the power supply. This is one of the

blue type rectifiers (castor oil bottle). This type used to be referred to as a B eliminator, but with more modern devices that term is dropping out of use. However whether you regard it as a rectifier or an eliminator it will certainly live up to its name. It is, to a large extent a corrective to the faulty use of the other bottles, and there are good reasons for choosing this old type of rectifier to the exclusion of many more modern makes. The main reason for its effectiveness is that the transformer is in oil.

TRANSMISSION SCHEDULES.

June, 1937.

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Wave-length, 31.28 Metres
(9590 K/Cs.).

Sydney Time. G.M.T.

Sundays: 3 p.m.-5 p.m. 0500-0700
" 8 p.m.-Mdt. 1000-1400
Mondays: 2.30 a.m.-4.30 a.m. 1630-1830

VK3ME, MELBOURNE.

Wave-length, 31.5 Metres
(9510 K/Cs.).

Melbourne Time. G.M.T.

Nightly,
Monday to 7 p.m.-10 p.m. 0900-1200
Saturday
(inclusive)

VK6ME, PERTH.

Wave-length, 31.28 Metres
(9590 K/Cs.).

Perth Time. G.M.T.

Nightly,
Monday to 7 p.m.-9 p.m. 1100-1300
Saturday
(inclusive)

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R.A.A.F. Wireless Reserve Notes

Officer Commanding: Flying Officer R. H. Cunningham, 397 High Street, Glen Iris, S.E.6, Victoria (VK3ML).

District Commanders—

Second District, N.S.W.—A. G. Henry, Clareville Avenue, Sandringham (VK2ZK).

Third District, Victoria—Pilot Officer V. E. Marshall, 3 Myrtle Avenue, Kew (VK3UK).

Fourth District, Queensland—A. E. Walz, Sandgate Road, Nundah (VK4AW).

Fifth District, South Australia—F. M. Gray, 52 Ormond Grove, Toorak Gardens (VK5SU).

Sixth District, West Australia—J. Mead, 111 Gerrard St., East Victoria Park, W.A. (VK6LJ)

Seventh District, Tasmania—R. Cannon, Goldie Street, Wynyard (VK7RC).

R.A.A.F. RESERVE THIRD DISTRICT NOTES. (3Z1-VK3UK)

As a number of our members have been on schedule consistently each week for nearly seven years, I suggested that some might care to have a three months spell. In view of the fact that the new scheme should be in operation within that time, all would want to be right on the spot then, so a spell now might make them fresh and keen. Not one member of VMC would avail himself of the chance for a spell though and many said that they felt apart from anything else, that they would not know what to do with their Sunday mornings if they were not on schedule. The result of the suggestion is an outstanding example of the spirit which is present in the District and it makes one feel very proud to belong to an organisation whose members work with such energy and sincerity.

The Convention at Charlton was attended by Reserve members from all parts of the State. In fact everywhere one looked the familiar Reserve badge could be seen. Unfortunately there was so much to be done in the short time available that there was very little time for any discussion of Reserve matters. We were delighted to have the opportunity to present to 3C4 a pair of Silver Entree dishes as a wedding present from the District. At the dinner also we were able to present to 3C3 the Cup which he was entitled to as the holder of the Crack station Trophy for the previous year.

Next month 1A1 and 3Z1 are going up to 3C3 and 3F9 for the King's birth-

day weekend and endeavor to make contact with VIM, VIS or VIA on 56 mc.

Each of us will be taking Super Het receivers, a stable transmitter, Class B modulated, and some form of beam antenna. I have felt, and have mentioned in these pages on numerous occasions, that the Western and Northern members have a unique chance for 56 mc work and I hope that it will not be so very long before we have 56 mc R/T sections operating throughout the Western and Northern districts.

During the coming weeks whilst still awaiting the improvement of conditions, we will be introducing many new features of interest into the schedules including abbreviated procedure exhibitions and cypher speed tests.

During the last month I have had over a dozen requests for enlistment but unfortunately can not accept any further members at the moment. It will be impossible to train any new men until the commencement of the new scheme, but then I hope we will be able to take another eighteen. Thus if any Ham in Victoria would like to join up and writes to me, his application will receive priority according to the date of his application. The only exception to this rule is in the case of a man whose location is in a key position in the state that is not already covered.

FLASH!! Just as we pulled this page out of our typewriter news came through of the arrival of a junior YL

(Continued on page 28)

Federal and Victorian QSL Bureau

(By R. E. Jones, VK3RJ, QSL Manager.)

Parker Shipley, 5339, No. 25 Avenue, Omaha, Nebraska, U.S.A., is forming a club for boys interested in amateur radio. The age limit is 25 years.

A special Coronation QSL card worthy of pride of place on any patriot's wall is being issued by E. W. Brambleby, XU8CB, the QSL manager of the I.A.R.A.C.

G6WY desires a card from the following VK3 stations:—BX, DX, HT, RW, WX and XI. His chance seems to be very remote.

A new Amateur Society in France styles itself "Radio Liberte," with address 5 Avenue de la Republique, Paris XI. Some European countries apparently endeavour to mix politics with amateur radio.

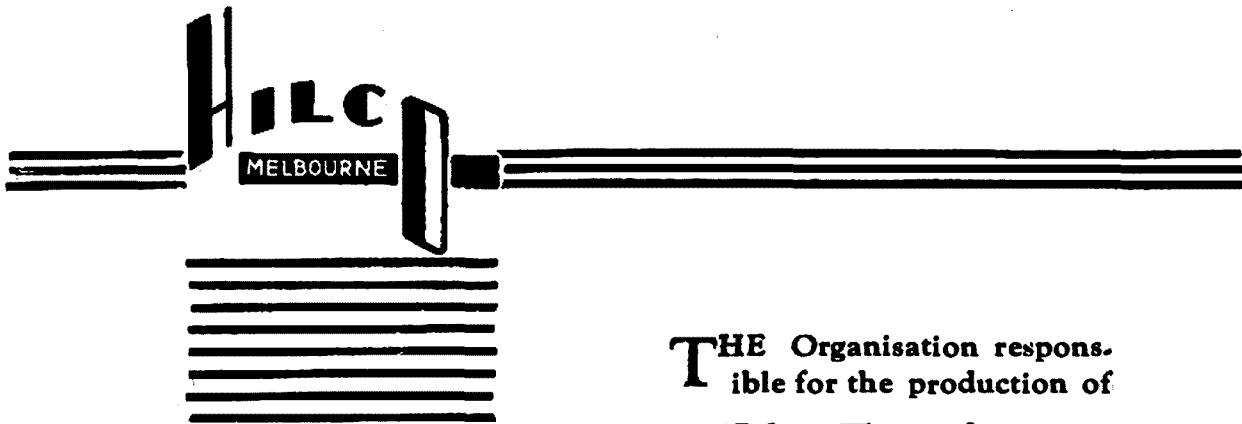
VK3SG will be temporarily located in Central Australia, with the call sign VK8DA, and solicits contacts on 7190 KC.

Victorian hams were pleased to

meet Merv. Conway, VK7CL, who spent a few days in VIM early in May. Other interesting visitors to Melbourne were VK3QB and his YF, from Maffra. Maffra is destined to have its share of amateur enthusiasm with the recent licensing of VK3QB and VK3SS.

Dave Duff, VK3EO, ex-2EO, expects to leave on his postponed cruise on H.M.A.S. Sydney about 12th July. His amateur movements from that date are a little obscure.

Cards are on hand at this Bureau, 23 Landale Street, Box Hill, for the following Victorian stations:—AD, AH, AP, AT, AX, BS, BV, CA, CU, CW, CX, DJ, DT, DZ, ES, FA, FB, FG, FT, FZ, GA, GB, GJ, GO, JA, JC, JE, JL, KO, KP, KY, LI, LQ, LY, NA, NB, NG, NS, OI, OX, OZ, PA, PC, PH, QX, RL, RM, RQ, RT, SA, SE, SG, SM, ST, TS, TC, TG, TQ, UN, UF, VK, XG, XU, YG, ZC, ZG, ZL, ZW, Ballarat, Howard, VKCEN.



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CABLES & TELEGRAMS "HILCOY MELBOURNE"

28 and 56 M.C. Notes

(By A. Pritchard, VK3CP.)

Conditions on 10 mx have not been so good, although these last two weeks have shown a decided improvement with sigs. from the States, being practically up to normal again. There are several new sigs. on the band; ZS6AL, LU7EF, HK4EA (harm.?), and J8CF, in Korea, are all good strength when conditions permit. VK3BQ reports AC4UU in Tibet. PY3BW and VO4LO well worth looking for. VK2GU has his 808's on 5 mx now, and the efficiency is identical with 10 mx. 2GU is keeping a constant watch, and with such an efficient outfit should break thru soon. From Africa, ZE1JU has a superhet on 5 mx, and is concentrating oh that band; also K6MVX has an Ultra Sky Raider, and K6MVB a converter on 5 mx. F8JG is making daily transmissions oh 56576 kc-cw from 1300 to 1310 GT, and also 1800 to 1810 GT using xtal control, 50 watts input to the final, feeding a vertical antenna. There are many G's also on 5 xtal controlled, G6YQ, G5JU, G6PG, G5LB, G5FN, G2GB, G2HG. Our best known and most consistent 10 mx Englishman, G6DH, has an automatically keyed, controlled, cw rig on 56000-56500 kc, 50 watts input, feeding a non-directional, horizontal antenna. During June he will be on daily, including Sundays, at these GM times—0900-0930, 1000-1030, 1100-1130, 1200-1230, 1330-1400, 1430-1500, 1530-1600, 1630-1700. Also, if conditions are extra good, the above schedule will be extended to 1700 and 1900 GMT. During the last month the VK's have been re-building—VK3YP is at present testing the Taylor T55, and finds it takes the watts and how! !—hr at 3CP; the line up is now Philips EL3, TRi tet. 80 mx xtal, 59 reg. doub. to 20 mx, 2.46's in P. Push doub. to 10, 801 buff-doub. to 5 mx, 801's in PP final. On phone the final is run class BC. VK3BQ has completely re-built his mod—24A, 6A6 phase inverter, PP45's, feeding thru a 20-ohm line to the 6L6 class AB stage; the quality leaves nothing to be desired. VK3CZ has the outfit going nicely; the grid

c. of the 800's is 50 mills with the antenna on! And the plate current dips from nearly 400 mills to 45 at resonance—what oh! ! The best VK6 is 6MW, who has beautiful quality phone—usually r9 hr. VK5KO is experimenting with various beams fed thru 600 ohm lines—stacked vertical arrays—the two half-waves in phase with reflectors seem best on the States. The xmitter line up is 6A6-80 mx xtal, to 10 mx; 802 buff, T55 or 800 final. 5KO is qso W6ASH most days even later than 5.30 p.m. our time. W6ASH has an auto-keyed rig. running each five minutes after the hour. (We remember 3YP had several W. qso's from 10 p.m. onwards.) The two loudest phones from the States are W6iTH and W9TTB; the latter is using 59, tri-tet 40 mx xtal, RK25 doub. T55, 150T, final PP 300T's 1KW input! ! The audio channel has a two-stage pre-amp; 6L6 class B thru 500-ohm line to 150 T's in class B. W6NAP, another r9 phone, has 53. co, 53 P-Push, RK23, 35T, 150T, mod. by class B838's. There are many high-powered ZL phones on also. ZL3KZ has 3.53's in a Jones exciter, 802, 50T, 150T final, ½-kw input-mod. has 6c5, 6c5, 6F6 PP, driving 211 PP to class B852's! ! The antenna is a Reinartz Rotary Beam, on top of a 55-ft. pole, two receivers—HRO and ARC 175. ZL4AO has good phone, with 20 watts input, 40 watts cw, and is almost as strong as 3KZ. 4AO reports many grand Aurora displays, and finds leading up to a severe one, that w sigs are r9 + all of the day; next day the band is absolutely dead! ZL4GM is an excellent phone (VK3FL designed the mod.) At present the rx is on 80 mx fed from a converter—2a7 and 56. The xmitter has 42 osc. from 80 xtal, 802 doub, 802 doub, PP 35T's final. Mod. has a 53 in cascade, 53 phase inverter, PP45's, class B 210's, 4 half waves in phase for the ant. system. At present the latest dx sigs. on 10 are K6MVB, K6NEK, W6CKR, W7EMP, W9TTB, W6ASH, around 4.30 p.m., and VU2CQ 9 p.m.

Divisional Notes

N.S.W. Division

W. G. Ryan, Secretary, VK2TI,
Box 1734 JJ, G.P.O., Sydney.

Country Zone Officers.

Zone 1 (Far West).—J. Perooz,
VK2PE, Hope Street, Bourke.

Zone 2 (North-West).—H. Hutton,
VK2HV, Byron Street, Inverell.

Zone 3 (North Coast).—R. J.
Berry, VK2NY, 54 Bacon Street,
Grafton.

Zone 4 (Hunter River and Coal-
fields).—S. Grimmett, VK2ZW, 161
Tudor Street, Hamilton.

Zone 5 (South Coast and South-
West).—R. Ross, VK2IG, 673 David
Street, Albury.

GENERAL MEETING.

At the general meeting, held on
18th April, a very interesting lecture
was given by Mr. A. H. Llewellyn
(VK2AH), the subject being "Tele-
vision." Mr. Llewellyn has just
returned from England, where he
spent some time with the Baird Tele-
vision Co. His presentation of the
subject was thorough, and at the
same time was easily understood, and
he indicated what has been and is
being done in England at present,
as well as explaining the methods
in use. Those present expressed great
appreciation of the address.

W. T. S. CRAWFORD TROPHY.

The final for this trophy—a hand-
some cup donated by W. T. S. Craw-
ford, Esq., Senior Radio Inspector—
was held at the Radio Inspector's
office on the evening of Tuesday,
4th May, being won by R. A. Priddle
(VK2RA); with C. Fryer (VK2NP)
and W. R. Nash (VK2WW) equal
second.

The other finalists were:—A. J.
Barnes (VK2CE), D. Dunn (VK2EG),
E. Colyer (VK2EL), K. Wetze
(VK2FK), L. Meyers (VK2KS), T.
O'Donnell (VK2OD), K. Sherlock

(VK2TQ), R. Corthorn (VK2VG),
A. McKenna (VK2WB), J. Cowan
(VK2ZC), S. Grimmett (VK2ZW),
and J. Howes (VK2ABS).

Mr. Crawford presented the trophy
in the hope that it would act as an
incentive towards better operating
amongst the amateurs of N.S.W.,
and at the conclusion of the final
expressed himself as being very
pleased with the general standard
of operating shown, especially in the
sending.

The Division desires to thank Mr.
Crawford for his generosity in donat-
ing the trophy, and also for the
keen interest he has shown in arrang-
ing the contest and practices in his
spare time. The operating of Mr.
Crawford during these periods was
a model for all.

The trophy, together with the
prizes won at the Radio Exhibition,
will be presented by Mr. Crawford
at the general meeting of the Divi-
sion on 20th May.

It is to be hoped that every amateur
in N.S.W. will make an effort to take
part in the contest next year.

ZONE 2 NOTES.

(VK2HV.)

Ron 2RV presented his YL with
a 224 mc. plate tank of gold studded
with sparklers. Congrats from Zone
2, but don't let it keep you off the
air, Ron!

VK2WQ, of "Where it's Crook"
(Werris Creek), has been very QRL
of late, although a nice phone signal
can be heard on 7007 KC when Bob
has time for a nagchew.

VK2IB is inactive at present, and
has not been heard from the Werris
Creek QRA.

Arthur, of VK2ZP, has hopes of
leaving the Royal Prince Alfred very
shortly for Inverell and home. Guess
he will stage a comeback to Radio
and give Flying 99's.

VK2HV is attempting to keep sane
and still build rotary beam antennae.

Amateur Radio

Has been after phone W.A.C. on 12 watts with some measure of success. Do Africans work on phone? hi!

ZONE 5 NOTES.

(VK2IG.)

VK2PF has a YL junior op. Congrats, Fred. The result is radio has been silent, although a little rebuilding has been in progress.

VK2TV had trouble driving a pair of 10's with a 45 doubler, but is now OK with another 45 kuffer. Has doubts about his location, and is thinking of moving.

LAKEMBA RADIO CLUB—VK2LR.
(Affiliated with the W.I.A.)

(By 2DL.)

The seventh annual reunion of the above Club, held at the Sunrise Hall, Canterbury, on 20th April, proved to be one of the most successful conducted by the Club.

In responding to the toast to the Radio Inspector's Department, Mr. H. K. Burbury conveyed the regrets of the Senior Radio Inspector, Mr. W. T. S. Grawford, at the latter's inability to attend. Mr. Burbury assured all present that his department was always willing to assist the amateur with any problems or enquiries which might arise. With regard to the authorised power for Australia, he stated that it was necessary to impose some limit, in fairness to all concerned.

Other speakers included Mr. P. Adams, 2JX (Fed. W.I.A.), Mr. H. Peterson, 2HP (W.I.A., N.S.W.), Mr. R. South (Australian Radio World), Mr. Haworth (Amalgamated Wireless Valve Co.), and Mr. McIntyre (Prices' Radio Service). At the conclusion of speeches, the usual trophies were presented by Mr. Burbury. The Chanex-Dulytic Cup (VK-ZL Contest) was won by VK2OI, the Slade Radio Cup (DX Contest) by 2KS, and the VK2UU Special DX Trophy by VK2AS.

At the annual election, the following were elected to hold office for the ensuing year:—President, Mr. E. Hodgkins, 2EH; Vice-President, Mr. J. Warren, 2QX; Hon. Secretary, Mr. G. Brown (unopposed); Treasurer,

Mr. H. Ackling, 2PX (unopposed); Publicity Manager, Mr. W. Phelps, 2DL (unopposed); QSL Manager, Mr. L. Hughes, 2QP (unopposed); Librarian, Mr. E. Hodgkins, 2EH (unopposed); W.I.A. Delegate, Mr. T. O'Donnell, 2OD (unopposed); committee of three, Messrs. Pinnell (2ZR), Taylor (2CL), and Clark (2IC).

In connection with the Sydney Amateur Radio Exhibition, 2OW was once again successful in winning first prize in the transmitting section. The exhibition was a great success, both from experimental and trade angles, and indications are that next year it will be conducted on a still larger scale.

ULTRA HIGH FREQUENCY SECTION.

(By VK2VN.)

Owing to the big exhibition, activities during the past month suffered rather a lull, very few stations being active on the 56 mc band.

Most of the usual enthusiasts had their time taken up with exhibition work and in preparing their gear.

Although there was not a great deal of U.H.F. gear on show, what there was was deserving of high merit for construction and efficiency.

Possibly the exhibits which attracted most attention were 2MQ's crystal-controlled transmitter and 2EM-2NO's very efficient receiver.

The transmitter uses an 80-metre crystal and six 6L6's as doublers and buffers, with a pair of 801's in the final, the whole being built in rack and panel style.

As regards the receiver, the main feature is the 956 RF stage. This tube gives remarkable amplification.

The activities of the section at the exhibition were the two-way communication between the Town Hall and a car fitted with transmitter and receiver touring the streets.

The screening caused by the buildings caused many a headache, but suitable spots were chosen where satisfactory communication could be established.

Reports on transmissions from both fixed and mobile stations were

received from outlying suburbs. The U.H.F. gear, when in operation, never failed to attract a large gathering.

At the last meeting, 27th June was set aside as the next Field Day. Tentatively the arrangements are that an attempt is to be made to bridge Port Kembla and Port Stephens, a distance of about 120 miles, mostly over the water. In addition, intermediate stations along the coast will be in operation, and high-power transmitters with accurately directed beams will be used at both ends.

ICW and fone is to be used, so that those stations using superhets will have an excellent opportunity of proving their superiority.

In concluding, all States will be circularised as soon as final details are available.

RADIO EXHIBITION.

The Division's second annual Amateur and Short-wave Radio Exhibition was held at Sydney Town Hall from 3rd May to 8th May, inclusive. The interest taken in the Exhibition by trade, press and public was very gratifying, as also that of the P.M.G.'s Department.

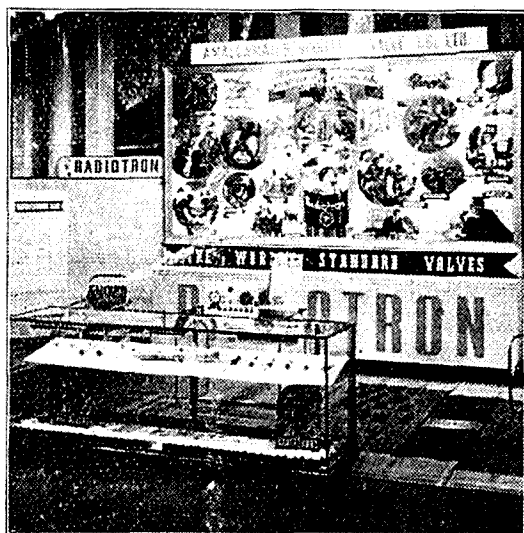
The Exhibition was opened, in the presence of a large gathering, by Professor Eugene C. Woodruff, President of the I.A.R.U. and A.R.R.L., who spoke from America via W2XAF. During the course of his opening address he extended to the Division the best wishes of the two bodies of which he is President, and also congratulated the amateurs of Australia on attaining a measure of self-government in the form of Vigilance Committees.

Mr. (now Sir) Ernest T. Fisk, Chairman of Directors of A.W.A., then spoke from England, and thanked Professor Woodruff on behalf of the Institute.

Mr. J. S. Duncan, Deputy-Director of Posts and Telegraphs in N.S.W., also addressed the gathering, and spoke in warm terms of the mutual good feeling which existed between the Institute and the P.M.G.'s Department. He also congratulated the Division on being such a live body, and on the excellence of the exhibits.

Our thanks are due to the above-mentioned gentlemen, and also to the General Electric Co. of America, who broadcast Professor Woodruff's address, through W2XAF, to Amalgamated Wireless (A'sia) Ltd., who placed VK2ME at our disposal for the replies, and also to the Australian Broadcasting Commission, which broadcast the opening proceedings through 2BL and national stations.

As a display of gear the Exhibition was an outstanding success, the standard of the exhibits being very high indeed, so much so that in some sections additional prizes were awarded. Prize-winners in the various sections are as follow:—



A portion of the Amalgamated Wireless Valve Company's stand, displaying the well-known Radiotron product.

1. Best complete stall exhibit for clubs affiliated with the W.I.A. (Wireless Weekly" Cup).—Waverley Radio Club, 1; Lakemba Radio Club, highly commended.

2. Best apparatus on Club stand.—A. Furze (VK2HF), Manly, transmitter, 1; G. Wells, Waverley, oscillograph, 2; G. Patterson, Waverley, Morse key, 3.

3. Most efficiently designed and correctly built multi-band transmitter (individual exhibition).—B. Dimmock (VK2OW), 1; J. Howes (VK2ABS), 2; A. Furze (VK2HF), 3.

4. Special prize for transmitter showing originality and economy in design.—Manly Radio Club, (VK2MR).

Amateur Radio

5. Most efficiently designed and correctly built amateur receiver.—A. Preston-Smith (VK2QK), 1; H. Clay (VK2UY), 2; C. Bischoff (VK2LZ) and B. Glassop (VK2BG), equal, 3.

6. Most compact and complete portable station (including UHF apparatus and transceivers). — C. Fryer (VK2NP), 1.

7. Ultra-high frequency receiver.—A. Sutton (VK2EM), 1; W. Smith, 2.

8. Ultra-high frequency transmitter.—W. McGowan (VK2MQ), 1; C. Winch (VK2IF), 2.

9. Best piece of apparatus (excluding apparatus and components eligible for other sections)—E. Spicer, microphone, 1; J. Cowan (VK2ZC), oscilloscope, 2; G. Wells, oscilloscope, 3; C. Bischoff (VK2LZ), testing equipment, 4.

10. Dual or all-wave receiver (home-constructed).—C. Brigden, 1.

The trade exhibits were of interest to amateurs and to short-wave listeners, and most of the stands had working exhibits, which attracted a great deal of attention. The exhibit of the P.M.G.'s Department was also very instructive and interesting.

A feature of the Exhibition was the work carried out between two 56 mc. stations located in the hall and a mobile station in a car travelling about the city. On the lower frequencies, reception conditions were very bad in the hall, due to electrical interference, so two-way communication was difficult, but in spite of these difficulties, quite a few successful contacts were made.

Altogether the Division has every reason to be pleased with its efforts, and our thanks and congratulations are due to the Secretary, W. G. Ryan (VK2TI), and organising committee—H. P. Peterson (VK2HP), W. M. Moore (VK2HZ), D. B. Knock (VK2NO), J. Moyle (VK2JU), P. Adams (VK2JX), and F. M. Goyen (VK2UX)—who worked very hard

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Our 1937

Illustrated Catalogue

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Amateur Radio

to make the Exhibition such a success. Mention should also be made of the displays and organising of the Radio Clubs.

MANLY RADIO CLUB NOTES. (VK2MR.)

All the boys are elated over the result of their effort at the W.I.A. Exhibition. Manly secured three firsts, a second, a third, and the special for the Club's transmitter, which speaks well for our constructors.

Since the introduction of our regular Morse class, it is surprising how many of our chaps can now copy at fair speed, and several new students have joined up, but have had to be classed separately. The great problem of "swotting" up the regulations and the handbook is being tackled seriously at the present time, as it is expected to place a few more names on the ham list shortly.

Preparations are being made to alter the colours of our Club from black and white, as also our ensign, which will be something worth looking at.

Work on UHF has not been too brisk lately, owing, no doubt, to the fact that other clubs and hams take fits and starts, and there does not seem enough enthusiasm to keep the ball rolling. We would be very pleased if some of those five-metre fans would drop us a line occasionally, making a sked any weekend, and thereby bring this band regularly on the air instead of overcrowding the lower frequencies. What about it, fellers?

All correspondence to this Club should be addressed to the Secretary,
71 Lawrence Street, Harbord.
R. L. LE MAINE,
Hon. Sec.

Victorian Division

VICTORIAN KEY NOTES. (By VK3DP.)

Sorry there were no notes in last issue, but the fault is mainly due to yourselves for not letting me know of your activities. So don't forget

to shoot along any news of interest. Much appreciated.

Well, there was quite a fair crowd at the May meeting, including Mr. Thompson and a visitor from N.S.W., VK2BP. 2BP was given a hearty welcome, and afterwards gave a short talk on VK2 doings. He is mostly interested in the U.H.'s.

Last month it was suggested that the QSL cards be distributed to financial members only. Council have given 3RJ a free hand to arrange the distribution as he thinks fit, and so not to make any more work for himself. Council also reports that they are very pleased at the interest taken by this section on the doings of the Council. This led to the attendance of Mr. Thompson, who gave a very comprehensive description on what took place at the February convention. Several points were cleared up, so everybody was happy. A motion was moved that Council be asked to acquire a Cathode Ray tube for addition to the library. There was a lengthy discussion on whether its use would warrant its purchase. Most favoured the idea, so the motion was passed.

Sorry to relate that 3MR, our Council representative, is not in the best of health. "Snow" has been ill for some weeks now, and we all wish him speedy recovery. Someone was heard to remark that it was through sitting up all night on DX, and suggested burning down the shack.

WESTERN DISTRICT NOTES.

(By 3HG.)

3RH.—Is on the air again, having had his generator rewound after it burnt out some time ago. Intends testing on 56 M.C. with 3HL.

3HM.—Doing a little on 28 M.C.

3HQ.—Marj. has taken up gardening!

VK3SG is going to Central Australia with an expedition this month. New call will be VK8DA. So now is your chance to hook a VK8. Mostly on 7 mc at 2100 E.S.T.

3KP.—Leaving for Europe in July, and all wish him a swell time.

Amateur Radio

3CB.—Active on 7 mc, but still has a sneaking regard for 200 mx. Visiting VK2 on 14th June.

3JD.—Just built 8-tube super, and building new final stage on xmitter.

3LA.—Hooked OA4AQ for WAC.

3XR.—Having trouble with his 5-tube super.

3HC.—First meeting for six months. Is toying with the idea of coming back on the air.

3RX.—Now settled in Toorak, permanently, he hopes. He paid a visit to the local B.C.L. neighbour, and his personality was such that he came away with permission to erect a 40-footer in their back yard. What a man!

3ZO.—Rebuilding new rig, and hopes to be perking shortly.

3UH.—Just installed a Taylor T55 tube, and the output is twice that of his 800.

3DM.—Busy rebuilding.

3SA.—Soon be on xtal controlled.

3YO.—Heard on again with funk fone. Golf must be on the shelf.

3TW.—Very popular with the 7 M.C. phone gang, his phone being quite good except for some A.C. in the carrier, from the converter.

3CK.—Seems satisfied to stick on 7 M.C. in spite of the QRM and being handicapped by low power. Says there is no one to work on C.W. on 3.5 M.C.

3FA.—Has not been heard for some time.

3SE.—Put his rig on 3.5 M.C., and works the gang on that band.

3OW.—Installed a 6L6 C.O., and is very pleased with the harmonic output, but, during tests, his 7 M.C. crystal went west!

3HG.—At last has new receiver perking. Is thinking of a 626 or 807 for transmitter, also directional antenna for 14 M.C.

3GA.—On 7 M.C., but his signal is not a 1937 signal.

3XU.—Is now on phone, but the quality is far from good as yet.

3BU.—His 7 M.C. phone is quite good, and very strong.

MALLEE AND NORTHERN DISTRICT.

(3ZK———3HX.)

Conditions during the month have not been the best at all, mostly due to unsettled weather conditions. Static has been prevalent, much to the annoyance of various operators.

The main feature of the month was the marriage of 3OR, who has gone and done it. Congrats, Murray.

3KR.—Still continues to work DX, like eating his dinner. Ken has a dud 6L6 in his speech amp!

3TL.—Has been on all bands during the month, but is not satisfied with his rig, so intends making sundry alterations.

3OR.—Has not been very active, but we hope to hear Murray early in the month, if he still lives.

3TS and 3FF.—Not very active, as Tow and Jock are busily installing an AC generator and re-building the gear.

3BM.—Has not been heard very much.

3KI.—Makes an appearance occasionally.

3WN.—Also not very active, but is on now and again.

3HR.—Another missing member. Charlie has been having some trouble with the rig, and threatens to rebuild.

3CE.—Has had headaches over a new speech amp.

3IH.—Playing round with speech amplifiers in preparation for fone operation. Line up, CC1, CC1 PP CL4's.

3EP.—Has been working Yanks on 14 mc, besides causing QRM on 3.5 mc.

3NN is making a few alterations to antenna and the coupling to it.

3ZK.—Is very worried with the operation of the speech amp; wants hi-fidelity; suffered a visit from 3HX.

3HX.—Trying out new car visiting some of the gang, and contemplates certain changes.

South Australian Division

(By VK5KL.)

With the new financial year begun and all offices filled, the outlook for the next twelve months looks bright indeed. Mr. Marshal Hyder has been elected President of the South Australian Division, and his able assistance as Secretary for the past few years can well be remembered. The other council members are as follows:—Mr. Coulter (5MC), Secretary; Mr. Walker (5WW), Treasurer; Mr. Pearn (5PN) Country Members' Representative; Mr. Cheel (5CR), Students; Mr. Briggs (5BD), Publicity Officer; Mr. Luxon (5RX), QSL officer, and Mr. Lloyd (5HD).

The above members are very enthusiastic, with new ideas that will benefit the Institute, and I'm sure as the year progresses the value of their ideas will be demonstrated.

Transmitters' Section.

Mr. Pearn (5PN) was re-elected chairman, with Mr. Lloyd (5HD) secretary. The gathering at this meeting has dropped off. How about it, chaps? Come along!

U.H.F. Section.

The attendance has been steadily increasing, and this section has the distinction of being the only one to provide supper now at the meetings for the members present.

Students' Section.

This year the council has gone to the full, and with the fee set at £2 10s. a course, the agenda for the year is the best and most impressive that has been offered for years. Mr. Bourne (5BU) has control of the lectures, with Mr. Cheel (5CR) assisting with code practice. The class consists of 22 members.

Technical Development Section.

Members in this section are very

busy building new equipment for the Institute's official station, VK5WI. With many new devices, the service for frequency checks will be right up to the minute when the station next appears on the air.

Country Members.

In future "Amateur Radio" will be included in your subscriptions for the year. Surely this will be appreciated. Mr. Pearn (5PN) operates every Sunday morning on 40 metres with a view to giving you the latest news of the Institute. Listen out for him. If not, write; he will appreciate your views, which may aid and benefit you.

Tasmanian Division

(By VK7JB.)

The annual meeting was the topic of discussion at the May meeting of this division, and it was decided to hold it at the Ship Hotel, Hobart, instead of Campbell Town, as originally intended. Nominations for the council were received, and also a notification from the President (7JH) that he has reconsidered his decision not to seek re-election, and will stand again for the council and office of president.

At the meeting of the council it was proposed to hold an exhibition of Hobbies in conjunction with other bodies interested, in the near future. Members of the Model Engineering Club are very keen to co-operate, and judging by the public interest displayed at exhibitions of a like nature recently, it should be a success.

Members' Activities.

7YL.—Not satisfied with working dx on CW, and now using fone with them. Latest additions are CO7CX, W6BKY, and a W4 on fone, and a G6 on CW.

7KV.—Installed an 807 as a buffer amp, and says it is a very F.B. tube, requiring very little drive, and very handy for 28 mc. work.

7JH.—Reports dx very quiet lately, only W's to work. (Same here, Jack, om.)

Hilco Transformers

Attention of Hams is directed to the advertisement in this issue from the big factory of Hilco Transformers Pty. Ltd., 97-111 Berkeley Street, Carlton, Melbourne. This concern specialise in the manufacture of transformers for all electrical purposes. The best technical knowledge and a high order of organising ability have spelt success, and because of the most careful attention to every detail in the complicated story of manufacture, the company is able to give a twelve months' guarantee of continuous performance or replacement covering every transformer produced. After many expansions and removals, the premises to-day comprise eight frontages of offices and workshops, wonderfully equipped throughout, and still further extensions are in view. All classes of transformers are manufactured and serviced, from the smallest to the largest, and meticulous care throughout is exercised. The Hilco transformers have earned an enviable reputation on performance, and it would be well worth the time for any Ham to visit the works, where he will be assured of a hearty welcome.

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Owing to lack of space the "Perfect Station" article, part 2, has been held over until next month.

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New Stock Arrivals

Recent shipments of Eddystone components have brought the stocks up to the budgeted level, and supplies of all the 48 lines are now available. Amongst the newer lines are two special dials. No. 1070 is a Full Vision Dual Speed Dial of the airplane type that does not require anything more than a 1/4-in. hole in the panel for mounting, and has a ratio of 100-1 and 20-1. Net price, 18/-. The Precision Slow Motion Dial No. 1069 is a high-grade dial with a slow motion ratio of 6:1. It provides an accurate and powerful drive for high-class test and laboratory equipment. The 4-in. scale is silver-plated brass, and has machine-cut graduations, which are read against a separate cursor line indicator fixed to the panel of the equipment. Net price, 25/3.

No. 1068 is a split Stator Condenser for frequency meters, receivers and laboratory equipment, which provides the choice of three different maximum capacities according to the way in which it is used. It is a solidly built component, with heavy brass vanes and Frequentite insulation.

Connection to the rotor shaft is made via a screened non-inductive pigtail. Minimum capacity formed by the rotor, and one side, is 5 m.mfd, and the maximum capacity 40 m.mfd. With the two side in parallel, the minimum capacity is 10 m.mfd, maximum 80 m.mfd. When used as series gap condenser minimum capacity is 3 m.mfd and the maximum 20 m.mfd.

Important Announcement!

We have been appointed Victorian Distributors for Eddystone Short Wave Equipment, a full range of which is now on view. An invitation is extended to Hams to inspect.

Call or write for illustrated Catalogue.

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(Continued from Page 17)

in the Powers household. The congratulations of all your fellow members to Mrs. Powers and yourself 3D4.

Sixth District.

(By 6Z1—6LJ.)

VMF is anxiously awaiting the result of the Bullsbrook aerodrome when it becomes occupied by both planes and staff. New members are also on their toes ready for a kick-off, when comparatively big things will be on the go in VMF. 6B1, at Kalgoorlie, is as regular as clockwork, at all watches, and has a high procedure efficiency. 6A5, at Geraldton, is another asset to this district; as well as being in a valuable country centre, is also well up in ability. 6A6, who was at Katanning, has shifted to Perth, and is not quite ready for activity. 6A1 and 6A2, two new members, are getting things in good form for their entrance to the Reserve. 6Z2 is another one who is contemplating a change of address, but is too busy dashing around the country to attend watches. He is away for practically every alternate week-end. Interstate watches have been resumed by 6Z1, and watches with other States will be welcomed.

The support given to the N.S.W. Division's technical article contest prize has not been up to expectations so far. There are only a couple of months left to send in entries. Better get busy right away.

Hamads

Advertising space in these columns is available to those wishing to sell, buy or exchange, at 3d. per line; approximately five words to the line. Minimum charge, 1/-. To ensure insertion enclose postal note or stamps with copy, and address to the Advertising Manager, "Amateur Radio," White Horse Road, Box Hill, E.11., Victoria.

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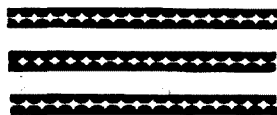
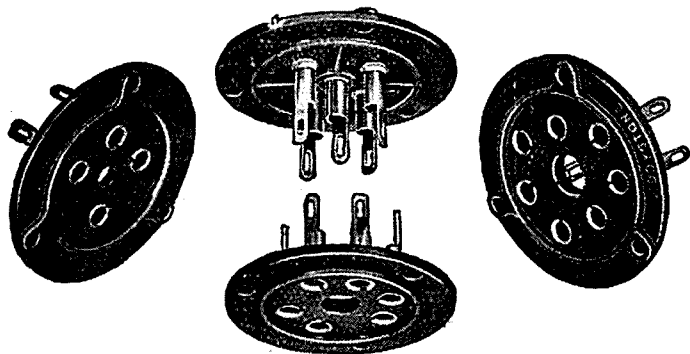
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Rebuilding time is about to come around once again. We all find many things to do in the winter nights that are put aside during peak DX periods. The past year has produced a number of new tubes and layouts, and before rebuilding we must first consider which are to be used. For transmitting, the beam tubes are definitely the order of the day. The 6L6 can be used from the C.O. to the P.A. The 807 makes a bonny doubler and amplifier; whilst the 808 performs the duty of a final amplifier with no mean performance.

Receivers have likewise progressed in efficiency, especially since "Eddystone" components were marketed in Australia. Low-loss dielectric insulation, noiseless condensers, high "Q" coil formers, and, generally speaking, higher efficiency gear that one finds in "Eddystone" products, have contributed greatly to increased receiver performance.

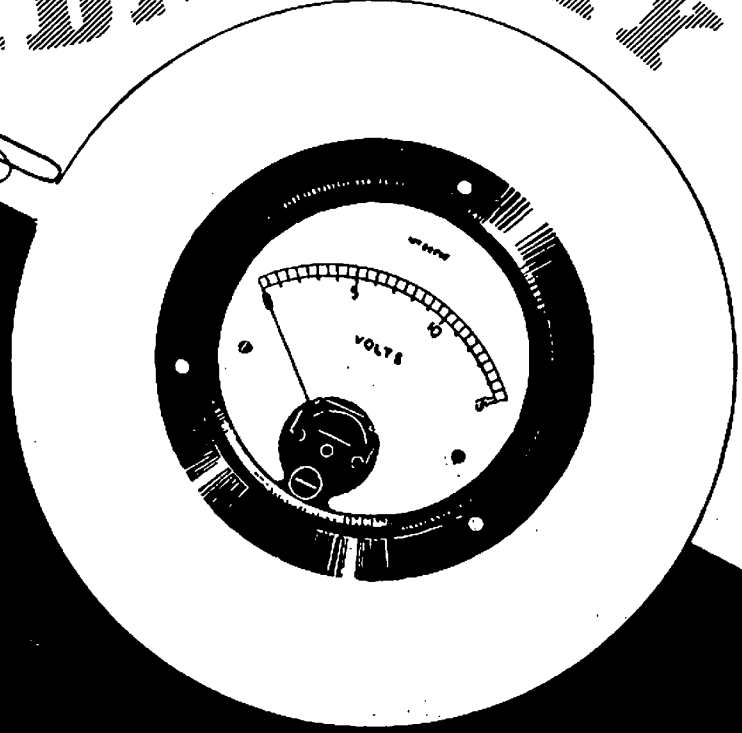
Before rebuilding, just take a look at the "Eddystone" Catalogue and see for yourself the vast number of lines that you could well do with. For instance, there is the short wave coil former made with 4 or 6 pins, threaded or plain, made with D.L.9 dielectric material—and the pins are spirally split, too. The chassis type coil bases provide POSITIVE grip for the pins, and are so made that flux or dirt cannot cause leakage or dirt between the pins. There are other sockets for top panel mounting, too, when the formers are used in transmitters.

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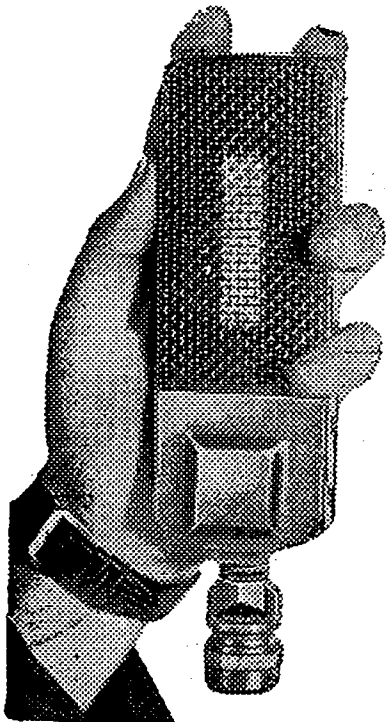
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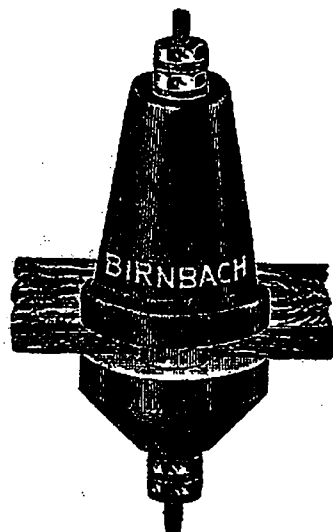
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Vol. 5 No. 7

1st July, 1937

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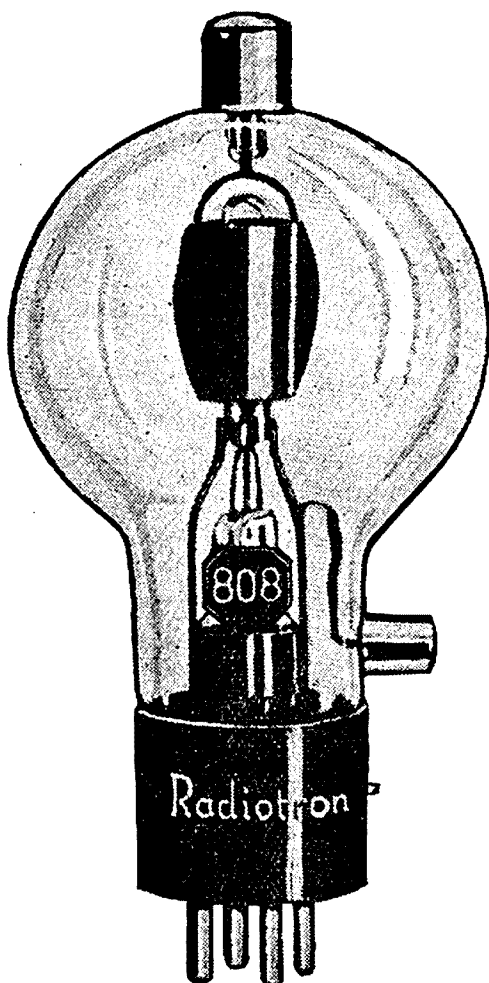
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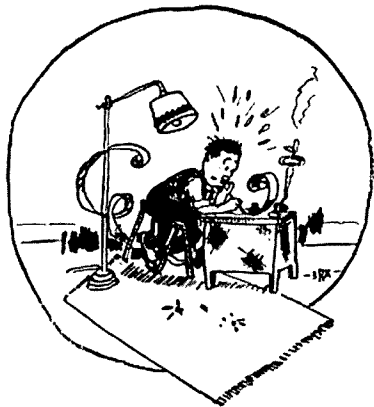
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Editorial



If you read this page you will remember the discussion with the three young Hams in our April issue. Early this week we had another visit from one of them, who came around to further discuss the subject. He said that whilst he agreed with most of our remarks, he felt very definite about one point, and that was that the WIA was letting the newer Hams down. "No, don't interrupt," he said, as we started to protest. "The WIA definitely IS letting us down. All the young Hams need is a little guidance along the right channels. We pay our sub., we attend meetings, we read the Mag., and that about covers all our membership is worth to us." We smiled, for it was strange that this little grouch had as familiar a ring about it as the previous one had. "Now, don't give us an oration on the value of the WIA, because we know all about that. We know we need an Official body to represent us, we know the paramount value of unity in the Amateur ranks, and so on, but that does not alter our opinion." "Very well, but now let us have the floor to say something in defence of the old Institute," we replied. "You say you realise the essential need for a body to act as the mouthpiece of the Ham movement in the country, so we won't belabour that subject. None the less, we are delighted to head it, for too great a percentage of so-called Hams are either too dumb or too selfish to do their share. But from the other angle, honestly, you are entirely wrong. It is not the Institute that is at fault, old man, it is you. You say that you attend meetings and pay your sub. Certainly they are both essentials to membership, but they are only the smallest beginning. One could almost say that what the drilled chassis is to the finished

receiver so your Institute life is to what it could be."

"Let us analyse our organisation. The Institute is composed of fellows from every walk of life, held together by one common bond. Every member pays the same sub. as every other member of the same class. Every full member has the same voting power, and the same opportunity for election to the Council, to sectional executive positions, or any other of the many positions available in the organisation, as his neighbor. In other words, ours is the Ideal form of Democratic government. The men who hold the reins of power each year are put there by you and your co-members; they are your fellow Hams. If you are not satisfied with your Division's policy or progress a word to any Councillor will have the matter up for discussion in double quick time. Further, if your ideas are those of the majority, there will not be any difficulty in getting them into operation. Now, here is the point. Some of you chaps, and believe us, many of the older Hams, too, seem to feel that the paying of their sub. each year entitles them to sit back and be waited upon. They seem to confuse the service that goes with the payment of the tariff at an hotel with the payment of their Institute subscription. The former is run to PROVIDE service, and the latter is run by OUR OWN SELVES for OUR OWN edification. Do you see the fundamental difference? Disraeli once said, 'You cannot expect a dividend unless you have invested capital.' Its application in this case is obvious. If you are going to get the maximum out of your membership you must put yourself wholeheartedly into Institute work." "Yes, I can see what you mean," he replied, "but I wouldn't stand a chance if I stood for election to Council. The members don't know me." "Maybe so, but an active participation in Institute affairs will inevitably lead to your election as a Councillor. In any case, that office is only one of many. Do you realise that there are thirty-three positions

(Continued on Page 28)

The "Perfect" Station

PART TWO

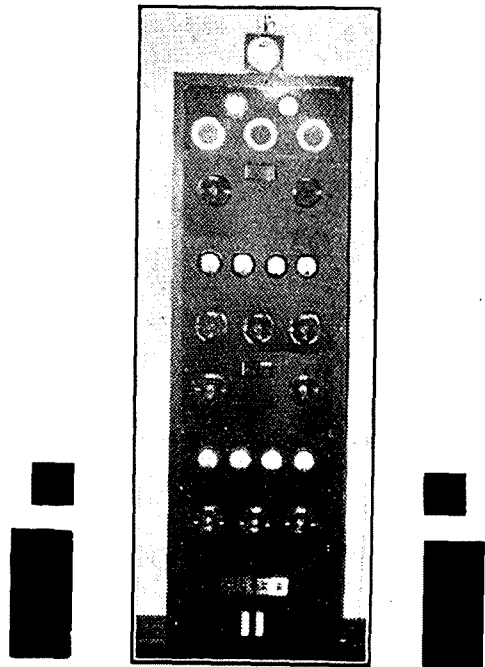
By Vaughan Marshall VK3UK

It will be remembered that last month we discussed antennae in connection with our endeavor to design the "Perfect" station. We naturally turn now to the Transmitter. Our requirements of four band operation, rapid band change, minimum of coil change and decent appearance really sum up the desire of almost every ham and the ways in which this problem have been attacked are without number. In our own case it would not be exaggerating to say that we "got hot" on at least 20 different designs over a period of months only to discard each for a supposed better one. Quite naturally we were swayed in the final choice by the tubes and general gear we had on hand. For tubes we had two 50T's and two of those old stalwarts TBO4/10's available.

In addition to the points required we demanded simplicity in order that we could entirely free the outfit from "bugs." There is nothing worse than to have an urgent schedule and to have to alternately plead and curse the transmitter on the air.

In general design the two extremes for four band operation are four separate transmitters and one transmitter with plug in coils and/or band switching en masse. Four transmitters can be ruled out immediately as being altogether too costly and as we are suspicious of too much band switching because of the introduction of long leads and possible interaction, a compromise between the two seemed essential. Our final decision was for two separate transmitters, one for working on 3.5 mc and 7 mc and the other for 14 mc and 28 mc. All filament plate and bias supply leads were brought out to a 12 pole double throw switch, made up of six DPDT switches on the one base with their arms screwed to an extension, carefully insulated. Thus a flip of the switch puts the power unit to either transmitter. We had had such satisfactory results

in the past with the 53 exciter that it became our natural choice for the CO tube. Of course the Beam type of tube would be the obvious choice today but we remember what we said in the first article, that a transmitter is never out of date provided it will do what is asked of it.



Thus the tube line-up became 53-TBO4/10-50T, and the frequency of operation of each stage is:—

Transmitter 1.		
53	TBO4/10	50T
3.5 -	3.5	3.5
3.5 7	7	7
Transmitter 2.		
53	TBO4/10	50T
7 14	14	14
7 14	28	28

Now for some specific details.

The Rack. It needs no discussion to convince anyone that the relay rack style of design is on its own when neatness, accessibility and economy of space are factors to be considered. Our rack was made up from 3" x 2" stock and stands 6' 6" high, and takes a

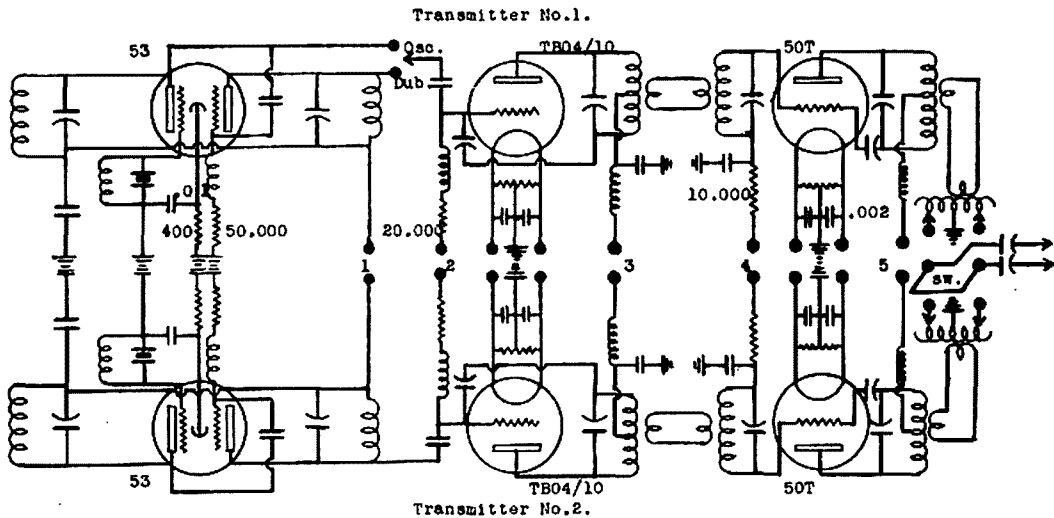
Amateur Radio

standard 19" panel for which the wood is recessed $\frac{1}{2}$ ". The power supply units rest on the base 14" x 22" which stands on sturdy couch castors so that the whole can be swung around easily. The sides of the rack are grooved $\frac{1}{2}$ " x $\frac{1}{2}$ " in the centre to take the power cables up to each section of the transmitter. Each chassis is self supporting on its panel and the power leads plug in along the back so that it is only necessary to pull out the plugs and undo the four screws in the front of the panel, to pull out any unit. As it is possible to get under, over or around each unit, there is hardly any repair that cannot be made without taking out the unit but if it is necessary it is a very simple operation.

Power Supplies. No circuit diagram is shown as the three supplies used are of conventional design. Separate

and battery suits us ideally. The battery gives a constant voltage with or without excitation to the stage and the leak has the inherent advantage that the bias regulates itself in accordance with the available excitation. In the CO the conventional Jones exciter biasing consisting of fixed cathode bias plus a leak in the doubler section is used.

Band Switching. In the exciter unit of the 3.5/7 mc transmitter the switch cutting in or out the grid leak and the Osc/Doubler switch are ganged so that only one motion is needed to switch from one band to the other. Because of our dislike of band switching in coils, for the reasons mentioned above because of the difficulty in getting a switch having low contact resistance and also because of the losses set up in the shorted section of a coil, we in-



supplies are used for each of the three stages. Five switches are brought out to the front panel and are, of course wired ahead of the twelve pole double throw switch mentioned above. The first switches on all filaments, both rectifier and transmitter, the second switches on the HT to the Mercury vapor HV rectifiers (after their filaments have been allowed time to warm up), the third, fourth and fifth switch on, respectively, the HT positive lead to CO, buffer and PA tubes. Without wishing to be guilty of repetition, do remember to check the filament voltages of the tubes at the sockets, especially when using some intermediate switching device such as described.

Bias. There is always a great deal of controversy on the best means of biasing a transmitter but we have always felt that a combination of leak

created the capacity in the tank circuit of buffer and the grid and tank circuits of the PA so that the condensers would cover both 3.5 and 7 mc. We have indulged in a great deal of argument as to whether this method is any more or less efficient than shorting turns on the coils, but we have this to support our selection, we obtain the output we desire with the equipment running well within itself. Our attitude to 28 mc is that we cannot afford any avoidable loss, hence it is felt that the extra minute used in plugging in coils, to obtain the best L-C ratio is well worth while. Thus no provision is made in this transmitter for band switching of coils.

Antenna Coupling. Link coupling to the antenna coupler was the obvious choice in order to reduce losses in the lines from the PA tanks, the one from transmitter 1 being four feet long and

also so that the effective length of the transmission line is the same to each transmitter. Each link is onto a separate antenna coil and a DPDT switch throws either one to the series/ parallel condensers and the feeders. An additional advantage is apparent now in the 3.5/7 mc PA tank in that that link does not have to be moved as it would if turns were shorted out. The link is built on to the 14 mc or 28 mc tank and the whole is plugged in as a unit.

Link Coupling is used between the buffer and PA units in each transmitter. Apart from other considerations, the advantage of link coupling in providing a control of excitation is sufficiently great to make its use desirable. After a great deal of experiment we feel a variable link is very helpful in getting those extra grid mills that often make all the difference. The links in our case are mounted on vertical slotted bakelite supports and have a wing nut so that they can be locked in position. The extra trouble compared to the inter-wound link is well worth while.

Keying is done in the cathode of the CO and as the buffer and PA are biased past cut off our requirement of break-in, from the transmitter side, is accomplished. A conventional click and thump filter is used and when correctly adjusted no interference is experienced in the 12 tube BC super even when the gain control is turned hard on.

The cathode side of the key is brought out to the 12 pole double throw switch, so that it can be switched to either transmitter with the power supplies. The other side of the key, of course, is earthed.

The switch poles are connected as follows:—1, Oscillator HT; 2, Buffer Bias; 3, Buffer HT; 4, PA Bias; 5, PA HT.; 6 and 7, Oscillator Fils; 8 and 9, Buffer Fils; 10 and 11, PA Fils; 12 Key, cathode side.

Two small refinements that have nothing to do with the efficiency of the outfit, and yet, at the same time, add to the ease with which it can be operated, are, firstly, an electric clock mounted on the top of the rack, and, secondly, a small 15-watt pilot light mounted just below and under each chassis. Each light is brought

out to miniature switches mounted at the back of the rack, so that any one may be switched on at will. A plug is also provided there for an electric iron, so that if a fault develops in a chassis that does not necessitate its removal, the appropriate light can be switched on so that the trouble can be instantly located, and then any joints soldered without having to juggle a torch or match to see what is being done.

Results. Turning back to our original requirements let us see whether they have been satisfactorily covered. Its appearance enhances rather than detracts from the appearance of the room so no trouble can be imagined on that score. Four band and break-in operation we have already discussed. Minimum of coil change is effectively covered as we only have to change coils for operation on 28 mc. Rapid band change. Transmitter 1 with its bank of crystals on 3.5 mc. is operating on that band. Transmitter 2 with its 7 mc crystals is tuned to 14 mc. Operating on 3.5 mc we desire to go to 7-mc. The flick of the CO switch and twisting buffer tank, PA grid and tank dials to logged positions sets us on 7 mc. 10 seconds at the outside. To 14 mc? Just throw the 12 pole DT power switch, flick the DPDT antenna switch, allow a few seconds for the tubes to warm up and there we are. One is calling CQ on another band almost quicker than it takes to read. There are no trick circuits to play up and provided the ordinary precautions are taken in layout no trouble of any kind should be experienced.

Details of an ordinary constructional nature are beyond the scope of this article, thus our remarks are confined mainly to a general explanation and descriptions of any unusual gadgets.

Next month we will investigate the Receiver, Monitor and Frequency meter sections in our quest for the "perfect" station.

.....

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The King's Birthday Week-end

FIVE-METER TEST.

As mentioned in last issue, 3ML and 3UK arranged to go up to 3RH, Glenorchy, and 3HL, Callawadda, Victoria, for the long week-end, with the objects in view of giving the countrymen a practical demonstration of five-meter gear, of comparing results in perfectly flat country against the hilly country we had always tested in before, and finally to attempt to contact Melbourne, Sydney or Adelaide. According to Ross Hull's experiments, it would seem that the early hours of the morning in the summer time are the best times for DX on this band, but that was no reason why we should sit at home for the next six months. We hope to have a regular set of schedules in smooth running order kept by stations throughout the State before the summer commences. In this matter, also, we would welcome the co-operation of the Ultra-High Frequency Sections of other Divisions, to whom details will be sent from our UHF section as required.

Although no DX contact was made by either station, a great deal of information was gleaned. The superiority of the Bruce antenna established, to our own minds, a definite stimulus given to this work to the countrymen, with the result that there are now four stations in operation. In fact, from every angle the test accomplished much. The countrymen with gear ready for operation now are:—3TD Lubeck, 3RH Glenorchy, 3HL Callawadda, 3OW Coleraine. 3ML used a MOPA transmitter, consisting of a 6L6G quadrupling from 20 mx to 5 mx and an 807 PA. 3UK used an E408N in a stabilised High C circuit. Power at both stations was approximately 35 watts, and both were modulated by a 6C6 feeding 79 in Class B. Both stations used superhet receivers, and also Bruce antennae. Owing to the heavy rain on the Saturday neither station was able to adjust the array fully before the Sunday morning.

It is interesting to note that the signal strength was much weaker

between the two points, ten miles apart, than we have been accustomed to over many times that distance in hilly country. On field days we have often used simple di-poles with three or four watts input to the transmitter, and yet have been able to maintain an R8 signal over 60 odd miles. There is only one gradual slope, probably less than 100 feet high, between Glenorchy and Callawadda, but beam antennae and far higher power gave a signal that rarely rose above R6. On a di-pole the signals were nearly inaudible. 3ML and 3HL found the use of the latter's 20 mx Vee beam, gave a higher field strength reading, and also a stronger signal at 3UK. Both 3ML and 3UK have plans in hand for automatic transmissions on the band with the beams directed according to pre-arranged schedules.

Some interesting sidelights:—

3WG, in Melbourne, heard 3UK during the test on a 5 mx super regen, when we imagine the latter was on 80 mx.

3UK claims one record from the test, being the first station to broadcast a running description of a fire on 5 mx. 3RH's chimney caught fire during a QSO with 3ML!

3ML and 3HL set to work just before midnight on the Sunday to build the latter a super regen receiver!

3ML and 3HL considered the Bruce antenna such an acquisition on the property that they made a deal on the spot and left it there.

The hospitality of 3HL and YF and 3RH and YF was so FB that both 3ML and 3UK tried at some length to think up some subterfuge to turn the three days into three weeks! Both were back at work on Tuesday morning, though.

**KING'S BIRTHDAY WEEK-END ON
56 MC.**

(By VK3PS.)

There seem to be two items of paramount interest to the average

ham. They are—To try something new and to work DX. Besides these considerations, the organisers of the 56 MC drive on King's Birthday week-end are keen aspirants for the Gadsden Trophy, and until that time practically all their work on this band had been done in conjunction with each other.

Thus it was arranged some time ago that on the Birthday week-end 3ML would go to Callawadda and 3UK to Glenorchy, all complete with the best they could devise in 5-metre gear.

To start with, 3PS visited 3UK, for reasons other than radio, about ten days before zero hour, saw the gear in the course of testing, heard of the three weeks' work till midnight or later every night, and that was the end—gear had to be ready before 12th June!

A visit to 3ML for some Eddystone parts revealed Bob also hard at it in the usual ham manner, till midnight. Incidentally, it is understood that great secrecy was observed between 3ML and 3UK regarding fine details of gear, though general principles were freely discussed.

The appointed day arrived, and in the foggy morning the party set out for the north. On arrival they found that rain had set in. The Melbourne boys got to work in the afternoon, and some at any rate were on watch right through the schedule times. Those heard at 3PS were:—3BQ, 3CP, 3LG, 3LL, 3NB, 3OJ, 3OT, 3PL, 3VH and 3WI, under the control of 3JO.

At 3WI about four "assistants" were on the job. It is a pity that the local QRM interfered with receiving conditions, for 3WI was the strongest metropolitan station, and, being central, should have been able to act as control station and collect reports.

As regards the Callawadda-Glenorchy gang, they contacted on 5 metres about 19.30 on the Saturday.

On Sunday night, 3PS cut short a 5-metre QSO with 3PL to listen for an 80-metre schedule. Although he could not contact 3RH he heard a contact between 3RH and 3OW, and

thus got all the news, which he relayed to 3PL, and any others who were listening.

3OW, at Coleraine, and 3TD, at Lubeck, were also on the job with 56 mc gear. The latter contacted both 3ML and 3UK, but the former could neither hear nor be heard.

At the conclusion of the tests a certain amount of barter went on at 3RH and 3HL, resulting in much 5-metre gear being left at those stations to be used in further attempts to contact Melbourne, Sydney and Adelaide.

The foundation has been laid for serious 5-metre experiment, and before long there may be a network of stations on this band. Although one of the objects of the week-end's work did not materialise, much valuable data has been collected, and, as is usually said of American conventions, "A good time was had by all."

KING'S BIRTHDAY WEEK-END AT 3WI.

(By 3JO.)

Saturday afternoon was spent in preparing for activity on Sunday. The transmitter used consists of a 3-stage MOPA circuit with the following line up:—6P6 electron coupled oscillator and doubler, 6L6 doubler, 6L6 power amplifier. The oscillation commences at about 14 mc, and the second harmonic selected in the plate circuit, which is link-coupled to the 6L6 doubler, which in turn provides 56 mc power to excite the 6L6 power amplifier. The power input to the final stage was about 24 watts, and this was plate modulated by means of Class AB 42's as triodes, a system of chokes and condensers being used to obtain the necessary power transfer.

The antenna used is mounted at the top of the mast at 3WI, and is a vertical half wave with a quarter wave stub at the lower end, the end of this stub being fed with a twisted pair. The receiver was a 4-tube superhet with resistance coupled I.F.'s

Signals from 3PS were received at R5/6 through very heavy noise, caused by some outside local disturb-

ance. Other contacts were made with 3VH and 3LG, the latter being RMAX, and no trouble to copy through the afore-mentioned noise. This concluded the activity for Saturday, and everything was in readiness for an early start on Sunday.

A start was made at about 0945 in the morning, and our efforts concentrated on contacting the country stations. We were, however, handicapped by the noise (afore-mentioned), which proved to be no respecter of the Sabbath, and, persisted throughout the day, making reception of signals below R6/7 rather difficult.

During the afternoon a shower of rain came over, and the moisture deposited on the spacers of the quarter wave stub caused a large increase in RF current, as indicated in the twisted pair feeders. This, however, did not appear to affect the signal strength at all. In the evening the afore-mentioned noise disappeared, and the last contact of the day was made under excellent conditions. The quality of the fone from all except one of the stations appeared to be quite good, although none of the finer points could be distinguished owing to the noise. The one exception was 3BQ, whose modulation appeared to be distorted, thus reducing the readability by a point or so.

The following stations were worked:—3PS, 3LL, 3OT, 3CP, 3OJ, 3VH, 3BQ, 3MB.

CANBERRA FIVE-METER ACTIVITY.

Of the local ham fraternity, 2GY, 2YN, 2ADM, and on occasions 2RR, are all active on 5 meters, 2AFB having rag chewed with both 2RR, 2YN and 2ADM the same day that he obtained his ticket. From that time until now rag chewing between 2AFB, 2YN, and 2ADM as a three-way has been common with 2GY making an occasional four way.

In regard to the rigs, 2GU is the only high - power crystal-controlled station. As mentioned by 2VN, he has 808's for his final. The remaining stations all use parallel rod oscillators with the exception of 2YN, who puts out unbelievable punch

from a much overloaded 245 as an ultra-audion oscillator. 2GU is also fortunate in having a super that goes down to 5 satisfactorily, all other stations using super regenerators.

VIC. DIVISION.

Note the date of the Annual General Meeting, Wednesday, 14th July.

Correspondence

The Editor,
Amateur Radio,

Dear Sir,

No one likes to see the hams tied down too much. When the new Regulations, prohibiting "Canned Music" on 40 and 20 at night, were brought in, I thought that the CW men might get a chance. Just listen around the band on 40 at night and see if it's possible to work anyone whilst only using the rated 25 watts.

I have become firmly convinced that the only way to have a qso at night is to either go qho or shift to 80 mx. Why can't something be done to try and persuade some of the boys to go up to 80 or even 160 for local phone QSO's. If you know any of the crowd in Sydney who are interested in 160 would you be good enough to ask them to write me just as soon as they like.

One of the boys up this way is a bit interested in 160 and we are considering the possibilities of going up there.

The old cry of "BCL QRM" is sure to be raised by many. But if we cause QRM, the BCL's will soon let us know and then we can take steps to prevent it.

To those using MOPA or self-excited rigs, 160 mx is an easy step. Even those using Xtal rigs can easily substitute a grid coil for their XTAL.

If this band were used for fone entirely and also a section of 80 mx band we would not have the QRM as it exists to-day on 40 and even 20 mx

Right here in this district, a number of the boys, finding dx rather slack, are using 20 mx for local QSO's.

Well I'm going up on to 160mx and all I can say to the boys is "Come up and see me sometime—anytime."

73 Bob, VK2TY.

1937 VK-ZL World Contest

The Contest Rules

Following are the rules of this year's test, and the following two important facts should be specially noted:—

(1) Under the rules one or more operators are allowed from each station.

(2) The log submitted is for the station's operation, and as such the loggings of one or more operators should be incorporated in the contest log submitted.

It will also be noted that there is a break of one week-end in between the Senior and Junior contests.

In drawing up the rules it was the contest committee's wish not to make the event one of "endurance," and we hope that we have met with success.

The support and enthusiasm with which the past VK-ZL International DX Contests have been met from amateurs throughout the world, has convinced both the Executive Committees of the Wireless Institute of Australia, and the New Zealand Association of Radio Transmitters (Inc.) that the Contest is now a looked-for event. This year the Contest is promoted by the New Zealand Association of Radio Transmitters (Inc.), with the co-operation and assistance of the Wireless Institute of Australia.

The Contest Rules.

1. The Contest Committee of the N.Z. A.R.T. (Inc.), will be the sole judges, and their decision on any rules or interpretations of these rules will be binding in the event of any dispute.

2. The nature of the contest requires contacts between the world and VK-ZL.

3. There will be three sections to the contest: (a) Senior, (b) Junior, (c) Receiving.

4. The contest is open to all licensed transmitting and receiving stations in all parts of the world. Unlicensed, ship and expedition stations are not permitted to enter. Financial members only of the W.I.A.

and the N.Z.A.R.T. (Inc.), at the time of the contest, will be eligible for awards in Australia and New Zealand.

5. The Stations competing in the Senior Section of the Contest may use up to the maximum power allowed by the national Radio Regulations. The stations competing in the Junior Section shall use up to a maximum power input to the last stage of the transmitter of 25 watts.

6. All Amateur Frequency Bands may be used.

7. No prior entry is required, but each contestant is to submit a log at the conclusion of the contest showing date, time (GMT), band used, station worked, signal reports exchanged, and points claimed for the QSO. Signal reports must include strength, readability and Tone.

NOTE.—No serial numbers are to be exchanged. Each log submitted is to be concluded showing the total points claimed computed as per Rule 9, together with a declaration as to the power input to the last stage of the transmitter. A contestant may enter for both Senior and Junior Sections, and will submit a separate log for each Section.

8. The Senior Section will be held from 1200 GMT., Saturday, 2nd October, 1937, to 1400 GMT., Sunday, 3rd October, 1937, and will be continued between the same times on the following week-end—9th, and 10th October. The Junior Contest will be run from 1200 GMT. Saturday, 23rd October, to 1400 GMT. Sunday, 24th October, and will be concluded between the same times in the following week-end, 30th and 31st October.

9. Scoring for all sections:—

Twelve points will be scored for the first contact with a station in a country other than VK-ZL. Eleven points for the second, ten for the third, and so on, until the twelfth will score one point.

The first twelve contacts will score 78 points, and each additional contact after the twelfth will count one point. In all cases contacts are

irrespective of the band used. This will apply to all countries except England and the United States of America; in these countries twelve or more (as above) contacts will be permitted with stations having the following prefixes:—G2, G5, G6, Scotland, and W1, 2, 3, 4, 5, 6, 7, 8, 9. The points scored by contacts in the above manner will be added together and multiplied by the number of countries worked, which give the final score. Each W and G district will not constitute a separate multiplier.

10. Scoring by competitors beyond VK-ZL: Twelve points will be scored for the first contact with a VK-ZL prefix zone, 11 for the second, 10 for the third, and so on to the twelfth contact, which will count one point. The first twelve contacts with a particular prefix zone will therefore score 78 points. Each additional contact after the twelfth will count one point. This will apply to each VK-ZL prefix zone worked. The points scored in the above manner will be added, and the total multiplied by the number of VK-ZL prefix zones worked, which will give the final.

The Prefix zones are VK 2, 3, 4, 5, 6, 7, 8, 9, and ZL 1, 2, 3, 4.

11. Only one contact with a specific station on each of the bands will be permitted to count during the whole of the contest except on the 28 Mc band, where one contact each weekend will be permitted to count.

12. Entries from VK stations must reach W.I.A., Box 2127L, G.P.O., Sydney, not later than 1st December, 1937. All overseas logs must reach Contest Committee, N.Z.A.R.T. (Inc.), Box 489, Wellington, New Zealand, not later than 31st December, 1937. All entries must reach the Contest Committee, N.Z.A.R.T. (Inc.), Box 489, Wellington, not later than 1st December, 1937.

Awards.

Attractive Certificates will be awarded to the station returning the highest total in each country; to the highest scorer in each of the G and W prefix districts and Canadian Districts.

Receiving Contest.

1. The general rules for the receiving contest are the same as for the transmitting contests, and it is open for any short wave listener in the world.

(Continued on Page 28)

Special Announcement

If you hold the A.O.P.C., Vealls extend valuable concessions to you. Have your name recorded on our Mailing List.....it will pay you.No cost or obligation, of course.

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Central 3058 (7 lines).

Station Description

(By VK2NQ.)

I suppose there are about two or three hams here in VK who—on very favorable occasions — have heard that wee little sig and sat hushed and intent, only to find it signing VK2NQ. Yes, I am 2NQ, and I—like you other guys—like to boast of my dx. Why, I worked nearly all States of VK in six months here with my rig, and I swell up and feel f.b.—till the light bill arrives!

What's that? Oh! Yes, I'm using a 6L6 metal CC osc. with 400V om. Gives a fair output on its second harmonic from an 80 meter rock, has its own power supply, choke input, filter, and an 83—aren't they pretty!

The osc. is link-coupled to the buffer, which is quite conventional, and utilises an Eimac 35T; this has 1000v anode. Supplied from a large pack which is made up of a thousand a side, 250 MXA tranny, a pair of 5Z3's, a pair of 4 mfd. 2000V working condensers, and a 250 MXA 60 henry (alleged) filter choke.

The Buffer is a vy f.b. doubler, too. Might be handy for this purpose when 40 metres wears out, hi!

This is linked to the final, in which I am using a graphite anode 311. This circuit is also very simple, like 2NQ himself. The anode has only 1000V, also from the same supply as the buffer, but its place does not go red like that of its driver.

Yes, this is link coupled to a series tuned zepp, semi-vertical, about 45 degrees, and sloping down from high up—about 70 feet effect-

ive—at the north end to 27 feet at the south end; it's plane is magnetic north and south.

Input? Well—er—25 watts in the day-time, but between midnite and 6 a.m. full advantage is taken of the stations QRO permit, which is 150 watts.

2NQ is strictly C.W. Will chew it with any licensed chewer any time on 40 mx.

For receiving we have early model detector and one audio, 6C6 and 6L6, with cans, and highly recommended; it has the ability to drag like a fine tooth comb, and plenty of audio, but it is quite useless for fone work without an R.F. stage or two.

Also a Super is in use. It has few, if any, advantages over the usual super. 6D6 RF, 6C6 1st det, 6D6 H.F. osc., 6D6 I.F. 85 2nd det, 1st aud., and a 6C5 audio, 37 b.o. Built into a good aluminium box wid square brass rod in corners, and compartments are provided for different RF stages, as well as an out-pet meter.

Chiefly used for measuring the quantity of local fone QRM. Have worked on 40 mx, Q's, F8's, FU8, ON4, U2's, U9's, J, XU, ZE, ZL, ZS, ZT, ZU, CR7, CR9, VQ8, VS, K7, K6, KA, VE, W's, OM, PK, ET1, ST1, HS1. This should be enough to show that this 40 mx is still able to provide entertainment even to the most fastidious pursuer of this wicked art. However, the DX maiden is as elusive as ever, and to me the chase is ever so thrilling.

MILLFORD RADIO CO.

PHONE: BRUNS. 1247.

TRANSMITTING AND RECEPTION APPARATUS BUILT TO SPECIFICATIONS. ALSO REPAIRS TO POWER TRANSFORMERS, CHOKES, ETC. QUOTATIONS GIVEN.

381 Sydney Road, [opp. Post Office] Brunswick

The VK-ZL 80 MX Fone Contest, 1937

The years contest is a decided improvement on last as it includes interstate QSO's as well and will keep the competition much more busy than last year. The inclusion of a limited section gives those amateurs who can not operate during Broadcasting hours an opportunity to compete amongst themselves as outlined in Rule 13.

The following are the rules:—

1. All entrants to win prizes must be financial members of the W.I.A. if residing in Australia and of the N.Z.A.R.T. (Inc.), if residing in New Zealand. Any station operated by non-members may enter the contest but will not be eligible for awards or prizes,
2. The contest shall be by means of amateur radio telephony transmissions on the 80 metre band only.
3. There shall be three sections of the contest namely.
 1. Transmitting. Unlimited Hours.
 2. Transmitting. Limited Hours.
 3. Receiving.
4. The contest will commence at midnight, Saturday, July 17th (New Zealand Standard Time), and finish at midnight Sunday, August 1st, 1937 (New Zealand Standard Time).
5. Seven days operation only will be allowed, the days of operation not necessarily to be on consecutive days. To come on the air calling for the contest or to send a letter combination as provided in Rule 6 is sufficient in either case to establish operation for that day.

TRANSMITTING SECTION UNLIMITED HOURS.

6. During the course of each two way communication (QSO), each station will exchange QSA, R, reports and exchange a six letter combination. Every log submitted shall contain the following details concerning each QSO. (a) Time. (b) Correct call sign of station worked. (c) QSA, R, reports given and received,

(d) Six letter combination given and received, (e) Points claimed, (f) At end of log total points claimed. The six letter combinations shall be arrived at as follows:—

Every station shall select three letters of the alphabet whose combination shall not be in alphabetical order or form a three letter word (viz) YOU, TOO, BIT, CAT, etc.) and these three letters will form the latter half of every combination sent out by the station. The first three letters will be taken from the last three letters of the immediately preceding QSO.

(Example:—At the beginning of the contest ZL4XX selects the letters ASD and VK2AA the letters TWE. They contact both for their first contacts. ZL4XX send his three letters only not having worked a station before and VK2AA does the same. On ZL4XX's second QSO his letters will become TWEASD and VK2AA's will be ASDTWE.

7. No time limit to be imposed on any QSO.
8. No schedules permitted.
9. No station to be worked more than once.
10. Only one operator permitted per station.
11. All transmissions to be in accordance with the Radio Regulations.
12. Points for each QSO will be claimed as detailed in the following table which is based on the Great Circle distances to the nearest 500 miles.

15	35	20	15	15	15	5	ZL 1 & 2.
15	35	20	15	15	15	ZL 3 & 4.	
5	20	5	5	5	VK 2.		
5	15	5	5	VK 3.			
				4.			
10	20	10	VK 4.				
5	15	VK 5.					
20	VK 6.						
VK 7.							

LIMITED HOURS.

13. Competitors desiring to enter for this section will be governed by all

Amateur Radio

the preceding rules but must not commence operation in the contest before 11.15 p.m. (New Zealand Standard Time) if residing in New Zealand, and if residing in Australia or before 11.15 p.m. local standard time of the state in which the competitor is located, on any date, operation is to cease at 7.15 a.m. on the following morning 7.15 a.m. being N.Z. or local standard time as the case may be. Stations contacted need not necessarily be in the limited section of the contest. For the purpose of this section only a days operation as specified in Rule 5 will be computed as being between the hours limiting operation.

14. In submitting their entries for this section, in accordance with the detail required in Rule 6, entrants shall state on the top of the log sheets the section entered for.

RECEIVING SECTION

15. Rules 1 to 12 inclusive, of the preceding rules shall apply to the receiving section substitution as applicable "listening" and "heard" for the words "calling," "worked," and "contacting."
16. A log submitted for this section shall be in the same form as required by Rule 6, with the addition of details as to what licencing district the entrant is residing in. Points shall be claimed as set out in Rule 12.

AWARDS.

17. A trophy will be awarded to the winner of each section (ZL and VK combined). In addition prizes will be awarded to the winning two stations in New Zealand by the N.Z.A.R.T. (Inc.) and the W.I.A. will award two prizes in Australia.
18. Logs from Australian entrants shall be forwarded to the W.I.A. Box 2127L, G.P.O. sydney and must reach there not later than August 24th 1937. Logs from New Zealand entrants shall be forwarded to the N.Z.A.R.T. (Inc.) Box 489, Wellington C.1., and reach there not later than August 31st, 1937.

19. To each log shall be attached a declaration that the entrant is a

financial member of his national society (if such is the case), that he is the only one to operate the station, that he only operated his station for seven days for the purposes of the test.

THE WORLD FRIENDSHIP SOCIETY OF RADIO AMATEURS.

ZL4CU via VK3EP.

This society was founded by three radio amateurs in April, 1935 and celebrated it's second anniversary on April 22nd.

It is a world-wide organization run on entirely voluntary lines, and there are no fees or subscriptions. All that is necessary to become a member is to sign and honour a simple pledge.

Certificate of Membership is supplied free to all accepted applicants.

The American Secretary is Duane Magill (W9DQD) 730 N6th Street, Grand Junction, Colorado, and Dave McEwan (ZL4CU) is Hon. Sec., for New Zealand.

Briefly, the principal objects of the Society are:—

1. To promote and foster the ham spirit of goodwill and friendship either by personal contact or correspondence, for this purpose several letter Budgets have been started.
2. To enrol British, American, European and generally all Amateur Radio experimenters of whatever nationality or colour.
3. To write letters of goodwill to brother hams who are cripples or invalids, and send them occasional letters and magazines.
4. And to ultimately bring about a bond of friendship and brotherhood among Amateurs and others in all parts of the world.

For further information a line to ZL4CU, 20 Mitchell St., Invercargill, N.Z., will bring a letter by return.

Electrical Explorers

Part I.

(By W. R. Gronow, VK3WG.)

When one stops to analyse carefully the wonder of electricity, it is apparent that this medium, which we use so freely to-day, is the outcome of years of exploration and applied thought. First, when we consider the origin of electricity, it becomes clear that although it was apparent in some form or other, the ancients had no real knowledge of its source or control, and as we investigate the subject, names of experimenters who pioneered this wonderful study, begin to increase, until we might name thousands who each contributed his or her small addition to the store of knowledge. Let us then investigate the history of this force which makes the best of hobbies possible, as well as brings comfort and cheer to the world's peoples to-day. The various forms of electricity as they were discovered, understood and applied, lead us up to the present knowledge available to those who to-day must take up the torch to illuminate further wonders. The absolute ignorance of the ancients concerning electricity lead to many amusing misconceptions, and when we consider the real discoveries from time to time we find that a lot of the explorers accidentally hit on truths, sometimes without actually knowing how or why, frequently leaving their greatest finds to others to apply—so watch out you don't discover some fundamental and leave it to posterity to develop. The compass used by mariners for thousands of years constituted, as an unknown force, the earliest subject for scientific study, which gradually led searchers to discover that a difference existed between this form of magnetic attraction to that force which attracted other bodies when rubbed briskly, so a knowledge of frictional electricity was born.

Dr. Gilbert, of Queen Elizabeth's court, one of the early experimenters in this subject, who saw the light, he it was who applied the term "electric" to his studies, and left for posterity his electroscope made

out of a straw, pivoted so that it could indicate the approach of a charged body. This instrument and the compass were the beginning of the art. The magnet, by the way, derived its name from Magnes, a shepherd, who was supposed to find the iron nails in his shoes sticking to a certain stone, which was called by his name, the magnet.

These early experimenters thought to use the magnet to attract another magnet, and so convey thought, so communication over distances was one of their schemes. Of course, it didn't work, but it kept them thinking. Gradually the atmosphere cleared, until we find Von Guericke, of Magdeburg, spinning his globe of sulphur in 1672 to produce a charge. He is who found that the presence of a lighted candle discharged a feather which his globe had repelled, sending it back to the globe again—electrons up to their tricks again. Hauksbee improved the sulphur globe with glass. Wimshurst made the later and most successful job of this kind of equipment. Von Guericke managed to convey his charges along a silk conductor, and he found that his globe would produce sparks when discharged suddenly—another early spark transmitter, if he had only known it. Stephen Gray, 1720, an inmate of the poorhouse, found that the electric effect could flow through certain bodies in contact, so a conductor came into being. Unfortunately, he tried silk thread, and not metal. During his experiments with conductors he found that the charge leaked off a conductor when supported on metal rods—naturally insulators came into the picture at this stage.

Charles Dufay furthered this experimentation of conductors and insulators by finding that metals supported on certain insulating substances conducted best of all—we're getting on to 1745.

Musschenbroek, in Leyden, attempted to collect this interesting force in a glass vessel full of water, which, as it was held in one hand, the affair charged up, formed a condenser, and he got the shock of his life!

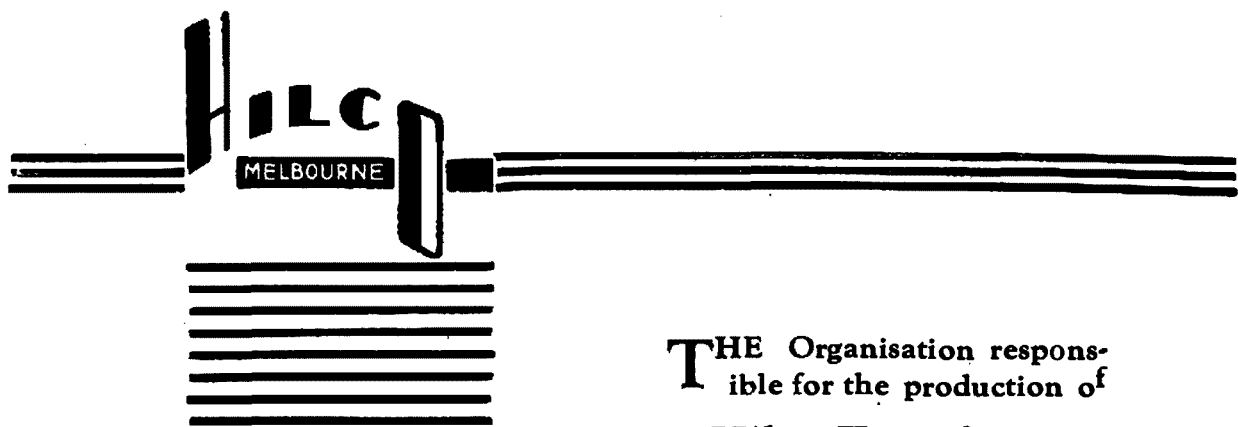
Nollet, the Frenchman, attached to the French Court, showed the effect of a discharge of this kind by passing it through a line of soldiers holding hands; they got it hot, and as each jumped at the same time he concluded that electricity was instantaneous in its action—painful, but true. We now have the conductor, insulator, condenser, and electric circuit in their early forms. Gradually the water and hand were dropped and metal plates insulated by the glass were used. So the dielectric came to be studied, and insulators were developed.

Benjamin Franklin, in America, also had very similar investigations, and discoveries to his credit, including a theory concerning positive and negatively charged bodies. Of course, up to now the only electricity

known was static electricity. Power was unknown in its present form. It was Franklin who noticed the similarity between electricity and lightning, taking personal risks with his kite in the process. By this time the study of electricity had quite a few adherents in England, Europe and America, each school with its particular theories—some right, most of them fantastic, but all of them leading onward. The Frenchmen and Russians were testing Franklin's theory about lightning with conductors, and some fatal accidents resulted.

Franz Ulrich Aepinus and Johann Karl Wilcke found that the glass in a condenser could be replaced by air as a dielectric, and also found that the charge was on the outside of the charged body. Priestley, Cavendish, and Maxwell, about 1780, also elaborated the latter contention, but Coulomb got the credit for experimentally proving the point, hence the unit of electrical quantity—the coulomb.

(to be Continued)



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Federal and Victorian QSL Bureau

VK3RJ QSL Manager.

Cards relating to QSOS as far back as 1933 have come to hand from Maurice Brown VK2OR—Have you become conscience stricken Morrie after this there is still a chance that FM8IH will do the right thing.

We can expect big developments in crystals at an early date as Roy VK7NG is conducting several experiments using petrified wood as an XTAL oscillator.

Jules Steiger—The QSL manager for W1 District is keen to get a card from the following VKS who so far have not obliged—VK 2QE, 2ACV, JX, 3MK, 5RD and 6FO. Jules QRA is J. Steiger W1BGY 35 Call Street, Willimansett Mass, USA.

VK3 is glad to welcome J. Coulter EXVK5MC—His new call sign is VK3MV and he will be a great asset to the Victorian ranks.

Ferguson EXVK2BP will be located with a geographical survey party in Central Australia between July and August—The call sign allotted to the party's Xmitter is VLU and the FREQ utilised will be 6680KC—All hams are requested to look out for him between 8 and 9 p.m. daily VK5 time.

The reseau des emetteurs francais (R.E.F.) request all QSL managers and others to ignore communications from a bootleg organisation recently founded in France and which was mentioned in this column last month the R.E.F. advise that they will still continue with their good work as in the past.

R.E.F. advise that QSLs for Morocco will receive more expeditious treatment by forwarding to A AEM BP50 Casablanca Morocco.

E16J W Howard QSL manager for E1 whose QRA is 23 South William St., Dublin, writes. "VK2 6 and 7 cards not coming through to E1. Shake them up especially the 6 and 7 as they are scarce here."

The R.E.F. intend holding a big amateur effort during the currency of the Universal Exposition which is being held in Paris at the present time. The amateur festivities culminate with a banquet on June 27.

Cards are on hand for the following:—VK3, AD, AP, AT, AX, BJ, BL, BS, BV, BX, CA, CM, CS, CU, CX, DJ, DS, EH, EO, FF, FK, FM, FS, FZ, GO, GP, HE, IL, JE, JR, JV, KO, KP, KY, LL, LT, NA, NG, NI, NT, OI, PA, PC, PH, PN, PY, QK, QX, RE, RD, RM, RQ RT, RW, RL, SA, SB, SG, ST, SV, TG, TQ, TZ, VK, WB, XD, XG, XU, XZ, YF, YG, YS, ZB, ZC, ZG, ZL, ZO, ZW, ZM, Duran Heaver Howard.

In spite of the fact that many of the modern transmitters described in handbooks and manuals show series fed H.T. circuits minus R.F. chokes in the leads, I have found and proved, in various exciter units, that the efficiency can be greatly increased by their use. As a matter of fact, one particular 53-53 band switched unit was found to be particularly hard to get going until all grid and plate leads were effectively choked. Rather too little attention seems to be paid to the keeping of RF out of the power supply these days, mainly because manuals imply that "it is not done" to use chokes. They are not only necessary, but CRITICAL. Not all chokes work well either. The main essentials are, of course, inductance, self capacity, low dielectric losses, and resistance. You will find the desired balance in the Eddystone RF chokes anywhere from 5 to 2000 metres. The two popular honeycomb types are illustrated herewith, and can be used as plate or grid chokes from 5 to 180 metres.



No. 1011. 2.5-10 metres.
Price, 1/10.



No. 1022. 5-180 metres. 250 mills.
Price 3/9.

For filtering I.F. or similar stages, No. 1066 type, with a wave coverage of 12.5 to 1000 metres, is ideal. Single hole mounting through the DL9 former permits easy assembly. Self capacity, 2.4 m.mfd. with an inductance of 17.9 millihenries and a DC resistance of 60 ohms. There are seven different chokes for seven different purposes in the Eddystone range, and full details are given in the illustrated catalogues obtainable from any of the following distributors:—

P. & L. WIRELESS LTD., Hardware St., Melbourne.

FLINDERS RADIO, 102 Flinders St., Adelaide.

W. & G. GENDERS PTY. LTD., Cameron St., Launceston (and Hobart).

Or from the Australian Representative:

R. H. CUNNINGHAM,

3ML, 397 HIGH ST. GLEN IRIS
PHONE U 9028 AFTER 6P M

28 and 56 M.C. Notes

A. Pritchard VK3CP

European signals have broken thru after a lull of two months—although VK2GU has been working them most evenings, the only difference being that and at 3BQ on June 5th at 6.15 and 6.50 p.m. respectively. 3BQ hrd YR5YN signals are weaker. G6DH was qso hr at 2.15 p.m. on the 8th June, which is the earliest time that the Europeans have been hrd here, in VK G6DH is r4 most evenings now at app. 6.15 p.m.; he reported a qso with YU2CD on 56mc showing good results with DX on 5. ZL4FW has an interesting outfit on 5; also ZL1JD is building a xtal rig with 100 w to the final on 5. ZL4FW has a schedule with W9CLH each Saturday at 1.30 p.m. (our time). The w has been heard often on the West Coast and ZL4FW hopes to hear him on a 10 tube 56 mc super het reporting via W9Tii on 10 mx. VK's 3YP BQ and CP are also on the look out!

3BQ and 3YP have re-built the RF portion of their supers, showing a wonderful improvement on 5 mx. ZL4FW's outfit has a pair of 53's and 80 xtal to 10 mx, 6L6G, doub 5 mx 807 buff on 10 and 5, 50T final with 100 watts input; the modulator has a cond mike and 6L6 class B; antenna is half wave vert with quarter wave stub feed. The most outstanding sig from the States is W6JJU who has a schedule with 3YP each Sat. morning. The antenna has $4\frac{1}{2}$ waves on each leg of a diamond, on 20 mx fed directly by an 800 ohm line. This antenna has a 16 deg. vertical angle of radiation. Jerry's outfit has a 53 osc, 40 xtal, 6L6 Push P doub 10—100 TH buff, and HF200 final with 400 watts input, modulated by class B Gammitrons. Another excellent phone is W9YHQ who has a V beam with 7 waves over all, fed from PPT20's final. The Hungarian DX contest gave us no sigs on 10 mx; in fact the only HA (F) sigs ever hrd on 10 are HAF8D and HAF8C. The Africans are beginning to be hrd each Sunday from 5 till 7 p.m. and ZE1JU is the most consistent; his rig has 59 tri tet 40 xtal, 59 doub 46's PP and 210 PP final, 40 watts input;

antenna is a 67 ft zepp. VK2GU has re-designed his beams with noticeable improvements in reports. His H type horizontal beams have 17 ft 1 inch for each of the 4 half wave sections; the $\frac{1}{2}$ wve section connecting the upper 2, $\frac{1}{2}$ wvs, to the lower 2, is 17 feet 7 inches and below that again the $\frac{1}{2}$ wave stubb, 8ft 6 inches long, with the feeders 44 inches from the shorting bar. VK3BW has re-built his class B mod and Archie has excellent phone. This mod. has a 6F6, 6C6, class ab 46's class B 210's giving 60 watts of audio!! Also since adding the Q bars in the feeders, his sigs have increased 2 points hr. The W stations are o.k. often at 7 a.m. and W6GUQ is r7 at that time—W6MFR was hrd qso a new South American, LU5FG—There are good qso's from K6 stns. up to 6 p.m.—K0LCV (always r9 K6MVV, 6MVX, 6OQE, and 6NEK, 6KMB. The Japs haven't been hrd for many weeks now although harmonics from KQI, PLF, TDC, TDR, TDI, TDH, JNJ and JNB have some punch between 5 and 7 p.m. when we usually hr J-stns.

Sat. 12th was N.G. for the W9CLH five mx test. VK3UK—3ML had a portable rig at 3RH—3HL during the King's Birthday week-end. UK's gear consisted of an E408N in a stabilised HI-C circuit ML used a 6L6G E.C. Tri-tet from 20 to five driving an 807 to 40 watts input. Class B mod was used in both cases, 3WI at the Institute rooms (3JO's outfit) on the Sunday put in R max signals all over the suburbs and QSO'd 3BQ, 3CP, 3OJ, 3LL, 3VH, 3OT and 3PS showing many on the job. 3ML-UK were not heard around Melbourne nor our sigs heard by them—we'll keep on trying—Hi!!

.....

The support given to the N.S.W. Division's technical article contest prize has not been up to expectations so far. There are only a couple of months left to send in entries. Better get busy right away.

.....

Divisional Notes

To ensure insertion all copy must be in the hands of the Editor not later than the 18th of the month preceding publication.

N.S.W. Division

W. G. Ryan, Secretary, VK2TI,
Box 1734 JJ, G.P.O., Sydney.

Country Zone Officers.

Zone 1 (Far West).—J. Perooz,
VK2PE, Hope Street, Bourke.

Zone 2 (North-West).—H. Hutton,
VK2HV, Byron Street, Inverell.

Zone 3 (North Coast).—R. J.
Berry, VK2NY, 54 Bacon Street,
Grafton.

Zone 4 (Hunter River and Coal-
fields).—R. W. Best, VK2TY, 57 Hunter
Street, Newcastle.

Zone 5 (South Coast and South-
West).—R. Ross, VK2IG, 673 David
Street, Albury.

GENERAL MEETING.

At the general meeting held on 20th May the Senior Radio Inspector (W. T. S. Crawford, Esq.) presented the prizes won at the recent Amateur and Short-wave Exhibition, and also the trophy presented by him for amateur telegraph operating.

In making the latter presentation to VK2RA, Mr. Crawford referred to the high standard of operating shown by the contestants, especially in the transmitting section. He expressed himself as being pleased with the interest shown in the contest, and at the same time made an appeal to those present to take a greater interest in CW operations, as being more reliable over long distances and under bad conditions, requiring less transmitting gear, causing less interference, and providing a training-ground for operators for emergencies.

Preparatory to presenting the prizes won at the Exhibition, Mr. Crawford congratulated the Division on such a successful undertak-

ing, and commented on the excellence of the display and of the competitive exhibits. The interest taken by him in the Exhibition was shown by his references to several individual items of gear during the presentations of prizes.

A full list of prize winners was published in last month's issue.

In a few general remarks, Mr. Crawford referred to the good feeling which exists between his Department and the Institute, and stressed the importance of amateurs dealing with the Department through the Institute or similar organisation, as it was very difficult to deal with individuals, but where a large number of men belonged to an organisation the wishes of that body would command respect, and also the Department could reach those men through a single channel. He also mentioned the work done by the Vigilance Committees, and commented on the improved standard of transmissions, at the same time asking that care be exercised as to the conduct of the station when on telephony, on account of the general public interest in amateur transmissions.

In conclusion, Mr. Crawford thanked the Division for affording him the opportunity of being present at the meeting.

The Chairman (VK2HP) and others then spoke in high terms of the personal regard which the amateurs have for Mr. Crawford, and a vote of thanks was carried with acclamation.

Among those present was Miss Longley (VK6YL), who spoke interestingly on the subject of Amateur activities in W.A., and also described briefly her trip through the eastern States.

The meeting terminated after mention was made of the forthcoming 5-metre field day, details of which appear elsewhere.

Amateur Radio

ZONE 4 NOTES.

(By VK2TY.)

Having only just taken on the job of Zone Officer, I have not had time to check up on many of the boys in this District.

The Maitland Gang seem to be rather quiet of late, and unless some of them drop me a line occasionally, their fame will not be spread across these pages.

What about it, 2GE?

Cessnock and the Coalfields area shows a little more promise.

2DG works them fairly consistently. About that fone, Keith?

2YL is another consistent DX hound around those parts.

Coming closer to home, 2OS, from Sunny Thornton, is putting out a bit of fone lately. What's the rig these days, Neville?

In Newcastle and District, there is not a great deal doing.

In New Lambton we find 2AEZ (Sec. of N.A.R.C.) trying fone on 20 mx.

2ZC, of Adamstown, is busy finding out just how many things can be done with his Cathode Ray Oscilloscope. Jim gave a fine demonstration with it at the Club on 10/6/37.

2ZW is rather QRL these days.

2BZ is seeing if he can blast the Ether (or himself) with a 2HE in the final.

New ham here (VK2AGD, of Mayfield).

A Mr. Jones, of Boolaroo, has just passed his ticket.

ZONE 5 NOTES.

(By VK2IG.)

It seems conditions were not so good for the HA contest, and in this zone few contacts were made. Some afternoons HA signals were up to R8, but hard to raise. A couple were raised at about 10.30 p.m., and it appeared conditions were reverting to last winter's, but so far have gone off again. K7's are now easy on 20 metres, together with VE's, with Europe getting harder to land. 2OJ completely remodelled his speech department, and it is now working fb. Dope on the line-up next issue.

2QE now has 6L6G, so will soon be remodelling also.

2EU also on fone on forty with new rig, but still testing.

2AFD having worries with power supplies, and also busy.

Old 2QD is now up and about again after a motor cycle accident.

2IG off the air until rx properly finished.

WAVERLEY RADIO CLUB.

The following office-bearers were elected at the recent half-yearly election:—President, G. Wells; Vice-president, M. Lusby (2WN); Secretary, H. Garland; Treasurer, A. West; Assistant Secretary and Treasurer, E. Johnson (2AFZ); Publicity Officer and W.I.A. Delegate, J. Howes (2ABS).

The Club can look back with some satisfaction on the 1937 W.I.A. Exhibition, as five prizes in all were won by Club members, including the "Wireless Weekly" Cup, which was won by the Club's stand.

A comprehensive series of lectures has been drawn up for the forthcoming two months, embracing a variety of subjects, and these are being anxiously awaited.

Visitors are always welcomed at the Club rooms, "Almont," 13 Macpherson Street, Waverley, and meetings are held every Tuesday night, at 8 p.m.

2AFG is using a 59 E.C. osc. driving an ancient D404 in the P.A., but has discovered that he gets more output from his osc. than from the P.A.! Why not try that AL3, Jack?

2AFZ is all smiles again now. An open circuit filament C.T. resistance was responsible for that R9 hum on his fone.

2FJ puts out good quality fone on 20 metres, using a nice new crystal mike.

2EG still chasing the elusive dx on 20-metre CU, and sure tickles up the ether around Randwick way with his 800.

2BV, the Club's xmtr, has been very active on 7 mc CW recently, and has some DX to its credit.

2ADI got an R6 report from his first W the other day. Is rebuilding rig, and will use 47 C.O., 46 Buff, and PP 6P6's in final.

2TN gets out well with an indoor aerial on the xmtr!

LAKEMBA RADIO CLUB— VK2LR.

(By 2DL.)

A new scheme recently introduced by the Club, whereby a regular official Club visit is paid to a certain

transmitting member's station, is proving highly successful. Various members volunteer to throw open their shacks for inspection by fellow members on certain nights. Since the Club now has 43 transmitting members located in the various surrounding suburbs, it is quite obvious that many have not yet inspected each other's apparatus, and thus this scheme provides an excellent opportunity of doing so, offering new ideas to the individual in the layout of his own gear.

Mr. D. Broadley was recently successful in obtaining his license, and may be heard nightly signing VK2AFU, VK2VW and VK2ACS were recently accepted as new members of the Club.

Chas. Luckman, 2JT, has been observed on numerous occasions making careful tests on the new trolley buses which are being put into operation on the Kogarah-Sans Souci run. It is understood that these electric buses created absolutely no electrical interference. Five-metre activity appears to be at a standstill as far as members are concerned, but it is anticipated that the band will be more popular after the winter months.

- ULTRA HIGH FREQUENCY SECTION. VK2VN.

During the past month all the UHF men have been preparing and constructing gear for the Field Day on 27th and when this appears in print we hope something worth while will have been learnt about the 56mc band. Quite a lot of trouble has been taken to ensure everything running smoothly.

For the reason above mentioned, activities have been rather restricted so perhaps it would be as well to mention briefly what has been done in the way of construction.

2MQ having completed his multi-stage crystal controlled transmitter using PP801's in the final is now concentrating on a multi-tube superhet.

2LZ not satisfied with his past efforts has just finished an 8 tube super, specially constructed for 56mc. Power supply and speaker are mounted in the chassis and tubes and condensers are so arranged that grid leads are not more than an inch long. According to reports this receiver is the ultimate in efficiency. Con recently reconstructed

his transmitter which now looks very trim and seems now to be even. PP800's are still used in the final, modulated by a 212D.

2RA of Crawford Cup fame is now a very enthusiastic U.H.F. fan and is building up quite a nice outfit.

2ZC is another who likes to see plenty of RF floating around, hence the reason for using PP800's. So far he has only contacted stations in the Newcastle districts.

When talking of R.F. and Q.R.O. brings to mind 2GU at Canberra, who is now installing PP100 T.H.'s modulated by a pair of 808's. 2GU by the way is the station into which flow all the ZL harmonics from 10 meters.

2VN now has PP802's driven by a 6L6 electron coupled tritet giving quite good output.

2UV uses PP6L6's while 2NO still has his pair of 35T's after a 6L6 driving an 802 buffer.

From the foregoing remarks, it can be seen that the general standard of equipment has shown a vast improvement during the past few months.

Victorian Division

VK3 PHONE SECTION NOTES. by J. R. Kling VK3JB

The May meeting of this section was held on Tuesday, 25th at the Institute Rooms at 8 p.m.

Mr. Thompson 3TH was in the chair, as our acting chairman Mr. Doyle 3CR who has been very ill came along later and assisted the acting chairman.

A letter was received from Mr. Gerald Lahiff tendering his resignation from the allocations committee, which was received with regret.

As other members of the allocations committee other than Mr. Lahiff were not present and the order of merit was not to hand, 3FL moved and 3CR seconded that the order of merit for the month of April be taken again for the month of May, this was carried unanimously.

3OY and 3OV resigned their positions on the band, leaving a balance now on the band of fourteen Metropolitan Stations. After a short talk on the whole position of the gang on the publicity band by Mr. Thompson, the allocations and crystals were given out.

Then the members of the UHF Section who so kindly came along to give us a lecture on 56mc doings took control, and it certainly was very interesting for all those interested, and some of the Phone hounds should show up on 5 meters very soon.

At the conclusion of the lecture the meeting closed at 10.45 p.m.

WESTERN DISTRICT NOTES. 3HG.

3SC is a new ham in Camperdown making the fifth in the town.

3GQ active on 14 mc with the YF on the mike.

3GC also on 14 mc occasionally.

3KX still working DX as of old.

3KL has moved from Avoca to Horsham.

3QM is old 5CH now located in Belmont.

3CK is considering a vibrator or genemotor power supply in place of the old batteries. Has adjusted his antenna with beneficial results.

3TD co-operated with 3RH and 3HL during their 56 mc tests recently. Is operator at 3LK broadcast station.

3AC is reported to have dropped 230 meters in favor of the higher frequencies.

3GW heard on 3.5 mc now and then but mostly on reserve work.

3WW active on 3.5 and 7 mc.

3XI has come to life once again, this time on 14 mc using three 6L6's but is not satisfied with his antenna.

3OW interested in 56 mc and is testing out gear.

3HG installing a 6L6G and a V beam antenna is able to work W on phone, also lots of DX on CW.

QUEENSLAND DIVISION

As it is some months since VK4 notes appeared in these columns a brief outline of the more important happenings at the Division's Headquarters will be given for the benefit of Country members. Since the last Annual meeting 4OL, due to business reasons, was forced to tender his resignation as secretary. Thanks was expressed by all for the splendid work done by Frank during his term of office. Mr. R. Thor-

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46

ley, 4RT, succeeded 4OL as secretary and, if all the co-operation promised is forthcoming, the Division can look forward to another successful year. Other new faces on the Council are 4UR, 4HR and 4AB, the positions filled being Amateur Radio Representative, Country Librarian and Publicity Officer respectively.

INTER ZONE COMPETITION.

All entries are now to hand for the VK4 Inter-Zone Competition held during the last week-end in May. Some 20 members participated in the contest and all declared it a huge success. After points had been allotted the scores were as follow:

FONE.		C.W.	
4TY	.. 508 pts	4NO	.. 267 pts
4LX	.. 328 "	4RH	.. 192 "
4UX	.. 321 "	4EI	.. 130 "
4ES	.. 300 "	4AW	.. 38 "
4AW	.. 51 "	4RT	.. 22 "
4XN	.. 26 "	4GA	.. 5 "
		4HR	.. 2 "

Congratulations to 4TY and 4NO for their fine performances Among others who took part were 4SA, 4SD, 4GK, 4RC, 4FN, 4DY, 4LK etc.

HIGH FREQUENCY FIELD DAY.

By the time this appears in print it is hoped that Sunday, 27th June, will be a red letter day for VK4 56 mc enthusiasts. On this date a field day has been arranged so that our 5 mx gang will have the chance to collaborate with VK2 stations in an attempt to establish a new 56 mc record. Two parties will be located at strategic points with outdoor equipment and several have signified their intention of taking part in the test from their home. QRA's with high power gear.

ZONE MANAGERS' REPORTS.

Zone 5. Mgr. 4EI, Townsville Reports LK now connected to mains, 6L6G-46's in P.A. Petrol driven 240 volt alternator installed at GA's. GE has one eye on study and the other on lookout for Ipswich boys. WG, new member, wants VK4 qso's EI complains of few VK4 stations on C.W.

Zone 4. Mgr. 4UX, Theodore. No's sigs put B.CL's sets out of action—hi, Do, the tennis champ, has been spending a bit of time on 7mc lately. Every one wnts to know what's appened to the Longreach boys, RQ and WH?

Zone 3. Mgr. 4XN, Dalby. GG is making a reputation for himself on 20 metre DX 'fone. CU and AF, Clifton, are trying to contact 4XN on 56 mc. KZ expects to have a new rig on 3.5 mc. shortly. YA has gone to VIS—best luck in new QRA om. XN hasn't been very active lately.

Zone 2. Mgr. 4TY, Kingaroy. OB still om 200 mx with good quality fone. BB's activity represents one sked weekly with 4GK and 2LZ, that is when Con puts in an appearance. ES is using 42's throughout the rig and his fone is f.b.

Country members are requested to submit monthly reports to their respective Zone Managers and thereby assist in keeping these notes as interesting and imformative as possible.

Activity on the air seems to be at a low ebb among the VIB gang. RF, EL, UR, HR, SD, JX, and UL are the only really active ones. Poor conditions are perhaps to blame. 20 mx is showing those whimsical qualities for which it was noted years ago; 10 mx is deserted except for a few weak W 'fone stations, and 40 mx is good only for inter-state QSO's. Let's hope that the "Divinity" who regulates our DX periods sees to it that conditions improve before the VK-ZL World DX scramble.

South Australian Division

by VK5KL

Mr. Jack Coulter has been transferred to Melbourne and Mr. Bill Walker (VK5WW) is the new secretary. All those present at the general meeting on June 9th, ejoyed the excellent lecture and demonstration given by Mr. R. Buckerfield (VK5DA) on modern BCL superbetrodyne receivers.

The T.D.S. members have commenced a series of sessions operating on 40 metres at 2 p.m. each Sunday. During these transmissions W.I.A. news and activities will be given this will be beneficial to all city as well as country members.

Every Sunday night at 10.30 p.m. on the 80 metre band listen to "The Technical Discussion Group." The first session was held on Sunday, 13th June, members were VK5FM, 5MD, 5LD and 5WJ. The subject was super-

hetrodyne receivers and some very interesting points were explained by those co-operating. Results of the DJDC contest held last August have come to hand. VK5 Leaders were 5GW, 5LD, 5RX, 5KL, 5LY, 5FM and 5BY.

Unfortunately weather conditions in VK5 did not permit extensive co-operation by the local chaps on 5 metres during the recent attempt for a record by the VK3's on the week-end June, 12th to 14th.

COUNTRY NOTES.

By VK5PN

VK5FB:—Frank, I believe, is settling down in the old home town—Wilmington.

VK5GW:—George, formerly of Adelaide has been for some time at Naracoorte. He is turning that town into a real live A.C. area.

VK5LG:—We very seldom hear from Keith these days; just an occasional rap on the knuckles when we forget to acknowledge receipt of letters, subs. etc.

VK5RE:—The voice of Renmark; "Where the Murray Croons a Lullaby" was in the City recently and believe me he was a busy man, visiting the local shacks, buying radio gear etc.

VK5WG:—One of the really good fone stations. Wally is usually to be heard at R8/9 in the City during week-ends. Guess he stirs things up in Port Pirie.

VK5PB:—Another of the Naracoorte gang. Have not heard much of "PB" lately. He seems to spend most of his spare moments in the 5XR shack.

VK5NW:—Our latest Country member Mr. R. H. Bailey of Mitchell St., Crystal Brook. The Institute extends a very hearty welcome to 5NW with best wishes for DX and "things in general." How about letting us know all about your station and activities O.M.

VK5AT:—Now I wonder when 5AT is on the air; I have never yet heard him. This much I can tell you about 5AT; when he was living in the City he was a member of the Sth. Aust. Divn. Council, and then, as now was an enthusiastic worker in the interests of Amateur Radio. Now I want to make an appeal to you chappies for articles, station descriptions etc. We want S.A. to figure more prominently in the

"Magazine." Particularly we would like you to pass on to your fellow Country Amateur worth-while tips for getting best results out of low-power rigs. Each one of you will have, at some time or other, had to face up to some problem peculiar to Country-station conditions. You have had to be an experimenter in the real sense of the word. You can help the other chap, and he can help you, so how about it?

Tasmanian Division

Via Radio VK3MR.

The annual meeting of this division was held at the club rooms on the 5th of June. The election of officers were as follows.

Council:—F. W. Medhurst (VK7AH) T. Connor (VK7CT), C. F. Johnson (VK7AR), H. Moorhouse (VK7HM), J. C. Batchler (VK7JB), L.C. Clark (VK7CK), L. K. Valentine (VK7KV), A. E. Allen (VK7PA) and (VK7AB).

President, VK7AH. **Secretary,** VK7HM. **Assistant Secretary,** VK7KV. **Treasurer,** VK7HM. **Traffic Manager,** VK7DH. **Deputy Tfc stn** VK7JB, QSL bureau VK7JB. **Magazine notes** VK7KV. **Magazine distribution,** VK7YL.

After the meeting the company retired to the Ship Hotel where a dinner was held and it was voted a great success. On Monday the visitors accompanied by 7YL, 7HM and 7JB, paid a visit to the "Pinnacle" Mount Wellington, via the new road. An enjoyable time was spent in the snow and the visitors returned to north in the PM.

MEMBERS ACTIVITIES.

VK7YL has migrated up to 80 mx. Having trouble with audio feed back on 20 mx fone. Reports conditions crook on latter band. Try 10mx Joy!

VK7KV working duplex fone on 5 mx 7KQ also on 5 mx consistently.

VK7CT not active at present QYL! "I say Terry, was that lemonade you were drinking at the dinner ??

VK7JH transferred to Waddamana and is taking a low power transmitter with him. Sorry you couldn't attend the dinner Jack.

VK7BJ.—On 40 mx and 20 with a 6A6 co, and a TCO4/10 modulated by a 6L6. That was a snappy edition on the pillion of the mobike, Joe.

(Continued on Page 28)

Radio Engineering Text Books

- - - FOR 1937

	Price.	Postage.
Radio Engineering (Terman), (completely re-written)	32/6	10d.
Radio Engineering (Henney)	32/6	10d.
Communication Engineering (Everitt), (completely re-written)	32/6	10d.
Practical Radio Communication (Nilson & Hornung)	32/6	10d.
1937 Radio Handbook (Frank C. Jones)	8/6	6d.
1937 Radio Amateur's Handbook, A.R.R.L.	7/6	9d.
Amateur Radiotelephony, 1937 (Frank C. Jones)	5/-	4d.
Ultra High Frequency Handbook (Frank C. Jones)	3/6	3d.
Antenna Handbook, 1937 (Frank C. Jones)	3/6	3d.
The "Radio" Antenna Handbook	4/-	4d.
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Seventh District, Tasmania—R. Cannon, Goldie Street, Wynyard (VK7RC).

THIRD DISTRICT.

(VK3UK—3Z1.)

The main item of interest this month was the trip of 3Z1 and 1A1 to the country for the Five-Meter test described in this issue. 1A1 stayed with 3C3 and 3Z1 with 3F9, and the wonderful hospitality extended to both of us made the week-end one of the most enjoyable we have ever had. Whilst no records were broken, a great deal of information was unearthed that will be of great help in future tests. 3B5, at Coleraine, had built special gear for the test, but although frequent attempts were made no contact was the job in Melbourne, and the former was able to make many local contacts with his new five-meter gear. One important aspect is that a definite stimulus to work on the band has been the result, and 3C3, 3B5, and 3F9 can be relied upon to be ready for any tests in the effort to get through from Melbourne. 3Z1 and 1A1 will have beams permanently on those places, and it is hoped to run a definite series of schedules until contact is established.

VMC2 are the first section to get under weigh with R/T schedules, but the others won't be far behind, as most of the country men use

phone on 3.5 mc.

3B5 worked with 3Z1 during the test week-end, always on phone, and the quality was excellent throughout.

3D6 has just moved to a new QRA much nearer to her old home, where her gear is still erected.

We are delighted to welcome 3BG, from Bendigo, as a new member of the super-enthusiastic type. He is in a key position there, and we can look to a future section being formed around that town.

SIXTH DISTRICT

Activity has livened up in West Australia, as a good roll call has been experienced for many weeks past. 6A6 has resumed watches, and 6A1 is being put through his elementary tutoring. 6B1 and 6A5 are as ever. 6A2 is seldom home for the week-ends now, whilst 6Z1 will be shortly moving to an extra fb QRA situated on top of a de-luxe hill. 6A2 is transferring to Northam, and by doing so will be placing another country district on the list of valuable locations for the R.A.A.F., and it appears as though the whole country will be linked up shortly. 6B1 and 5A2 are in contact thrice weekly for inter District traffic.

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(Continued from page 25)

VK7DH.—Got amongst the European DX the other Sunday. Good work Dave. Still trying to solve modulation worries

VK7HM. — QRL annual meeting. Hopes to be on the air again soon when institute business is cleared up (You will never find the time!)

VK7KQ.—(ex 3KQ) Gil Miles hypnotized the Northern gang with tales of 5 mx and supported remarks by fine display of 5 mx gear.

VK7JB.—Hibernating to 80 mx for the winter. Runs skeds with the Mallee gang. 3WE, 3HX and 3ZK, QRL with technical college.

VK7LZ.—Heard on 5 mx fone after many months of cw work. He is using a condenser mike but is not satisfied with the quality.

VK7KR.—Very interested in 5mx at present. Hopes to get over to VIM with the stabilized osc described in ARRL hand book.

VK7RK.—Waiting for someone to donate a rx so as he can get on the air. Ask Henry, Ray.

VK7AB.—On 10mx with 35T in the final of xtal rig, and with KR and LZ, hope to work VIM on 5mx. (Don't we all).

VK7CL.—Recently visited VIM and brought back the 5mx bug also. Sorry you missed the dinner Merv.

VK7CK.—Will be installing a deisel engine and alternator if AC lines not forthcoming shortly.

The VK7 gang wish to extend to "Stripy James" the personality of Swan Hill, their pronounced sympathy and congratulations on his recent matrimonial plunge!!

(Continued from Page 3)

in the normal organisation of the Victorian Division, and although we have no figures of the other divisions their organisations are similar. Every one of those positions requires an earnest, enthusiastic fellow if progress is to be made, and every one of those men requires assistance if his sphere of work is to be successfully carried out. In fact, there is a job for every member if he will only accept the responsibility that is rightly his."

"That is alright from the WIA viewpoint, but how does it help me personally in my efforts to work along the right lines in Ham Radio?"

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(Continued from page 12)

2. Only one operator is permitted, and only one receiver can be used.

3. The dates, times, scoring of points, logging of stations, and bands used, for the duration of the contest are the same as for the transmitting contest.

NOTE.—Reception of 28 Mc stations will be permitted to count for once on a week-end, and not once only for the duration of the contest.

4. To score points the call sign of the station being called and the readability, strength and tone of the calling station, must be entered in the log, together with band, time, date. Logging of CQ on test calls will not count.

NOTE.—Overseas stations must be logged when either calling ZL or VK stations by Australian or New Zealand listeners. Overseas listening stations must log VK-ZL stations when they are calling overseas stations.

5. Australian and New Zealand stations will count their score as Rule No. 9 of transmitting contests.

6. Overseas listening stations will count their score as per Rule 10 of the transmitting contests.

7. Entries must be sent as per Rule No. 12 of the transmitting contests.

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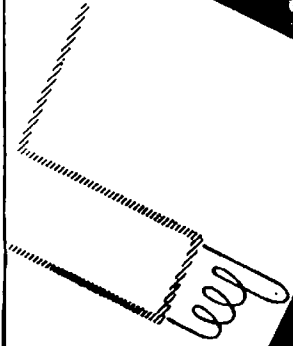
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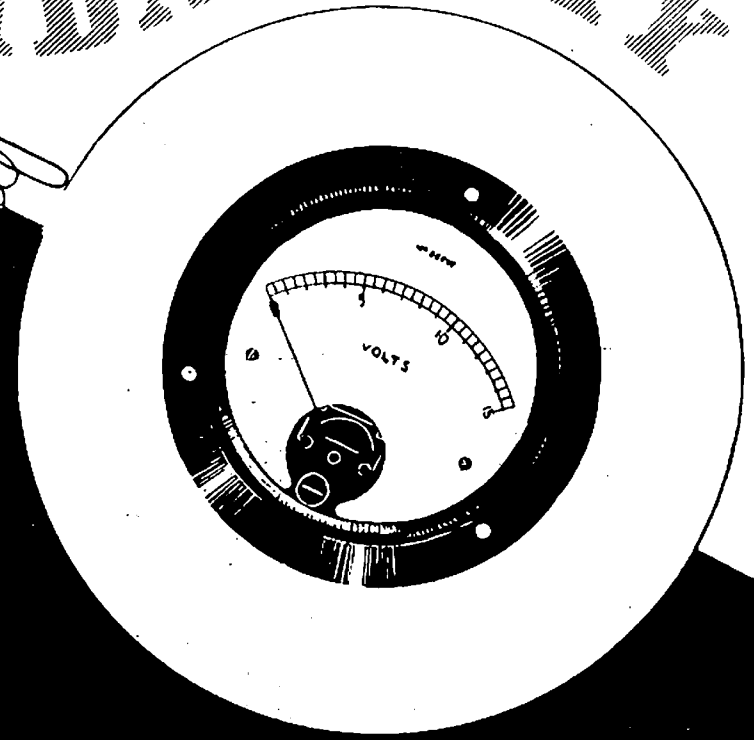
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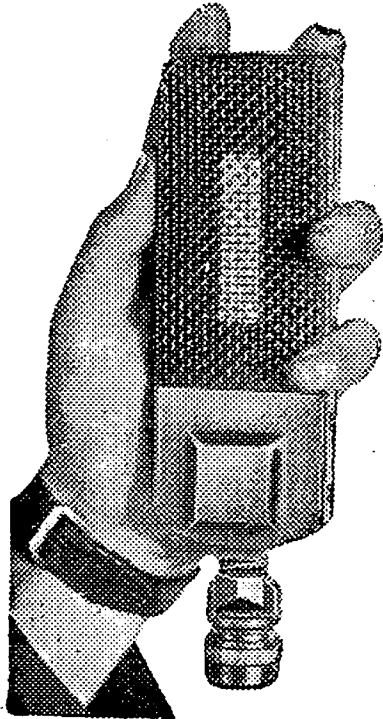
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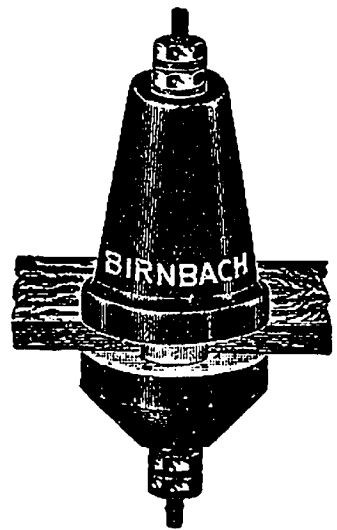
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Vol. 5 No. 8

1st AUGUST, 1937.

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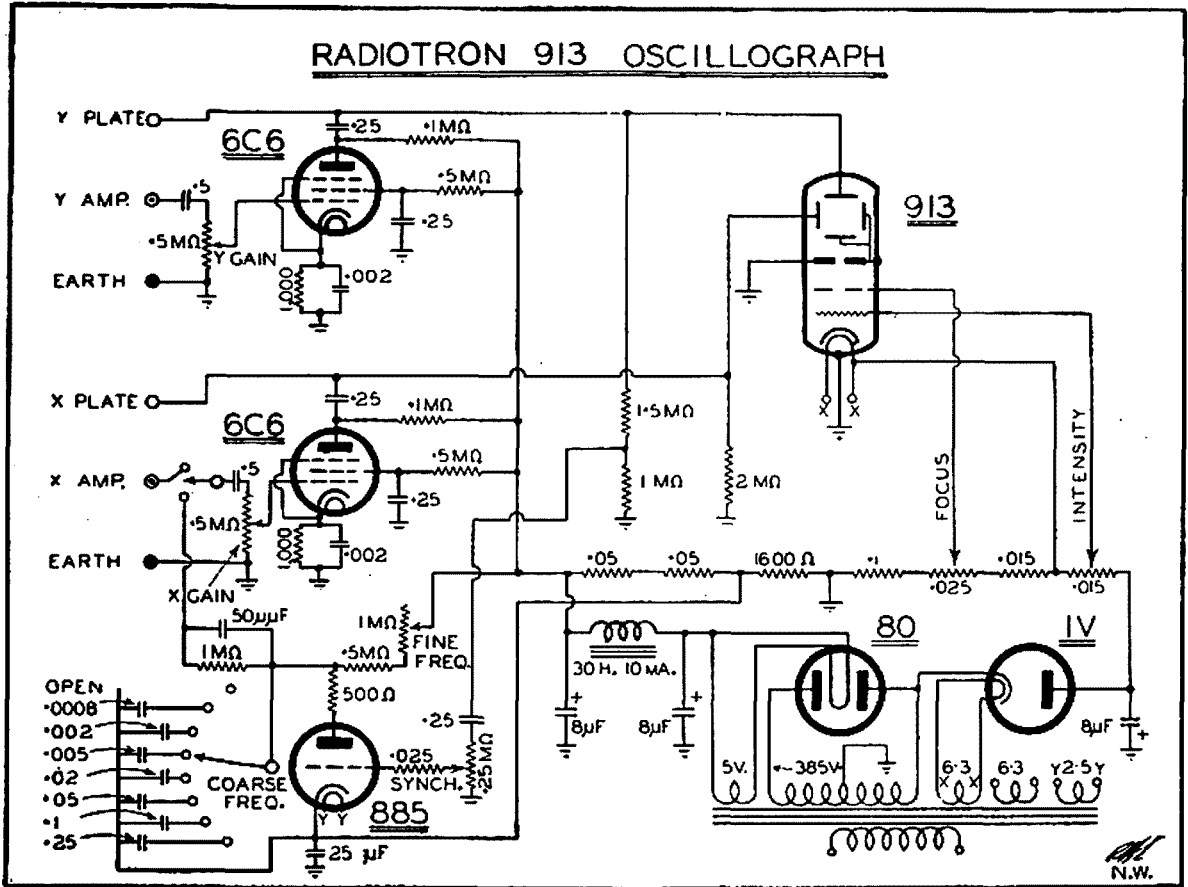
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Editorial

From time to time we hear outbursts from various hams on some phase of the ham "Game" with which they don't agree. The energy and violence of their outburst sometimes would do credit to a public man fighting for a Country's freedom rather than a ham voicing a protest at a detail of his hobby which he is not in agreement. We sometimes wonder whether we have lost our sense of proportion to our Hobby for Ham Radio is only our Hobby albeit the best one of them all. None of our Natures are alike, none of us want quite the same out of "the Game," but being human all of us want it made just our way. If he had not lived nine centuries too early Omar Khayyam might have described our attitude when he said:

" . . . this sorry scheme of things
entire,
Would not we shatter it to bits
and then
Remould it nearer to the hearts
desire."

It is strange how paradoxical human nature can be. A ham can experience the finest comradeship imaginable will put his best into the design of his station equipment, will be extremely proud of his hobby and yet should he be QRM-ed by a phone man, if he be keen on CW, by a QRO man if he be on QRP by the "young squirt" around the corner, if he thinks he has graduated from that stage, he rants and raves of inefficiency, of selfishness, of stupidity and of "lids." Allowing there is a small, a very small, minority in Ham Radio as in every other walk of life which is grossly selfish and unreasonable, is it sane or logical to label the greater portion of the majority by the same tag? Ask a Ham who has an appreciation of his hobby and who perhaps has often spoken of the spirit of comradeship that exists, if he genuinely believes that the interference caused is either deliberate or done knowingly with a 'dont care' attitude. We will warrant 90 per cent will reply, after consideration that neither category fits any except that very small minority. It

is thoughtlessness that is at the back of the trouble and surely thoughtlessness is amenable to reason.

The Vigilance Committee exists and has the necessary authority to deal with that minority and the Committee and the WIA itself can reduce the number of thoughtless acts by a kindly co-operation. But surely it can be cleaned up completely by a conscious spirit of co-operation and restraint by each and every individual ham. Some hams talk of further restrictions to curb this and that form of trouble. More restrictions! Haven't we got sufficient restriction now? We grudgingly admitted that some form was necessary to curb that minority we have spoken of, but to talk of further restriction is surely the sternest indictment possible of our utter incapability to control our own activities and those of our fellow hams. (Perhaps we feel that only the other fellow is at fault.) What does our membership of the WIA mean to us if we cannot use it for this purpose? The organisation is maintained so surely this is a logical use to which it may be put. We hear mention of the phone activities of some States interfering with the DX activities of others at certain periods. Do we ever hear of any correspondence on the subject asking for co-operation to clear up the trouble? No! Rather we hear that those who complain have written to the department on the subject. Why maintain an organisation if we are not going to use it as the mouthpiece of the Ham movement?

It is about time we asked each other if it isn't possible for us to use the same intelligence in our ham lives as we have to use in the bigger job of life itself. Should the reverse be the case we would find ourselves bankrupt in an incredibly short space of time. Let us remember this, ham radio is our hobby. It should be a relaxation from our ordinary lives and Heaven knows we need some relaxation from them, they contain enough troubles of their own. But if some of you want your ham radio run like the Taxation Department say so, in order that we may take up some other hobby in despair. As W3BTQ recently said, "Why not try Astronomy, we can all look at once without bothering each other."

The Theory and Application of Automatic Volume Control

By VK6KN.

The average experimenter of to-day does not appear to have a very clear conception as to the meaning of automatic volume control as it is called, perhaps the first thing to do towards accomplishing the object of this article is to change the name of the subject under discussion and call it automatic gain control.

First of all let us consider the

will flow from cathode to plate resulting in a current through the circuit and voltage drop across the diode load resistor. The function of the device which we are considering is to maintain the output of the final intermediate amplifier stage constant in spite of varying input voltages from the aerial to the first R.F. amplifier. This results in a steady audio output

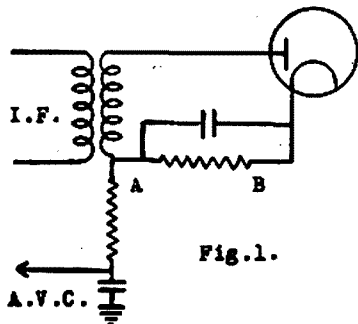


Fig. 1.

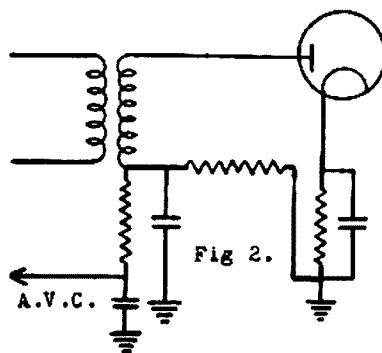


Fig 2.

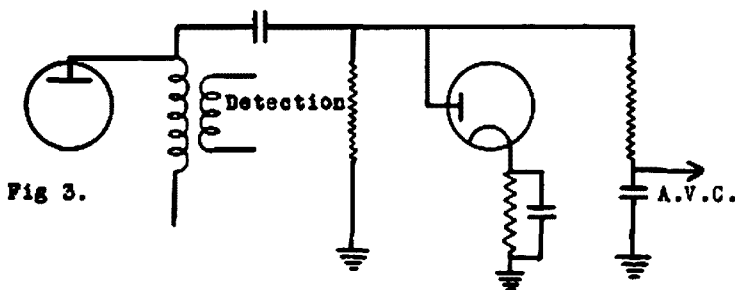


Fig 3.

theory of operation and then some practical circuits concluding with methods of application to receivers. There is no doubt that A. G. C. was introduced by engineers as a result of the success experienced with the variable-mu r.f. pentode which first came on the market in the form of the 235, the purpose of which was to eliminate cross modulation in receivers, a fault prevalent with jobs using the 224A. A. G. C. is invariably accomplished by the use of a diode. All Hams should be familiar with diode rectification principles or at least with the one that states that if the diode plate is positive with respect to the cathode a stream of electrons

voltage to the speaker and prevents blasting of strong stations and the fading of distant stations.

Let us consider the circuit in Fig 1. This is very simple but will serve to illustrate the principle, the R.F. transformer is the final i.f. transformer in the system and the fluctuating voltage is applied to the diode as shown. When the wave is positive at the plate end a current flows through the circuit and a voltage drop results across the diode load resistor. The important point to note is that the point "A" on the resistor is negative with respect to point "B" or cathode. Now the amplification factor of the variable mu tube re-

ferred to previously depends on the value of grid bias applied, the greater the bias in a negative sense, the less the amplification of the tube, so from this we see that if we can obtain a voltage negative in respect to cathode and proportional in amplitude to the amplitude of an alternation of the amplified signal wave then we have a method of controlling the amplification of the high frequency amplifier and so maintaining its output constant. It will be seen that this negative voltage is available from the diode load resistor at point "A" and

some attenuation to weak signals this is obviously not desired, so that corrective measures must be incorporated and this is done by preventing the A. G. C. from working until so desired. How can this be done? Let us go back a bit and it will be remembered that the controlling voltage is only in existence when the diode plate is positive with respect to cathode, therefore, if we can raise the potential of the cathode above earth and take the diode load resistor return to earth then we have a method of delaying the action of the A.G.C. Suppose for

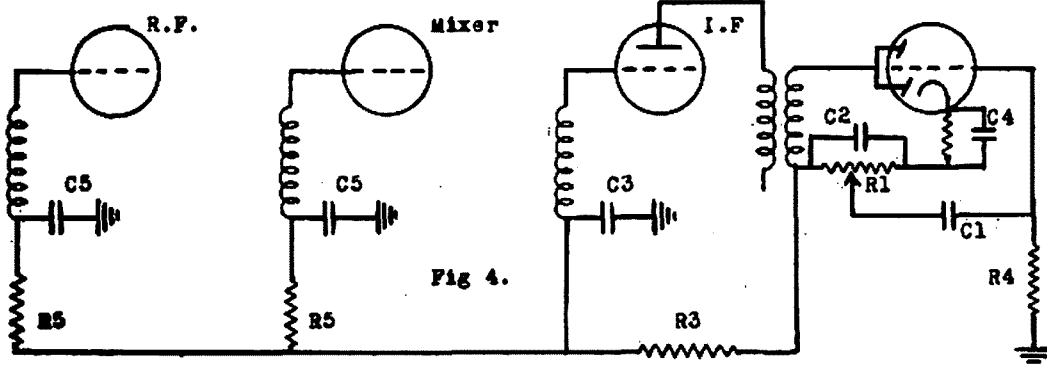


Fig 4.

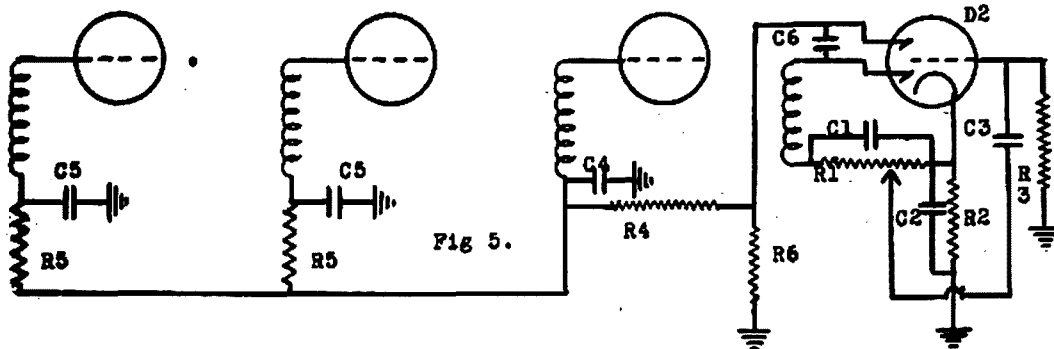


Fig 5.

this is transferred through a filter to the grids to be controlled. The purpose of this filter may seem rather obscure at first, but it is necessary to prevent the controlling voltage from varying at audio frequencies. The voltage drop is dependent on the degree of modulation of the carrier and if the filter was not used the controlling voltage would tend to smooth out the modulation envelope at audio frequency. The A. G. C. voltage is taken from the condenser which acts as a reservoir. It should not be necessary to point out that the diode rectifies, and the current through the diode circuit is D.C. The system outlined above serves to illustrate the action of A. G. C. but if used would offer

example that the cathode is four volts above earth potential then a signal below four volts will not make the plate positive and consequently no voltage will result across the diode load. A circuit of this type is shown in Fig 2. Certain engineers couple the diode to the plate of the final I.F. tube through a condenser of about 100 mmfd. as shown in Fig 3. instead of the usual method diagrammed in Fig 4. which shows a complete practical circuit of an A. V. C. system and brings us to the second part of this article.

To obtain a clear conception of what happens let us consider the function and approximate value of each part in the circuit in Fig 4.

The valve used is usually of the multiple type such as the 6B7 or 75 having included in it another set of elements used for amplification, however, at present we are only concerned with the diode section. The resistor R1 is the diode load resistor and has a value of about half a megohm and as the diodes are also used for detection in Fig 4. it is usual to employ a potentiometer the moving arm being capable of tapping off any required amount of rectified audio voltage and transferring it to the audio amplifier through a condenser of .01 capacitance shown as C1. The condenser C2 is the r.f. return path and has a value of from 100 mmfd to 500 mmfd. The combination R3 C3 is the filter referred to previously the size is usually between 1 and 2 megohms the condenser being about .05 mfd. The combination R2 C4 is the usual cathode bias network the value of the condenser is 10 mfd, small electrolytics being obtainable, the resistor naturally suits the tube in use. The combinations R5 C5 are isolating resistors and r.f. return condensers and are 100,000 ohm and .1 mfd respectively.

Now let us consider Fig 5, the diode D1 is used for detection and the components R1 C1, are the load factors of the detection circuit but we will not consider these here. The diode D2 is used for A.V.C. and is coupled to the r.f. circuit through a condenser of 100 mmfd shown as C6. the diode load resistor for D2 is R6 and has the usual value of between 1 and 2 megohms while the combination R4 C4 is the filter the purpose of which is now familiar to you. This circuit is more modern than that in Fig 4. and can be fitted to any set providing the amount of R.F. amplification is sufficient.

Much further can be written on the subject of A.V.C. but enough has been

said to enable the reader to sensibly follow any other articles on this subject which appear in advanced technical journals and also to fit A.V.C. to his own super.

WORKED ALL STATES (W.A.S.) AWARDS.

In keeping with the policy adopted at the 1937 Federal Convention; it was decided to award to stations producing suitable evidence a Worked All States (W.A.S.) Certificate. These certificates are now available and your cards should be sent to your divisional Secretary.

The award is no sinecure and takes some winning and shows that the Applicant has all band experience. Contacts may be on either phone or C.W. Contacts on any four bands are suitable either 10, 20, 40, 80 MX; or 20, 40, 80 and 160 MX and so on. The same stations may be contacted on all bands.

The rules are as follows:—

1. Applicants must be financial members of the W.I.A.
2. The following are considered as states, VK2, VK3, VK4, VK5, VK6, VK7, VK8 and VK9.
3. QSL cards must show clearly that any six states has been worked on each of any four bands.
4. The 24 cards must be forwarded to the Divisional Secretary for perusal and he will notify F.H.Q. of the decision of his council on the suitability of the presented cards. On the receipt of this advice F.H.Q. will mail direct to the applicant the Certificate.

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.

The Perfect Station

Part 3.

By Vaughan Marshall, VK3UK.

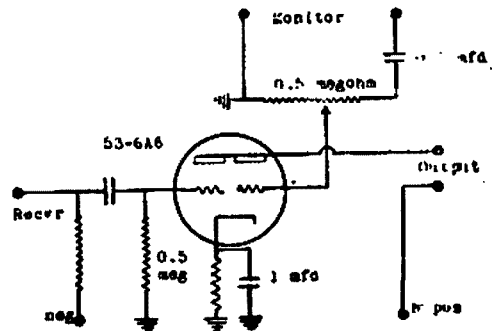
Having examined the "Perfect" Station problem from the antenna and transmitter angles and suggested one solution for each, we now turn to the receiver/monitor section. We have coupled these two together for the obvious reasons that as the transmitted signal must be monitored and provision for break-in operation is essential both units must function smoothly together.

The points that will require most attention in the receiver are Stability, Sensitivity and Selectivity. It has been said that a TRF, the "Super Gainer" and a full Super form the three progressive stages in the design of the station receiver. Whether that statement is correct or not depends first of all on how great are the demands made on the receiver and secondly how much we can afford to spend on it. There is no doubt of this however, that the greater part of the pleasure associated with operating a station is inevitably tied up with the receiver because, whilst an efficient transmitter and antenna will reflect their efficiency in results, there is a tangible, immediate and always present appreciation of a good receiver.

It is our earnest belief that, for city use at any rate, the objective should be towards a Super, if the maximum pleasure from the listening side of ham radio is to be derived. The beauty of it is that we can add stages as time, and more important, finance permits giving progressive advances towards the ultimate design. Two factors are essential to successfully carry out this idea, firstly to carefully plan the finished design at the start, so that the addition of a stage does not require the moving of any existing components and secondly to have the strength of purpose to stick to that design, because it is so easy to be lead down the "byways" by

introducing trick features not suitable for the general design.

It is not within the scope of this series of articles to describe any particular receiver but we suggest, in designing the station receiver, to build an outfit, in stages if necessary, whose ultimate form will give the maximum possible sensitivity, stability and selectivity required for the particular station and location. In our own case the receiver valve line-up is 58 RF., 57 1st Det., 58 HF Osc., 58's 1st & 2nd I.F.'s 57 2nd Det., 58 Beat Osc., 53 Audio and Monitor input, 2A5



penthode output, plus a crystal filter. This outfit fulfills every demand we make and truly fills the position ideally as the Station receiver.

There are a few points worthy of mention regarding the manner in which its design fits in with the requirements of the station as a whole. No provision is made for Band switching because of the complications introduced by endeavoring to switch four sets of coils, to say nothing of the bulkiness of such a coil assembly. The use of plug in coils does not impair our rapid band change requirement in the least. In a contest, which is the only time that seconds are at a premium in the matter of band changing, the flip of the transmitter switch throws it to the desired band and whilst we are calling CQ we have ample time to change coils with the other hand. The monitor signal is available all the time, as will be explained, and as the coil change

takes on the average 16 seconds and the "5 times 3" CQ call about 65 seconds all is in readiness when the call is concluded. It is considered bad practice to call on a band without first listening there, but it is good to know that this method is available if it is ever required.

A worthwhile aid to this procedure is to adjust the four sets of coils so that the bands will fall within the compass of the main tuning dial at the same dial readings of the Band Setting condensers. Thus the only action necessary when the coils for a different band are plugged in is to "trim" the RF control and tune in the normal way.

As no switch is touched on the transmitter while operating on any one band it is desirable to obviate the use of any switch from receiver to monitor. Break-in demands this also. Naturally then either the receiver audio channel must be used or else "split" phones or a combination of phones and speaker. The following method is the best we have tried as there is no switch to be handled, no de-tuning effect on the receiver and the monitor signal level can be adjusted to that of the incoming signal if desired. The monitor has its output fed through a 500,000 ohm variable resistor to one grid of a 53 twin triode. The receiver output from the 2nd Detector plate is fed to the other grid and the two 53 plates, joined go to the 2A5 penthode output valve.

This monitor combines the purpose of Frequency meter also and is a replica of the one described in the Handbook using a 24A Electron Coupled Oscillator feeding a 27. Admittedly it is not a precision instrument but then it is not intended for that purpose any more than the RF thermocouples in the antenna circuit of the transmitter are intended to tell the power radiated. It is completely adequate for normal station requirements and in any case as we have yet to discover a "precision" dial at a price within reach of a normal pocket, it seems a trifle futile to build what would be intended as a super-accurate meter and put on it a dial that can only be read to, say a quarter of a division.

Recapitulating we can say that each of the sections that make up the complete station has been designed in relation each to the others in the endeavor to make the whole a smoothly functioning unit. A card above the receiver gives the logged dial readings for each crystal in the transmitter and also the receiver tuning dial is calibrated for each band.

No switches need be touched while the station is on the air, break-in is smooth, band change is efficient, monitoring is automatic, in short we are able to obtain the greatest pleasure possible through the convenience of merely having to key and listen during a QSO.

A little careful consideration of the points we have discussed in these articles will be found well worth while and whilst the solution to each must be arrived at with due regard to the personal needs of the individual operator, the results will repay the time, yes and the money, spent on what will be regarded as the permanent station equipment.

TRANSMISSION SCHEDULES.

AUGUST, 1937.

VK2ME, SYDNEY.

Sydney Time	Sundays.	G.M.T.
3 p.m.—5 p.m.		0500—0700
7.30 p.m.—11.30 p.m.		0930—1330
	Mondays.	
1.30 a.m.—3.30 a.m.		1530—1730

VK3ME, Melbourne

Melbourne Time	Nightly Monday to Saturday (inclusive)	G.M.T.
7 p.m.—10 p.m.		0900—1200

VK6ME, PERTH.

Perth Time	Nightly Monday to Saturday (inclusive)	G.M.T.
7 p.m.—9 p.m.		1100—1300

Wavelength 31.28 metres (9590 Kc/s.)

Multiple Unit Antenna

Some Thoughts on Dimensions.

by E. H. Cox, VK2GU.

Casual conversations over the last few months with a number of people who claim only moderate success with multiple element antennas seem to indicate that the process of determining the dimensions of the units in such radiating systems is still not so clearly understood as it should be if their potential performance is to be fully realised. The following notes are intended, accordingly, to recapitulate the principles involved in determining the length of radiating units in antennas employing more than one simple dipole.

Not so long ago, it was possible to do oneself fair credit at the exam for the AOPC by asserting that the ordinary dipole dimensions were made a little short of the physical half wave length to compensate for "proximity effects"—the loading of capacity to earth, capacity to masts, guys, halyards and other adjacent objects upon the antenna wire, and also, for the fact that the velocity of a wave upon a wire appeared to be a little less than the velocity in free space. The correction factor K, quoted in the Handbook and elsewhere, and varying between about .96 and .94 up the amateur spectrum provides an admirably accurate method of determining the length of wire to be used when the antenna is to be a half wave radiator. But the fact has recently emerged that the picture is not quite so simple as this summary makes it appear. If the half wave wire has no ends, it is in fact, not forshortened for resonance by the amount which the factor K demands, but it actually remains a physical half wave long. The forshortening effect, then is intimately associated with the ends of the antenna, and it is coming to be given the name "end effect" which appears to be considerably more appropriate than the more familiar term "proximity effect."

A dipole "without ends" is very common in amateur practice. A 40

metre dipole operated on its second harmonic is equivalent to two dipoles being operated 180 deg out of phase on 20 metres. But in it, there are only two ends for the two dipoles instead of the four they should ordinarily have. Thus the antenna virtually contains one dipole without physical ends. Suppose now that on 40 metres, the antenna has been cut precisely to the frequency of a crystal on exactly 7,000 KC. The antenna length will be less than half a wave long by almost exactly 3 ft 6 ins. and its length will be about 66 ft 9 ins. Bearing in mind the real significance of the end effect, it is obvious that for resonance at the second harmonic of the same crystal, the antenna would require to have a length equal to 95 per of a half wave for that half wave which has ends, plus a physical half wave for the dipole without ends. The necessary length for resonance with the second harmonic of the crystal according to this reckoning comes out at about 68 ft. 6ins. Our antenna, then is about 21 inches too short to hit resonance with the crystal on its second harmonic. Using a 40 metre zepp fed wire on its second harmonic, this error, perhaps, would not be very serious, but it cannot be disregarded even in a simple system like this if a higher harmonic than the second is chosen. For instance, a wire cut to resonate on 3.5 Mc would be about five feet too short to strike resonance with the fourth harmonic of the 3.5 Mc crystal. Twenty metre operation on a 3.5 Mc antenna is not uncommon, and the fact is accordingly worth remembering if the feeders refuse to balance properly when working them at the fourth harmonic of the crystal frequency for which the antenna was cut.

To clear the air, let us point out that from what has already been stated, the following formula for determining the length of an antenna

to be operated at harmonics of its fundamental frequency can easily be deduced.

$$\text{Lgth in ft} = \frac{(N-1 + K) \times 492}{F} \quad (1)$$

where N is the number of half waves on the wire, K the end effect correction factor for the frequency used, and F the frequency of resonance in megacycles K is .96 for frequencies lower than 3 Mc .95 for frequencies between 3 and 30 mc, and .94 for frequencies above 30 mc. Rough justice will usually be done if the mean value for K (namely .95) is taken as a working basis for all bands and antenna lengths can be calculated with tolerable error by simplifying the formula accordingly to

$$L = \frac{(N-.5) \times 492}{F} \quad (2)$$

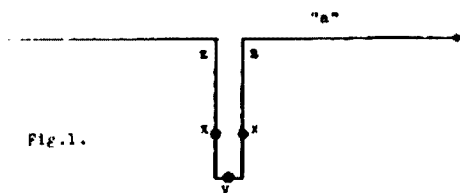
The fortunate soul who has the space to put up a V beam five wave lengths on a side will quickly appreciate the formula. If designed for 14 mc exactly the length per side would work out at 348 ft, but if calculated on the assumption, so often made, the every half wave should be shortened to compensate for proximity effects, the length would appear to be only about 334 ft. And, in the latter case, the builder would probably wonder why the apex of the beam insisted on harbouring a voltage node, when a loop was expected.

So few of us have broad acres at our command that the case just cited may be regarded as a little remote. Nevertheless, the effect is equally important in the case of the ever more popular arrangements of phased dipoles, such as the two half waves in phase, end to end, and the even more effective "H" array of four half waves in phase. This is particularly so when a matched impedance line is used to feed the system. When Zepp feed is used, approximate resonance can be achieved even when the antenna elements are considerably off resonance by balancing errors on the line tuner and the Zepp system has so many losses in any case, that the extra loss duo to forced resonance is not greatly noticed. But if the system is fed by a matched impedance line it will in no circumstances

draw power properly if more than a very small amount off true resonance and even then the line becomes an enthusiastic partner in the business of radiating power.

Consider first the case of two half waves in phase, joined by an impedance matching and phasing stub and intended as a broadside radiator.

(Fig 1). Here virtually, we have a single wire operated at its third harmonic—three half wave antennas with only two ends between them. The length can readily be calculated by the formula (2) shown above and it will be accurate. The only difficulty then to be faced is the determination of the length of wire in each of the two radiators a, a, and the length of wire to be reserved for inclusion in the stub (b) In this simple case, nothing practical would be lost by dividing the wire equally between the three sections. In more complex arrays of the same type, such as the H array of four phased dipoles,



the same rule of thumb can hardly be followed safely, because of the need for accurately phasing spaced sets of wires. A modification of the above formula is therefor useful to meet such cases. It can readily be evolved by assuming that if a dipole with two open ends is reduced by end effects by an amount equal to .05 of a physical half wave, a dipole with only one open end will be reduced in length by .025 of a physical half wave—that is that it will be 97.5 per cent of a half wave long. In fact, the principle of reducing antenna length by 2.5 per cent of a half wave for every end on the antenna provides merely another way of writing the second formula given above.

Applying this principle to the two half waves in phase, the formula for determining the length of each of the Radiators a, a, in fig.1 becomes.

$$L = \frac{.975 \times 492}{F} \quad (3)$$

And, since the wire forming the stub has no ends at all, its total length, including that of the cross bar at the bottom of the stub is equal to a full half wave at the frequency used and is determined by the formula:

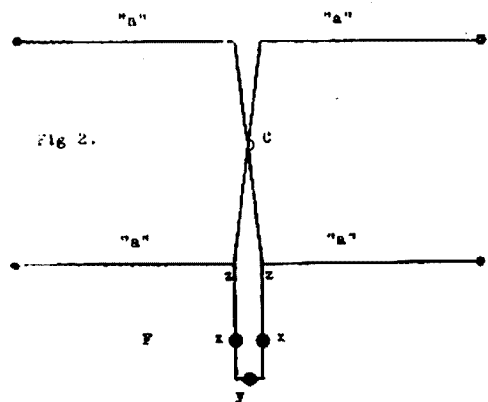
$$L = \frac{492}{F} \quad (4)$$

The employment of these two formula for determining the dimensions of the antenna of Fig 1 involves two calculations in place of the one in equation (2) but it has the merit of avoiding any ambiguity regarding the points at which the wire should be folded to form the stub. In the building of the antenna of Fig. 2, equations (3) + (4) are of much greater value. Here the important dimensions are the lengths of each of the four radiators a, the length of the matching stub (b) and the length of each of the two wires in the combined phasing and transmission system c joining the upper to the lower elements.

The "H" array has four open ends, and the length of each of the elements a is accordingly calculated by solving equation (3) for the frequency to be used. The matching stub B has no end effects to be compensated for, and the total length of wire required is accordingly given by equation (4). Similarly, each of the wires in c is a dipole without ends, and the length of each wire forming c will be a full half wave as determined by (4). It is to be noted that the total length of wire in b is only a half wave—that is b will hang one quarter of a wave below the bottom dipoles, while the total length of c, or the length of each of the wires forming that section, is a full half wave. In addition to ensuring that the antenna will tune accurately to the frequency for which it was intended the use of formulas (3) and (4) for determining the length of the elements will ensure that the two bottom radiators are tapped onto the combined phasing sections b and c at exactly the correct point to maintain the four elements exactly in phase and at the exact centre of the voltage loop at that point.

In both diagrams the points x, x represent the points at which a

two wire transmission line would be tapped to feed the system. It is worth pointing out, in passing that since the stub in Fig 2 feeds into a system having about half the impedance of that fed by the stub in Fig 1, the ratio of zy to xy in figure 1 will be considerably greater than in figure 2, if the impedance of the transmission line is the same in both cases. In other words, to effect a correct impedance match on the stub of Fig. 2, a 600 ohm line would require to be tapped on considerably further from the closed end of the stub than it would in Fig.1. Generally, it will be found that in such a system as fig. 1, the matching point for a 600 ohm line will be between 20 per cent and 25 per cent of the distance up from the closed end of the stub. In fig 2 for the same line, the point of correct impedance match will be between



35 per cent and 40 per cent of the distance up from the bottom, to the ends of the lower pair of antennas.

The use of the formulae outlined has been illustrated in one or two simple cases. In general, one or more of the last three will be invaluable in designing almost any form of antenna using more than one half wave. The only system in current use in amateur communication which at the moment of writing comes to mind as an exception is a rhombic arrangement correctly terminated by a resistor of appropriate value. And the reason that the rhombic is an exception is that it is not a single wavelength or single band antenna. If it is correctly built and correctly terminated, it will work with high efficiency over a frequency ratio of about two to one not merely on one narrow band and its harmonic, but at any intermediate point. Obviously, when dealing with a radiator as accommo-

dating as this it is impossible to apply a formula to determine the length of its sides to the last half inch, because one is very uncertain at what frequency its efficient operation begins, and at what frequency it ends.

The operation of an antenna at harmonics of the frequency for which it was intended is never wholly satisfactory. In some cases, even harmonic operation is quite impracticable. Nevertheless, in the case of simpler antennas, the efficiency of a system operated at a harmonic can be improved by ensuring that the harmonic frequency chosen is a true harmonic of the antenna length used.

It was pointed out earlier that the 40 metre dipole cut for a 7 mc crystal would be too short for resonance with the second harmonic of the crystal. But resonance could clearly be established by choosing a crystal of higher frequency for operation on 20 metres, and the problem of balancing feeders for the higher frequency band would accordingly be simplified. The frequency required for harmonic operation of a given antenna can be calculated by re-writing formula (2) as follows

$$F = \frac{(N - .05) \times 492}{L} \quad (5)$$

In the case cited earlier, L had been worked out for the fundamental of the 7 mc crystal at 66 ft 9 ins. by (5), it is then obvious that the flat top would resonate satisfactorily on the 20 metre band if the original crystal used on 40 metres were replaced by one with a frequency of about 7,185 Kc. followed by an appropriate doubler. It becomes obvious, however, that to apply this principle successfully, the fundamental of the antenna must be fixed very close to the low frequency end of the band, and even then the frequency for most effective harmonic operation will work out fairly close to the high frequency end of the next band.

In conclusion, it is of interest to consider in the light of what has been written, the construction of the familiar end fed zeppelin antenna. Here the whole system of antenna and feeders is resonant, and may be considered as a harmonically excited wire fed at some appropriate point

off centre. The whole system, however has only two free ends, one on the antenna and one on the open feeder. It is general practice to make the "flat top" or radiating portion of such an antenna about 95 per cent of a half wave long—that is, to cut it in accordance with equation (2) above. It seems likely, however, that in these circumstances, the flat top would be cut a little short, and that for real resonance equation (3) should be used. It would then follow that the flat top would be 97.5 per cent of a half wave long. But, extending the same argument, it would also seem that the open feeder should be a little shorter than that joining the end of the antenna. The open feeder in fact would appear to require to be 2.5 per cent of a half wave shorter than the feeder joined to the antenna. Such geometrical unbalance should make for better electrical balance, and it would not tend to increase appreciably radiation from the line, as it is well known that the main part of the power radiated from an antenna seems to be emitted from the area about the current loop. There is practically no radiation near a current node, and since current nodes should exist on the ends of a zepp feeder line, the radiation at this point should be negligible. The writer has not had the opportunity to test in practice this aspect of Zepp antenna construction, nor does he know of its discussion. He would accordingly be interested to learn the experiences of anybody who may make a direct experiment.

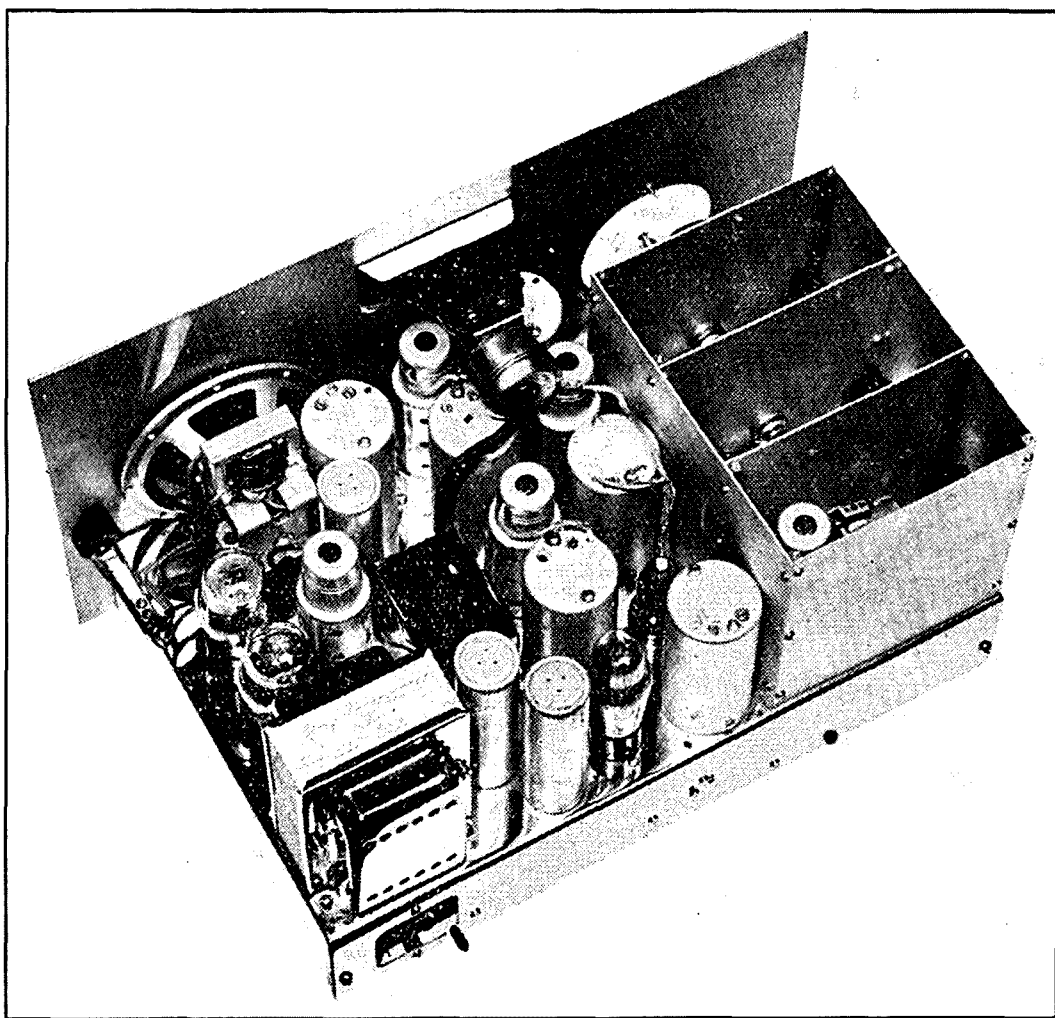
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The 1937 All Band C.W. Test

The Fisk Trophy contest which has been running the last few years, was as you are no doubt aware won outright by VK4 Queensland Division. The discontinuation of this contest would mean the closing of the only Interstate Test, and so under the above name similar in all details. This type of contest will be again held. Certificates will be awarded the winners as under Rule 12.

We would be pleased if you would give the test every support in your division and hope that it will be as well received as last year.

The scoring may be a trifle complicated, so a formula has been arranged which should clear up any misunderstanding.

The grand total score equals:—

(A x B), plus (50C, plus 20D, plus 20E plus 30F plus 100G plus 500H.)

Where A equals number of contacts.

B equals number of States worked.

C equals number of States contacted on 160 MX.

D equals number of States contacted on 80 MX.

E equals number of States contacted on 40 MX.

F equals number of States contacted on 20 MX.

G equals number of States contacted on 10 MX.

H equals number of States contacted on 5 MX.

The above formula will give the score claimed by any station in the contest.

Rules are as follows:—

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 C.W. Test.
2. The Times of the contest are as follows:—from 1400 Eastern Standard Time Saturday, 4th September till 2359 E.S.T. Sunday 5th September, and again

from 1400 E.S.T. Saturday 11th September till 2359 E.S.T. Sunday, 12th September.

3. The test is of a contact nature, and with each contact, a 10-letter cypher must be exchanged before a point is scored.
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.
5. Any station can be contacted once on each band each week-end.
6. States are as follows:—VK2, VK3, VK4, VK5, VK6, VK7, VK8, and 9 combined.
7. Licensed power must not be exceeded and infringements of the P.M.G.'s regulations may mean disqualification.
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.)
9. Bonuses will be added to the score after multiplying (Rule 8). The bonuses are as follows:—
Contacts on 160 MX—50 points for each State worked.
Contacts on 80 MX—20 points for each state worked.
Contacts on 40 MX—20 points for each State worked.
Contacts on 20 MX—30 points for each State worked.
Contacts on 10 MX—100 points for each State worked.
Contacts on 5 MX—500 points for each state worked.

The sum of bonuses plus those points scored as in Rule 8 will constitute the grand total score.

10. The cypher to be exchanged consists of 10 letters. The first

five being chosen by the entrant, and 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. XYZAB—AAAAA.

11. All logs must reach the Federal executive, Box 2127L, G.P.O. Sydney, by the 30th October. 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.
12. Certificates will be awarded to the leading two station in each state and a special certificate to the Australian wide winner.
13. The decision of the Federal Headquarters executive of the W.I.A. will be final and binding in all matters.

Federal and Victorian Q.S.L. Bureau

VK3RJ—QSL Manager.

VK6LY has been elected QSL Manager for VK6 in place of VK6LJ who held the job down for many years.

W2CC well known to VK's is still keeping up his schedules with VK5HG and VK2AP despite changes in QRA. The respective total contacts with these VK stations are 1270 and 220.

By this VK3EO Dave Duff should be enjoying a spell at sea. Dave has preserved his old VK2EO call sign.

The official QSL Bureau for Esthonia is :—E.R.A.U., Box 220.

Tallinn, Esthonia.

Cards are distributed only to licensed stations.

Cards for the undermentioned Victorian Stations are on hand:—AD, AQ, AT, AX, BJ, BL, BV, BX, CA, CM, CU, CS, CW, DJ, DQ, DS, EH, EN, ES, EW, FF, FM, FN, FS, FT, GJ, GO, GP, HB, IL, JE, JN, JR, JS, JV, KP, KY, LN, LI, LT, LY, NB, NI, NT, OI, PA, PH, PN, QX, RE, RD, RL, RM, RT, RW, SB, SA, SG, SE, SI, ST, SV, TB, TD, TG, TZ, UN, VK, XA, XG, XK, XU, XZ, YF, YG, ZB, ZF, ZG, ZO Dinan Webb.

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Electrical Explorers

PART 2

By W. R. Gronow, VK3WG

Aloysius Galvani, the Italian, found that when a charge from two metal plates was connected to a muscle and nerve in a frog's leg, muscular action took place—more anatomy than electricity about that—thus the term galvanism was used, the word "galvanometers," as indicating instruments, was applied in Galvani's honour.

Alessandro Volta, the Italian, went one better. He made up batteries of dissimilar metal plates, as he claimed the muscular action to be the result of current generated between the plates and not in the muscle and nerve action. So a constant source of electricity came into being. The term Volt is rightly applied in his honour. Numerous experimenters applied this constant source of supply for their experiments — chemistry greatly benefited, water being decomposed into oxygen and hydrogen by this means.

Humphry Davy, the Englishman, improved the batteries by his experiments, and among his many discoveries were listed the arc light, iodine, etc.

Hans Oersted, in Copenhagen, about 1805, discovered that a compass needle was moved at right angles to a wire conductor carrying current, and made many investigations of this type of study.

Andre Ampere conducted numerous experiments with wires carrying current, discovered several important laws relating thereto, worked on the needle and wire idea, and left us his name as the unit of current.

Francois Arago and Humphry Davy both found that if current was passed through a coil of wire it would magnetise a bar of iron in its centre—the electro-magnet was born. They also used steel, and so made permanent magnets.

Professor Ohm, of Germany, gave us the law which all electrical

students know is the basis law of electricity, hence the unit of resistance is called an ohm.

Michael Faraday takes the stage at this time, about 1840. You can see how much he had to work on, passed to him by the labours of the pioneers. His strong feature, however, is to be found in the application of the truths as he found them. A knowledge of the difference between electricity and magnetism was now well established, and the various ways of producing electricity were well known. Measuring instruments employing the wire and needle idea gave them the galvanometer, which was later improved by D'Arsonval. But to return to Faraday, poor, uneducated, he became an assistant servant to Sir Humphry Davy, who introduced him to many of the leading experimenters. Faraday was very sincere, and by hard work and study he eventually took his master's place as head of the Royal Society. His discoveries in electricity, as well as chemistry, were notable. He concentrated eventually on electricity following Oersted's discovery about the needle and wire. He developed this idea until he produced a magnet that caused a wire-carrying current to rotate—the electric motor was developed from this revelation. Most of the electrical terms were framed by him, putting the electrical discoveries of his time into precise theory. The law of magnetic induction was his discovery, and so the electric generator was his child. Both the dynamo and magneto added another source of power to the list. He discovered the induction effect in a coil, the transformer, alternating current, the commutator, etc., whilst his thought on atoms and that transmitting medium which we call the ether showed him to be the foremost man of his day.

James Clerk Maxwell, the great Scotch mathematician, about 1870, put the electrical terms and knowledge of these times into mathemati-

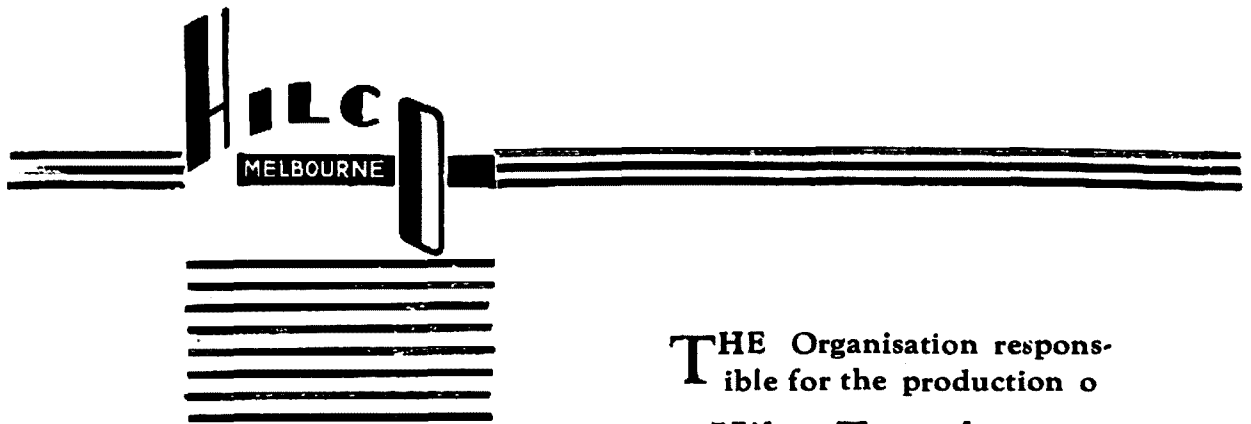
cal form, so that electricity came to be more generally understood as possessing definite laws which could be expressed in a mathematical fashion. He showed mathematically that the velocity of propagation of magnetic action was similar to that of light. Following this fact, wave forms came to be related and understood.

Such names as Lord Kelvin and Heinrich Rudolph Hertz now come on the screen, and Hertz soon startled his contemporaries with his theories. About this time, 1870, Morse had invented his telegraph, and Bell had developed the telephone. Hertz started to demonstrate Maxwell's theories of wave motion practically—about 1886. He found that a wire bent to form a rectangle with a small gap between the ends, when connected to a circuit in which an induction coil was placed, that when a spark occurred on the coil interrupter a spark also appeared at the gap on the rectangle. At last the basic idea of a spark transmitter. He further noticed that this happened when the rectangle was only inductively

coupled to the induction coil. He showed that resonance was the secret of this action between the circuits. What a discovery! Others had nearly hit on the idea.

Henry, Von Bezold, Hughes did not follow their schemes out, or they might have hit on it before him. Hertz, with his resonator circuit, could now generate waves, and by a resonating circuit tune them in and detect their presence at a distance. We are on the verge of communication at last, and Sir Oliver Lodge was only a step behind him. Hertz showed that these ether waves travelled at the same speed as light, and could be reflected, refracted, diffracted and polarized. His experiments were conducted on wave-lengths of 5-6 metres.

Righi and Lebedew went lower still in wave-length to about 1 centimetre. Many other experimenters, such as Cooke and Wheatstone, carried on the search for a communication system by wires, leaving the ether wave idea to be germinated by Marconi.



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James Prescott Joule, in England, was at this time (about 1860) working out theories on the conservation of energy, and his name is kept alive by the electrical unit for quantity—the joule. Herman Helmholtz put his ideas into mathematical form, and established them on a proper basis.

Young and Fresnel meanwhile were opening up the knowledge of light waves and explaining their ideas on the substance of the ether. Light waves were used to transmit messages over distance, but the future still held the opportunity, for which all the previous knowledge had prepared the experimenters, and Marconi, by patient work, clear vision, and persistent effort, succeeded at last in effecting communication with Hertzian waves, that long-sought dream of transmission of thought over long distances.

THE WINDBAG CLUB.

Formed by a number of the 80 meter phone gang with the object of assisting one another to improve

transmissions and at the same time lessen the QRM—the Windbag Club now numbers eleven members—all Eastern Staters so far.

2JC is President and control station, while positions of committeemen are filled by 2KQ, 3EP, and 4GG. The gang are going on spot frequency 3503 KC and should be heard in full blast by the time this note appears. The rules of the club are worthy of emulation.—

1. Abide by the rules and regs. of the P.M.G. Dept.
2. Never knowingly put the rig on air when out of adjustment and if notified take immediate steps to rectify trouble.
3. Put out best quality phone consistent with equipment and finances at your disposal.
4. Be ready at all times to assist either with advice, standing by etc. any fellow member having trouble with his or her rig.
5. Always give a candid report.
6. Never promise to QSL unless you intend to do so.—3WE.

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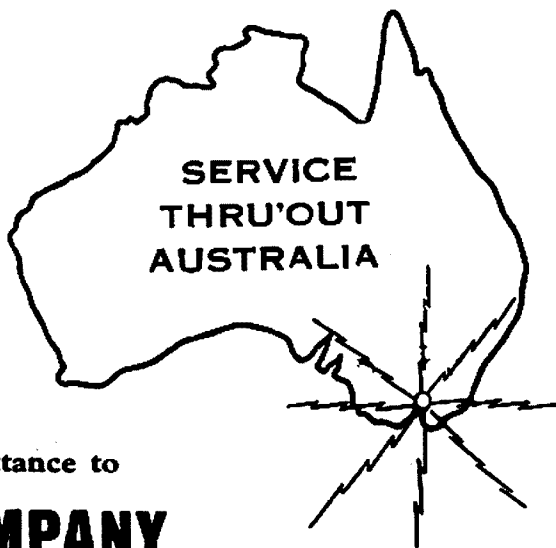
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28 and 56 M.C. Notes

A. Pritchard VK3CP.

Ten Meters! The band has been very changeable these last few weeks—very short skip, giving signals from VK6, ZL, VS and K6 stations r8 for many hours at a time, even past the peak periods—VK2GU's phone is often r7. The Europeans have again faded out, although the day preceding a run of warm weather, usually brings G6DH in round 7 p.m.

VK3BQ heard YR5YN at 2.15 p.m. on the 8th June; this is the earliest time Europeans have been heard in VK. There is quite a lot of activity in the West. At present VK6LW, 6FO, 6SA, 6AA and 6MW are on consistently. VK6LW is using a 2 stage rig, having a 6F6 Electron coupled osc. from 40 mx, and 6L6G doub. to 10 mx. The ant. is unusual 2 half waves phased with a quarter wave section, one of the antenna fed by a single wire matched impedance feeder. 6LG reports many VK harmonics r8 (unfortunately). VK6SA has 7-'46 type tubes in his 6 stage cw rig—80 mx xtal, and PP final; he is experimenting with various beam antenna. We were surprised to hear VS1AA at r8, cw from 6 till 7 p.m. on Sunday 20th June; he qso'd ZE1JU and received 569x—later qso hr at 3CP; 3BQ and 5LJ wkd him the following Sunday. VS1AA has a xtal on 3508KC using Maxda tubes in the exciter and buffer stages, 100 watts to PP 838's in the final. VS2AK also has fine signals and has qso'd 2GU many times, two way phone. Another two stations in Hawaii are consistent, K6LNP and K6iCL in the former and PP T55 in the latter. The best sigs from the States are W6LOY, W6NGJ, W4EEV and W6CKR (r9). The peak period is around mid-day at present. At VK3BQ, Max has been doing some very fine work with a 1 stage 10 mx, 2 stage 5 mx rig. After grinding half a dozen 20 mx xtals and testing them in a tri tet—EL3 or 6L6G—the output was so good that the antenna was hooked on giving r max sigs hr and a 449x contact with 6SA. Adding a 6L6G reg. doub. to 56 mc

gave excellent output with T9x sigs; this makes practical very much simplified xtal control on 5 meters. This tri tet also drove the 801 reg. 5 meter doub. here at 3 CP, giving a resonance dip from 100 to 40 mills at 750 volts on the plate. K6LCV is always r9 but is most difficult to contact due to his antiquated receiver. VK3YP has the four half waves in phase—H type, beam finished and the improvement with both the Tx and Rx is astounding. R9 reports from K6LCV and all over the States being received. ZL4AC is using a 20 mx xtal with a 6C5 tube, 807 doub and RK20 final, 60 watts sup. modulated, and is one of the best N.Z. stations. At present there is more activity there than hr in VK. ZL4GM, 4AO, 3KZ, 1FT and 1JD are on regularly giving many fine contacts. ZL1JD has perfect quality phone and reported a qso with VK2TA as late as 8.30 p.m. on the 25th June. 1JD outfit has a 40 mx rock! and PP Taylor t20's in the final modulated by class AB 45's VK3FL was heard clg. 4GM a few weeks back but was not heard since. ZL2FY has an outfit worthy of notice and is yet another version of 28 mc xtal control—2 '42's osc and doub. 6L6G doub. 10 mx PP 210 with 80 watts input. The mod. has a xtal mike, 3-57's pre-amp PP 45 Class A—210's Class B. From Japan J2CF is the only station which has been heard for several months now, although the harmonics near the low frequency end—XQK, XGP, TDC, JNJ and NPO reach r9 levels. Regarding 56 mc dx! W2JCY is one of the most active stns. and desires us to look out for him. He has a $\frac{1}{4}$ kw input and has contacted all w districts except W5 and 6; he has been hrd by G5BY and our old friend G6DH. Our most consistent 56 mc man 3JO is putting out beautifully steady excellent quality phone. VK2GU is still improving his 5 meter transmitter. Harold is putting in two Eimac 100TH tubes and using the 808's in the Class B mod. Best of luck OM.

Divisional Notes

To ensure insertion all copy must be in the hands of the Editor not later than the 18th of the month preceding publication.

N.S.W. Division

W. G. Ryan, Secretary, VK2TI,
Box 1734 JJ, G.P.O., Sydney.

Country Zone Officers.

Zone 1 (Far West).—J. Perooz,
VK2PE, Hope Street, Bourke.

Zone 2 (North-West).—H. Hutton,
VK2HV, Byron Street, Inverell.

Zone 3 (North Coast).—R. J.
Berry, VK2NY, 54 Bacon Street,
Grafton.

Zone 4 (Hunter River and Coal-
fields).—R. W. Best, VK2TY, 57 Hunter
Street, Newcastle.

Zone 5 (South Coast and South-
West).—R. Ross, VK2IG, 673 David
Street, Albury.

W.I.A. CHARTER.

After negotiations extending over a lengthy period, during which time certain legal difficulties were overcome, the Division has now taken over the original Certificate of Incorporation of the W.I.A. of New South Wales, so that the Divisions full title is now the Wireless Institute of Australia (N.S.W. Division) Incorporated.

This means that we have the full rights and powers of the original W.I.A., being recognised as a properly constituted organisation.

JUNE GENERAL MEETING.

At the general meeting held on June 17th we were privileged to hear a very interesting talk on the subject of "Modulation and its Associated Problems" by Mr. J. G. Reed, VK2JR, the engineer responsible for the design and erection of

the recently completed 60KW broadcast station at Wellington, N.Z.

Mr. Reed's lecture, the subject matter of which is presented elsewhere in this issue, dealt mainly with the problem of overmodulation and methods for its detection. The subject was presented in an entertaining manner, much appreciated by those present, and the information given should prove of great value, especially to the 'phone men.

JULY GENERAL MEETING.

At this meeting Mr. R. Chilton, VK2RC gave an interesting lecture under the title "A Synopsis of Valve Operating Conditions as applied to Performance and Life". He mentioned particularly the phenomenon of "contact potential" particularly as effecting receiving valves designed to operate with low values of grid bias, and also the effects of grid emission in power valves and transmitting valves.

Several of the points mentioned by Mr. Chilton formed the subject for interesting discussion by those present indicating the interest taken in the lecture.

U.H.F. ACTIVITY.

The U.H.F. Section of the Division proposes to hold regular 56 mc. Tests on the last Sunday of each month by doing this it is hoped that something more definite will be achieved in the near future, as only through widespread and continued interest can we hope for success, particularly with regard to DX on this band. The U.H.F. Section notes deal with this more fully.

ZONE 5 NOTES.

VK2IG.

Patchy conditions have maintained on all bands this last month

Amateur Radio

the 40 metres is showing a slight improvement. On 20 Europe easiest to raise during the early P.M.'s with W's heard on 10 most of the day.

20J is rather quiet has new fone going OK after having (he reckons) had every fone ailment possible.

2QE putting in electron coupled 6H6G so also not on much. Talks of going five metres.

2AFD hopes to have rig going about a week on grp.

2EU raising the DX on forty. Also has fone in, es fb reports from the locals. Had trouble in neutralizing the final and found he was over driving it.

2IG on 20 only. New super FB with iron cored var-selectivity IFT installed QSO'd PK6 es 1KZ for new ones. Remodelling xmitter.

All stations here having much trouble from motor qrm and also from commercial giving plane reports on fone and this is helping to keep 'em quiet.

LAKEMBA RADIO CLUB—VK2LR.

B 2DL.

Members of the above club last month conducted experimental transmissions from the Kogarah district on the occasion of the official opening of the trolley bus service in that area. The control station was situated near the official stand, while portable equipment was fitted to cars which moved with the procession. The Mayor of Kogarah, Ald. J. C. Battye, gave his fullest support to the experiments.

A further interesting transmission took place between the Enmore Activity School and the Manly Intermediate High School. The transmitter at Manly was operated by Mr. E. P. Hodgkins (President, Lakemba Club) VK2EH, and that at Manly by Mr. E. Treharne, VK2AFQ. Speeches greetings and messages of a similar nature were exchanged between the two schools, in the presence of the Director of Education, Mr. Ross Thomas.

The transmissions proved very popular with the boys, and efforts to introduce radio to them as a hobby, is to be highly commended. It is understood that the pupils at Enmore school are very enthusiastic regarding radio, as they receive a lot of use-

ful information from their teacher, VK2EH.

Two more of our members sat for the last A.O.P.C. exam, including the Secretary Mr. G. Brown. It is rumoured that a special prize is to be given to the member who constitutes the 50th licensed transmitting member of the club.

WAVERLEY RADIO CLUB.

Several very interesting demonstrations of gear have taken place at the Club meetings recently. On June 22nd, our President, Mr. G. Wells, delivered a lecture on the uses of the cathode ray tube, illustrated by his oscilloscope, which incidentally won a prize at the recent W.I.A. Exhibition. At the next meeting Mr. Wells brought along an audio amplifier and pick-up, and entertained members with some high fidelity reproduction—the boys being particularly intrigued with the speaker cone hopping about half an inch on the 50 cycle notes.

A "frequency run" on 2ABS' Modulator was the feature of the next meeting, and was accomplished by measuring the output with a vacuum tube voltmeter, while a standard frequency record and crystal pick-up were connected to the input. The most surprising result of the test was the amazing output of the pick-up on the low frequencies—as much as 6 volts output was measured at 50 cycles. At the conclusion, a frequency response curve was drawn by Mr. Lusby (VK2WN) and 2ABS was quite elated at the appearance of same. The output wave form was also viewed on the screen of Mr. Wells' oscilloscope and strange but true was an almost perfect sine wave.

More interesting demonstrations are to follow and anyone interested is invited to drop in any Tuesday evening at 8 p.m.

Two of our most enthusiastic members, A. Pearce and G. Patterson sat for their "tickets" on July 13th, but despite unlucky numbers we hope to add two more hams to our collection—good luck boys.

LOCAL CHATTER.

2EG is at present pursuing the Europeans on 14 mc every Sunday afternoon—don't despair, Dev.

2FK has decided to give the foreign listeners a thrill by going back on the air again.

2AFZ looks very pleased, Maybe it's because his rig has quit its antics and is working fb now.

2AFG now makes a big racket around these parts with an AL3 final and two 50 ft sticks. Passers-by take one glance at the impressive array of guy wires and think it is VIS!

2ABS has just built a nice new 9 valve superhet with every modern convenience except hot and cold water laid on, and now can hear every electric motor in Bondi, but not much dx.

2QM has obtained his 1st class ticket—congratulations. Cec.

2FJ is warming his 211s on 14 mc fone these days. He should be closer to W than anybody else in Sydney, because his QRA is right on the edge of the big pond.

Victorian Division

PHONE SECTION by J. Kling 3JB

It was with great regret that during the month of June the passing of one of our fellow members was recorded. His sudden death was felt by all members of the fone section, who honoured him by appropriate announcements followed by a period of silence during all 200 metre transmissions on Sunday, June 13th.

The fone section meeting for June was well attended at the Institute Rooms even though the temperature was nearing freezing point and many of the members were suffering from colds.

After a silent tribute to the late Mr. Ern. Kilborn, the election of office bearer's of the fone section for the next year took place. The respective positions of Chairman, Secretary and Asst. Secretary are now held by W. Sievers (VK3CB) A. L. Johnson (VK3FL) and Mr. Clarke of (VK3RI).

Mr. G. Thompson (VK3TH), who has held the position of Chairman for many years, although nominated for the chair again this year, expressed the desire to relinquish this duty

owing to the pressure of business from other sections of the Institute, it is pleasing however that he has offered to assist during the meetings. Members of the allocations committee for the period are Messrs. Kerley, Hansen and Doyle (VK3CR). Members of the gang were pleased that our friend Mr. Doyle is now able to assist with the allocations committee, and as he is now residing for a while at Long Island Frankston we will no doubt be having some useful reports from him. Apparently the sea air has improved his health and it is hoped he will be able to attend some of the meetings in person in the near future. A special test for New Zealand dxers was held on the first Sunday in July and practically all metropolitan stations were to be heard for an hour during the late night session.

MALLEE AND NORTHERN DISTRICT.

(3ZK—3HX).

Sorry gang that no notes appeared last month, but as they just didn't well? However we hope that it will not occur again.

Conditions in this part of the state have not been at all bright, in fact they have been bad owing possibly to the unsettled weather and the continued unbroken line of frosts, with the advent of a break and some rain conditions should improve. On 20 metres the conditions have been patchy and then very little coming through. On 40 metres skip seems to be prevailing and mostly only interstate stations are coming through. On 80 metres a background of noise has been existing but in spite of that many stations are coming in very well particularly the ZL's 4AT, 2JO, 2BT, 2BE, 2MK and 3IF heard as early as 5 p.m. on this band being the best, Yanks have been lately.

3KR still continues to work W6BKY on 20 metres with wonderful success, and Ken is very pleased with his V beam which he has raised to the top of his 80 ft stick. Ken believes in comfort having installed remote control to the fireside; in fact he almost refuses to leave the fire for the mike when visiting.

3OR is not particularly active since his return home, but makes an ap-

Amateur Radio

pearance occasionally on 80 Murray has been troubled with generator hum but has nearly got rid of it with a couple of condensers.

3TL has been trying to improve his modulation and has succeeded to a certain extent, Treb is not satisfied however and will probably get it going before long.

3CE has been troubled with a new speech amp for some time and in spite of various ideas it refuses to perk in a satisfactory manner Roy has not been very active owing to cropping but as soon as that is finished he will be on 20 mx.

3WN is heard on 80 occasionally with very nice fone, but Jack is not very active.

3HN will make a comeback shortly is in his new shack, but had the misfortune to burn out his 400 v generator.

3NN is not very active but Herb makes an appearance on Sunday morning skeds.

3EP has at long last obtained the YF's permission to install the gear beside the fire, which Ted has with

excellent results. He had to lengthen his feeders to do the job, but he still comes in like a ton of bricks, quality very good except for a slight echo effect.

3TS and 3FF having got their generator working and the rigs chirping are now installing fone on one of the rigs. 3TS Tom took Yankie land by storm and how.

3IH has been active on 80 mx fone plate modulating a 6P6 with good results.

3KI is heard occasionally with r9 fone but the quality?

3BM has been missing where Bruce?

3ZK in spite of rumors to the effect that he is frightened to come on the air makes frequent appearances. Jim is very QRL.

3HX is at the moment stationed on 80 mx and is endeavouring to get some quality from his speech amp. Tom understands that something is due to happen so he is just waiting.

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THE DOINGS OF THE BOYS IN GIPPSLAND.

By 3DG and 3WE.

VK3IL.—Gabo Island Lighthouse on 7 mc with very chirpy sig using MOPA, power supply genemotor power input 5 watts. Boys give Bob a shout if you have a few hours to put in as he has time on his hands down there.

VK3LY.—Ron puts out fb fone on 7 mc when not on duty at local broadcast station, on chiefly of a morning and afternoon until four o'clock, and late at night. Sigs fb and R7 reports from W on fone. Line up something like this 42 Xtal Osc 6L6 doub and pair of 10's in final modulation equipment 57, 56, 42 feeding pair 6B5's in push pull with Heising modulation.

VK3GO.—Has just shifted to new gra and expects to have new ant erected soon a Zepp. At present on 7 mc with TNT using 45es. qrp and is not heard very much.

VK3BR.—Not on air very busy selling radio and has the VK4 Bug biting him hopes to make a trip up there very soon, if unable to, will come back with gro as the AC has now be laid on to the town.

VK3QB.—Just returned from holidays with a load of gear and can be heard on 3.5 mc using a 802 in a tritet xtal rig with a fb T9 note. Jack has worked a couple of ZI's and is getting out nicely.

VK3SS.—Keith has had the misfortune to fracture a couple of xtals tuning up his rig which we believe is at present a 6P6 xtal osc. Has very little time to spare as service work keeps him honest.

VK3DG.—Is at present on 80 mx cw with qrp using a 53 xtal osc and a 6P6 pa wid 3 to 6 watts input. Hopes to have power pack reconstructed soon and is going to try fone.

VK3DI.—On 80 mx fone with suppressor grid modulation es qrp Hopes to give 28 mc a try later when he gets recr to work satisfactory down there.

3PR.—Still on QRP phone with sup mod. 6P6 and vibrator power supply and still hoping for AC power supply. Nevertheless puts phone into ZL with 5 watts or less.

3WE.—Well listen on 40, 80, or 234 at due hours and the "Old Man

of the Mountains" is sure to be there Even when Omeo temperature hits 14 deg. there's nothing frostbitten about Bills sig.

Strays.—3ZK otherwise "Stripey James" was on a Pub. Address Job recently when a snappy YL passed Jimmy turned round, tripped over the amplifier and wrecked it, besides barking his shins and skinning his nose.

Noted that a certain station on the Avoca, who wailed about duplex last year, now works little else—accompanied by Sunday feedbackers and extraneous noises—what say Tommy?

Queensland Division

Results of Five Metre Tests Communication Established Between Brisbane and Toowoomba.

On account of the fact that no news has come to hand from the Southern States or New Zealand it is perhaps a little early to judge the final results of the field day held by the Wireless Institute of Australia Divisions on Sunday, 27th June. At this writing we are, however, forced to the conclusion that as a result of the Field Day Queensland amateurs are now more five metre minded than ever before.

All told the day was a great success. Much interesting data was collected and the effectiveness of height in ultra high frequency propagation was amply demonstrated.

The most outstanding performance went to 4HR, stationed at Mt. Gravatt, and 4CG, Toowoomba, who maintained excellent voice communication across the intervening distance of approximately 70 miles for well over an hour. This communication represents a land station record for five metre stations in Queensland and looks like standing for some time.

4HR's log reads as follows: 801 in a split hartley circuit; 6 volts on filament and 230 on plate. A 42 used as modulator with P.M.G. mike. Receiver of the self-quenched type using 76 and 42. A vertical half-wave copper rod proved the best among many aerials tried for transmission. 50 feet of wire 15 feet high served for reception. 4WI on the

Amateur Radio

motor vessel "Mirimar" was held all the way across Moreton Bay until it berthed at Amity Point. 4LX, 4RY and 4AW were all QSO'd at good strength. 4CG, Toowoomba was worked and held for about 1½ hours, the signal strength of the Toowoomba station being around R6 to 7. A harmonic from commercial station FZN was heard and a weak station playing gramophone records which was thought to be 4CU of Clifton.

Other field stations participating included 4WI, Amity Point, 4RY, Mt. Cootha, and 4WT, Mt. Nebo. 4LX, 4AW and 4AP operated from their home QRA's.

Another Field Day will no doubt be held on the first Sunday in August and by the time these notes appear in print country members interested in 'five' will have received full details of the arrangements.

PERSONAL ITEMS.

The first xtal controlled 3 way contact on "five" was effected recently by 4AW, 4RY and 4AP.

Congrats to 4RY for winning the Division's Cup for the best all round station in Queensland.

4HR is busy rebuilding his five metre gear. "Tibby" must think his five metre record wants extending.

4UR is waiting for 4JX to finish his ten tube super. Have patience O.M. It will make a nice Xmas Box.

4PR has divorced radio and gone in for motor cycling.

4GK and 4YL are pretty quiet these days.

4RF, 4SD and 4EL are about the most consistent DX chasers at the moment.

4LX wants to know the best method of feeding a Bruce antenna Can any one oblige.

4AP finds more interest in the speedometer and revolution counter of a Riley 9 than in radio dials just at present.

4OL must be in hiding. Haven't seen or heard of him for weeks.

4FB and 4GU still find time to play a bright record or two on Sundays.

4JX and 4JU our QRO fone men have arranged a secret treaty. Very commendable O.M.'s.

4WT is now an enthusiastic five metre fan. Bet Bill will at least have a high polish on the gear.

4RG is keen on making fone WAC on 14 mc. Think that the African QSO will mean many late nights.

4KH is building his seventh super-het RX. Soon the Club will be holding a guessing competition to see how many supers the "old commercialop" has built.

Tasmanian Division

The usual monthly meeting was held in the Y.M.C.A. Rooms, Liverpool Street, Hobart on July 1st and the attendance was rather poor, due no doubt to the very cold night, one is rather tempted to remain indoors when the weather is unpleasant. The Lecture was delivered by Mr. H. Moorhouse VK7HM and his subject was "Transmitter Construction." Did some one say a fire in the room would be appreciated? I hope the Council will take heed and not let us freeze next meeting night.

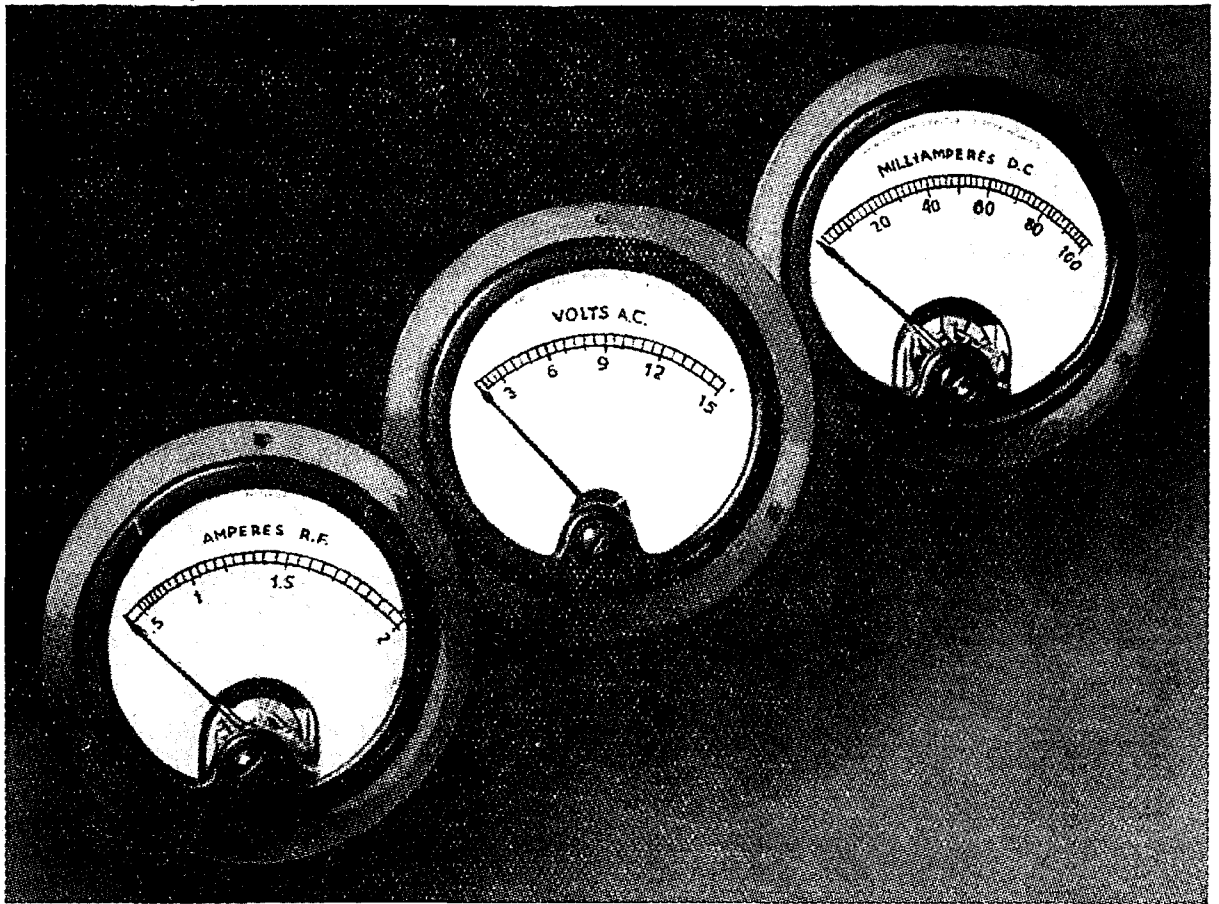
The Fisk Trophy, 80 metre phone, VK-ZL and not forgetting the National Field Day are causing the active hams in VK7 to sit up and take notice, we expect to muster a large team this year, so look out. Arrangements are now being finalised for the Southern Members and Northern Members to try and place VK7 first if possible.

We welcome to the Institute the following new members, VK7LC (Lloyd Chappell) of Ross, in the short time he has been on the air he has worked nearly all continents VK7WJ (J. Lithgow) Tarraleah, we have not heard from him over the air, very busy getting ready VK7's great hydro electric scheme. VK7HY (Henry Yeates) Launceston Henry was very pleased with his visit to VIH and will be sure to be at the next Annual Dinner, and finally Bruce H. Brown of Launceston Bruce has not yet had his call sign allotted, but we hope he will be on the air very shortly.

We are making an appeal to all non members to join the Institute there are several still outside the fold, the cost is small and the benefits are many, write to the Divisional Secretary for particulars. Members should help to get new members, help us to help you, join the Institute.

(Continued on Page 28)

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R.A.A.F. Wireless Reserve Notes

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District Commanders—

Second District, N.S.W.—A. G. Henry, Clareville Avenue, Sandringham (VK2ZK).

Third District, Victoria—Pilot Officer V. E. Marshall, 3 Myrtle Avenue, Kew (VK3UK).

Fourth District, Queensland—A. E. Walz, Sandgate Road, Nundah (VK4AW).

Fifth District, South Australia—F. M. Gray, 52 Ormond Grove, Toorak Gardens (VK5SU).

Sixth District, West Australia—J. Mead, 111 Gerrard St., East Victoria Park, W.A. (VK6LJ)

Seventh District, Tasmania—R. Cannon, Goldie Street, Wynyard (VK7RC).

RESERVE NOTES.—3rd District. VK3UK—3ZI.

Conditions, whilst much better than they have been, still remain patchy on 3.5 mc. In particular the signals from the Western District boys nearly always are subject to bad fading. 3B5 has a fade out from R6/7 every three or four seconds on most Sundays but strangely enough 3C4 who used to invariably be weak and fade badly here, now puts in a steady R6 signal. Possibly his alterations to antenna and gear are partly responsible.

3B5 and 3B2 ran a 56mc test early in the month with the latter operating from home and the former with his 56mc super het cruising around in the car. Signals were a good R6 at ten miles even with a few big hills in the way so they have plenty of encouragement to continue the good work. 3D4 is active on 56mc and 3D6 is altering the 56mc gear preparatory to carrying on further experimental work on the band.

3D3 is still having trouble with his power supply equipment. The wind driven charger has been unable to do its stuff this month as there has been an almost total absence of the necessary wind. As a result his batteries are fiat. He has hopes of the connection of AC shortly and his troubles from a recharging point of view will be no more.

3C4 hopes to be down in the city shortly and we hope he will have more time available for radio than usual. Most of the country men have so many things to attend to on their

all too brief trips to the city that the time available for radio is usually very small.

3C3 and 3F9 are very quiet at present but we suppose that they are busy getting their 56 mc gear ready for the forthcoming tests with Melbourne.

3A1 is still away from the city as much as ever.

3A4 has resigned from active work for twelve months as he will shortly be leaving for England for an extended stay. We wish him the best of luck and hope we may be able to QSO from one of the G's sometime.

3A2 has also been forced to resign owing to the pressure of exams and he also may be leaving VMC soon. Geoff has been one of the best Section Leaders we have ever had and he will be greatly missed from that position. We all wish him the best of luck with those exams.

3WD at Ballarat is a new member we wish to welcome to the fold. He is at 3BA with 3AL who was one of our enthusiastic old timers. If he can follow in the latter's footsteps he will indeed be an acquisition to VMC. It is with the greatest regret that we learned of the death of 3B2's Mother and we extend to Neil on behalf of all members our deepest sympathy.

Sixth District.

The consideration for the army station G71 has been brought up once again and the matter may be brought to a head in the near future. 6A6 has resumed watch attendance

once again after settling down in business in South Perth. 6B1 has erected a new 80 foot lattice mast and complains of much DX! 6A5, one of the most reliable stations still appears on the band for each watch. 6A1 will be on watch without the signal manual but will be more or less OK for one from 6Z1 who will be shifting in a week or two to a new qra (we believe that it is known as DX valley-1A1!) Otherwise VMF District is awaiting new members stationery from Air Board. 6BI is now stationed on B/C work at 6BM.

7LJ still entertains BCL's on 200 metres, has a sked with 3CN every Friday night, University and the new second operator taking all his time.

7JH still at Waddamana, they say it is cold up there Jack, 20 degree's below freezing point.

7PA on the move so will not hear his Sunday transmissions for a month or so, the BCL's will miss you Peter.

7AH the Grand Old Man of Radio is back once again with us and every member is very pleased to see you Pop after your illness, may you be spared many more years with us.

7MM we are pleased to know Mr. Masters is again active on the air, has a sked with 3CN every week.

7BQ one of the early experimenters in VK7 is always to be found on Sundays entertaining BCL's his record library is the envy of all hams.

7JB Buck find the ham game has not enough thrills so has taken up footballing, how did you get on in Launceston the other week end Buck, did you play contact at the Hotel?

7AL Tommy Allen (7PA's brother) has just got his license although he got his ticket last year, been second operator at 7PA for a long time.

7AB the 'Stutes representative in Launceston, very busy at present arrangeing a team for the forthcoming contests. Keep up the good work Doug.

7LZ, 7KR, 7RK, 7CJ, 7RY, 7RC, 7AM, 7CL, 7CK, 7HM, 7DH, 7CM and the rest of the gang are not forgotten but space will not permit mention It will be your turn next month. The Magazine Correspondent (7KV) will appreciate any item of interest for inclusion in this column.

(Continued from page 25)

We regret very much to learn of the death of Mr. E. H. Kilborn VK3KE who ably distributed the Magazine, members of this Division offer their sincere sympathy to the family of Mr. Kilborn.

MEMBERS ACTIVITIES.

VK7.

7YL very busy helping Buck (7JB) with the 200 metre transmissions not heard much on CW lately, what about that sked with 7HM. Joy?

7CT suffering with YLittis very bad, when are you coming on the air Terry?

7DW Bunny still waiting to get power supplies big enough to get 25 watts inputt, what happened to that 250 watt job?

7KV still dabbling in 5 metres, getting R max from 7KQ (Gil Miles) at a distance of 100 yards.

7DJ we are anxiously waiting to hear you on the air John, what is the delay.?

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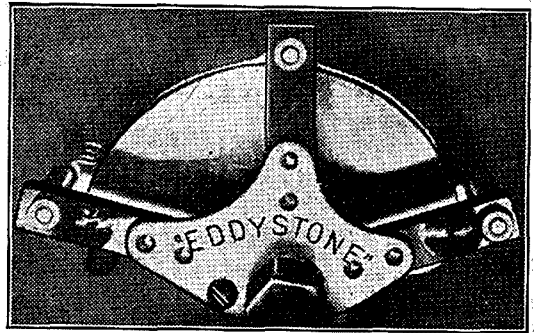
Hamads



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A rather interesting experiment was carried out recently on insulating materials for radio frequencies. The 979 model double spaced transmitting condenser was taken apart and in place of the special insulating strips were inserted two pieces of good quality bakelite; one strip of the original material was left for comparison. A good supply of RF was run through the condenser in a tank circuit and before long frying noises and much smoke were observed. The result may be seen in the photo below. Notice the two outside strips of bakelite and see how they have produced two beautiful blisters when injected with RF. The original Eddystone strip passed the test with flying colors and did not murmur under the strain.

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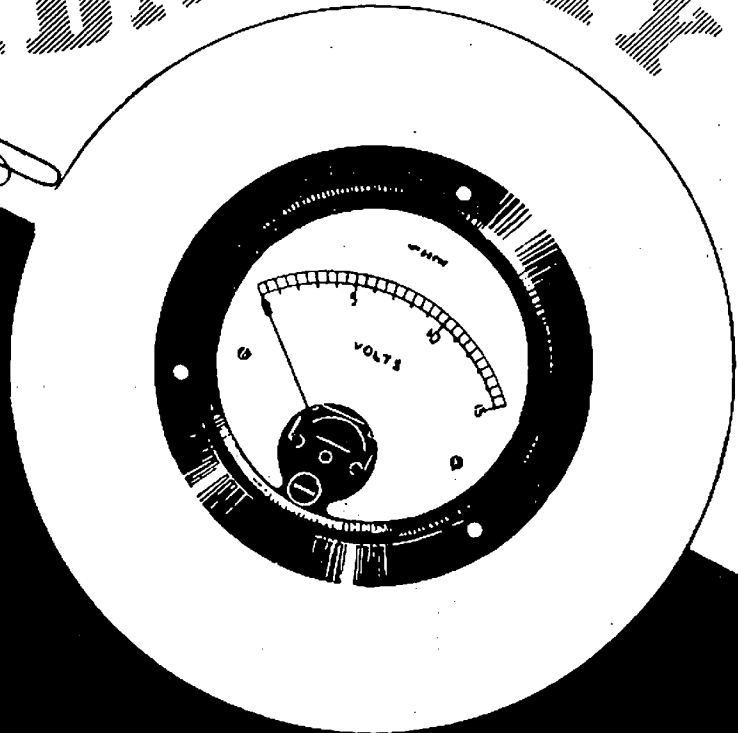
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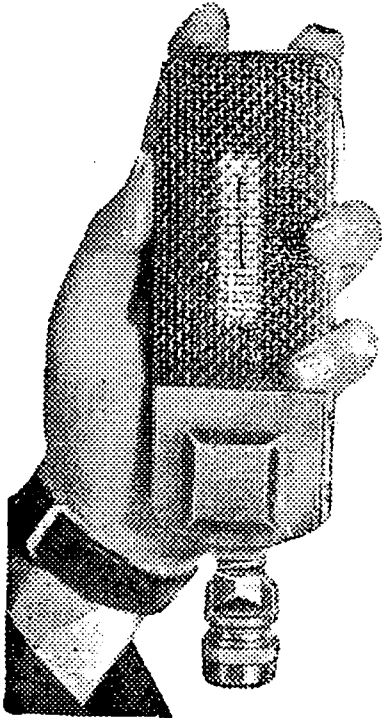
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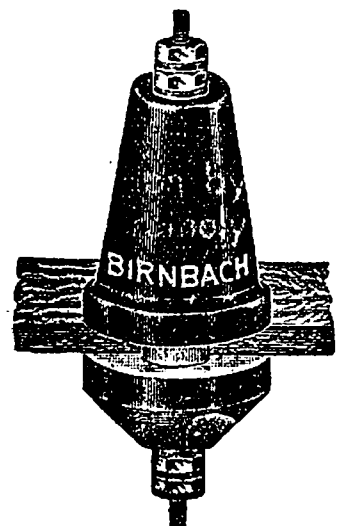


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Vol. 5 No. 9

1st SEPTEMBER, 1937.

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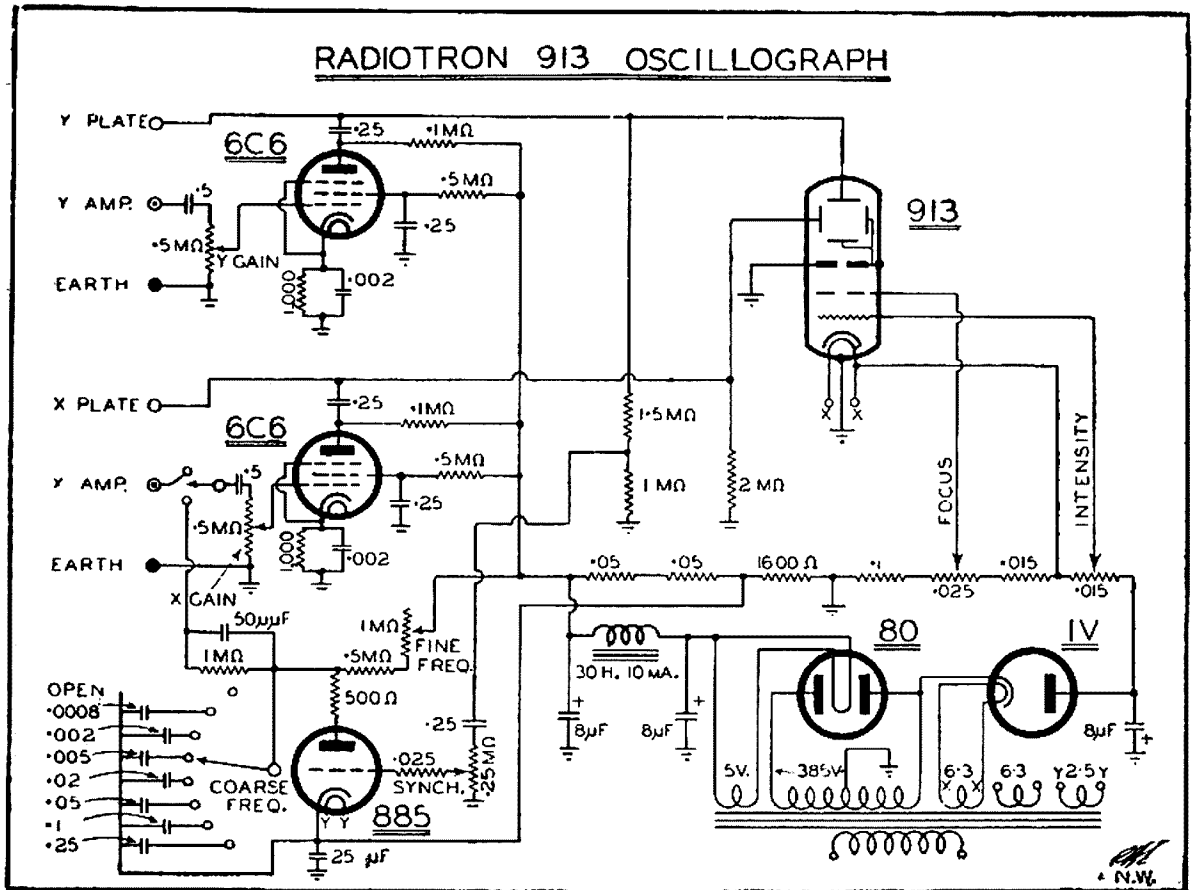
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EDITORIAL

Each month Amateur Radio has tucked away somewhere in its columns the words "Are you a member of the W.I.A.? If not, why not?" One supposes that much of this must fall by the wayside and only a small proportion bear fruit. This is not the fault of A.R. itself for it must be remembered that, as a rule, only members get it direct and the other hams, given to glossing over the wares on bookstall counters, may or may not expend the humble sixpence asked.

It is to the non-member reader, that these words are directed, who, whether he be of the openly vindictive or apathetic type, may possibly say "Why should I join the W.I.A. and get nothing in return for the outlay," forgetting that Amateur Radio itself is the outcome of the Institute's co-operative effort.

Others are of the "lone-wolf" type and are content to make their sole contact with other hams over the air. Meetings bore them, or are inconvenient. Why should they join the W.I.A. Let us face a few facts that to-day stare us hard in the face and deduce therefrom obvious reasons why every licenced Australian Amateur should be a W.I.A. man.

Radio communication has reached a stage where the "man in the street" takes it as a matter of course and ham radio is not the novelty it was several years ago. It is obvious that, unless Amateurs co-operate and prove to the public that organized control is the only method of cleaning up some of the drivel heard from phone stations to-day, their prestige will suffer.

Twelve months ago, new regulations were put into force by the Department with a view to securing

this result. Partial success has been achieved but complete success could have been realised, had every holder of a transmitting licence been a member of the W.I.A. This is no idle boast as the Institute has always stood for co-operative control of the amateur bands, curtailing the activities of the selfish individualist, to the benefit of the majority.

Your moral support is the important thing, not so much your membership fee, but the more financial any organization is, the more it can achieve for its members.

It is certain that the non-members cannot, individually, do anything to improve conditions either on our bands or with the Department whereas a 100% representation of all VK hams would enable us to present a united front to any problem.

Let us make the W.I.A., despite the small number of hams in Australia, second to none as an organization for the betterment of ham radio.

A simultaneous membership drive in all States should do much to achieve this happy result.

Mr. and Mrs. E. Kilborn and daughters wish to thank all Members of the Wireless Institute for their kind expressions of sympathy in their recent sad bereavement in the loss of their son and brother, (late 3KE), especially thanking the Amateurs on the 200 metre broadcast band who showed their sincere respect in observing two minutes' silence during their sessions on Sunday, 20th June.

Will all please accept this as a personal expression of our sincere thanks.

mission line it would probably be difficult to prevent radiation; although by using a concentric tube line having the outer casing connected at ground potential and the inner conductor properly tapped up the coil, such an arrangement could be used very satisfactorily with a single valve tank circuit.

The inductively coupled circuit as shown in 1b used with an open two-wire line would be entirely satisfactory. The centre turn of L2 may be grounded if desired and the line connections equally spaced on either

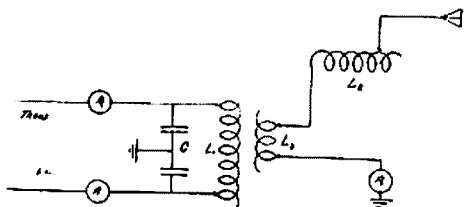


Fig. 1. B

side of the ground connection. In some installations, the grounded centre tap arrangement is most satisfactory, while in others better results can be obtained without it. With L1 and L2 closely coupled, the impedance matching is accomplished in 1b as in 1a by varying the number of turns between line connections. The characteristic line impedance, however, is not a function of frequency although the impedance of the terminal equipment is; so if the operating frequency is changed to any great extent, the terminal coupling must also be changed. Of course

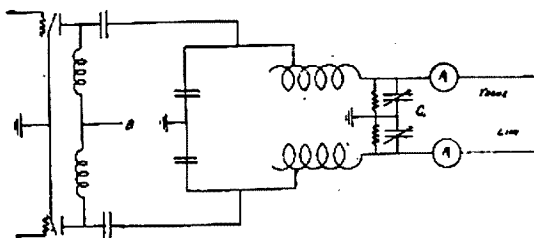


Fig. 2

the maximum power transfer and the minimum of radiation from the line is obtained when the terminal impedance is equal to the line impedance.

There is the disadvantage with inductive coupling however, of accentuating the transfer of harmonic energy with the effective coupling being tighter at the higher frequencies thus tending to counteract the

effect of the impedance mismatch at these frequencies. A capacitive coupled transmission line on the other hand has the advantage of minimizing the transfer of harmonic energy. One such arrangement is shown in Figure 2.

With capacitive coupling it will be observed that the condensers C1 on each side of the ground are made variable usually by having a number of condensers in each bank so that any desired number may be connected in parallel to match the line impedance—of course the amounts between ground and each transmission line wire should be identical. With this method, however, as the frequency is increased the capacity must be decreased and vice versa in order to provide the correct terminal impedance. And with a given capacity, the

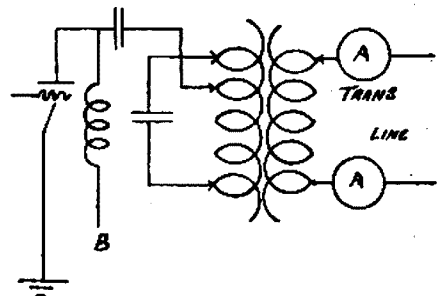


Fig. 3

coupling is weakened as the frequency is increased with a corresponding decrease in the transmission of harmonic energy.

Just as the coupling turn ratio for an inductively coupled transmission line is a function of the two impedances to be matched, so is the required capacity of C1 a similar function of these two impedance, the valve plate to filament impedance and the transmission line impedance. With a given transmission line at a given frequency, if higher impedance valves are used, the capacity on each side of C1 must be increased. A case where this is applicable is in a high powered transmitter where each of the push-pull valves actually consist of two or more in parallel and sometimes it is desirable to operate on reduced power with fewer valves in the final amplifier.

Probably the most common method of terminating a transmission line at the antenna end is by means of a tuned circuit which in turn is inductively coupled to the antenna. Such an arrangement is shown in Figure 3 where the coupling between L1 and L2 must be so adjusted that with the proper value of C1, the transmission line is delivering power into a terminal impedance that matches the line impedance. It must at all times be remembered, however, that the currents in the two transmission lines must be identical to prevent radiation from the line itself.

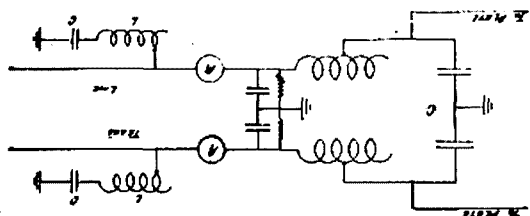


Fig. 4

In tuning the transmitter, transmission line coupling, and antenna system, it is impossible to list a definite set of conditions that must be met in a system as described because of the differences in actual circuits used, operating conditions, and so forth; but in general simultaneous conditions should be obtained although there will be the usual compromises. In the first place, there should be a maximum antenna current with a minimum plate current for satisfactory power output, while at the same time there are equal values of current in the two transmission line wires. Then care must be taken so that distortion is not introduced by poor adjustment of the output circuits of the final power amplifier.

Radiation of harmonic energy sometimes becomes a little troublesome, although as much of this as possible should be eliminated at the transmitter. One method of accomplishing this is shown in Figure 4

which is merely an extension of Fig. 2. The two series circuits LC between each transmission line and ground are each tuned exactly to the second harmonic of the transmitted signal. These circuits, to be effective, however must be of very low loss design at the frequency of the second harmonic when they act as practically dead short circuits to ground, and thus this signal should be almost entirely eliminated from the antenna. Of course, if the third harmonic is troublesome, the circuit LC should be tuned to that frequency. In addition, a very low loss low reactance parallel circuit LC may be placed on each side of the transmission line and tuned to the frequency of the offending harmonic; but to be effective in this case, it should have a large value of capacity and a small value of inductance.

TRANSMISSION SCHEDULES.

September, 1937.

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G.M.T.

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" 7.30 p.m.-11.30 p.m.

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Overmodulation Indicators

VK2JR.

(The following article covers essential features in the lecture delivered by Mr. J. G. Reed, VK2JR at the June meeting of the N.S.W. Division of the Wireless Institute of Australia.)

The advent of very efficient Class "B" modulator equipment has put into the hand of the experimenter a means of fully modulating carrier waves of quite respectable power.

Listening to the "DX" bands leaves little doubt as to the modulation capabilities of the modern transmitter. Over modulation seems the order of the day, and the consequent side-band "monkey chatter" spoils many a choice piece of long distance work.

Under 100 per cent modulation, the current in the modulated amplifier makes excursions between the limits of approximately zero, and twice normal value. Should the modulator stage supply excess power to the modulated amplifier the current in the anode circuit of the latter stage will suffer sudden interruption. This break is akin to that caused by c.w. telegraph keying of the carrier at audio frequency rate. It needs little description for one to realise just how annoying interference can be from a transmitter operating with final stage keying minus a click filter. When this keying is carried out hundreds of times per second as is the equivalent with sustained overmodulation the result is disastrous to adjacent communication channels.

Overmodulation in the positive direction is not so serious as this merely introduces distortion of the fundamental tone which appears as harmonics of the latter. The negative modulation is usually so rapid that the sudden carrier interruption causes the generation of transients with frequency components extending far beyond the normal sidebands associated with speech transmission.

Series modulation offers a satisfactory solution of the "monkey chatter" problem. With this system

wherein the modulator operates as a series resistance to the modulated amplifier, in distinction to the function of an alternating current generator as in the Heising and Class "B" systems, it is impossible to suddenly interrupt the carrier wave. As the modulator grid is made increasingly negative in the series system, the final sloping cutoff of the modulator valve causes a tapering off of the current towards the zero value. It is physically impossible to cause the anode potential on the modulated amplifier to reverse, and cause the sudden interruption characteristic of the previously mentioned methods of modulation. Space is too valuable to go further into the principles of the methods of modulation, but should the reader desire additional information, a QSO with VK2JR any Sunday morning on 7 or 14 mc bands will be gladly worked.

An interesting example of the freedom of series modulated stations from side band "monkey chatter" is available any evening by listening to the New Zealand stations 1YA and 1A, both of which operate on the 5000 kc system. Australian National stations 5CK and 3WV on adjacent channels which operate with Heising modulation are regular "monkey chatter" offenders, particularly during the jazz music sessions. (Hi.)

"Radiotronics" Technical Bulletin No. 77 (A.W.A. Valve Works) gives some interesting information together with suitable valve combinations for series modulation.

As previously mentioned, the cause of side band chatter is the sudden reversal of anode potential to the modulated amplifier. If these short time period impulses can be indicated to the operator it is possible to regulate the depth of average modu-

lation so that overmodulation becomes merely an intermittent and not a chronic phenomena.

The circuit illustrated in Fig 1 outlines the connections for an overmodulation indicator which will faithfully indicate all forms of modulation which tend to turn the anode potential negative.

The essential features are a rectifier valve and a neon or gas discharge lamp. The latter may take the form of the familiar "Osglim" night light or one of the miniature equivalents as employed for station indicators on the Sydney Underground Railway platforms.

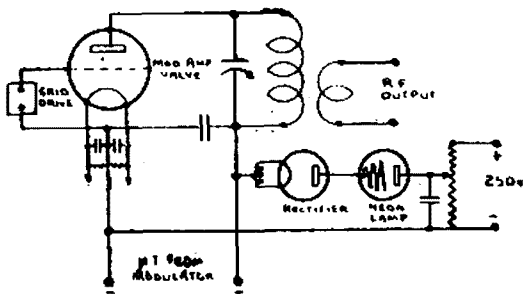


Fig. 1.

It is necessary to provide a winding for the rectifier valve which is insulated to earth for the peak potential of modulation which may be taken as double the steady d.c. value. With medium power and voltage transmitters it is possible to employ the anode current to heat the filament of the rectifier valve if the latter has a filament of the 60 m.a. class or suitable value for the anode current used.

With the filament of the rectifier valve positive there will not be any tendency for electrons to flow through the modulation indicator circuit, but should the filament go negative with respect the anode—which is at ground potential, current will flow through the Osglim lamp causing it to give a flash.

Owing to the fact that the Osglim lamp requires a minimum voltage of approximately 180 volts to cause ionization it is necessary to apply a polarising potential to secure immediate operation, and to avoid a delay until the negative modulation

has built up the desired breakdown potential.

The earth return circuit from the Osglim lamp is taken to the slider of a potentiometer connected across a rectifier capable of generating a minimum of approximately 200 volts.

To set this potentiometer to the correct value, make a temporary connection from the anode of the rectifier valve as indicated in the dotted lines—and increase the potentiometer until the lamp just commences to flash. It will be observed that the lamp will continue to glow until the potential is reduced to approximately 160 volts. Keep the potentiometer at the higher setting and lock it in position. With this adjustment the lamp will flash immediately overmodulation takes place, and with the slight backlash before extinction, the glow will last for sufficient time to give an unmistakable indication to the operator. With a little calculation and meter measurement it is possible to calibrate the scale of the polarising potentiometer permitting it to be set for operation at other values than 100 per cent, such as 80—90 or 120. Too high a value for peak indication is not desirable for obvious reasons. A little practice will enable the operator to judge a suitable average modulation which gives only occasional overmodulation peaks.

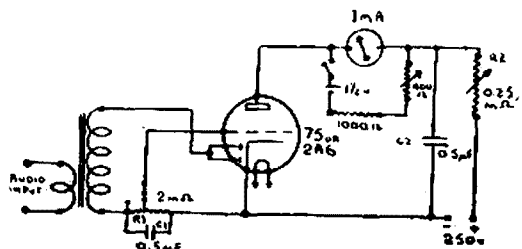


Fig. 2

If this simple indicator is fitted by "DX" specialists there will not be that tendency to try and get across by shouting and consequent serious overmodulation.

Should the foregoing overmodulation indicator appear a little too ambitious for the experimenter not in possession of a suitable transformer for the heating of the special modulation indicator rectifier, it is

possible to make quite a simple percentage modulation indicator which measures the peak instead of the average modulation as in the simple valve voltmeter.

The circuit of this indicator is given in Fig. 2. in which it will be seen that use is made of a diode-triode valve and a milliammeter. The principle is as follows:—

With zero signal the grid of the triode section will be at cathode potential and the anode current will be at a suitably high value. On the arrival of a signal, either of steady or complex tone, the diodes rectify the positive pulses and build up a negative charge on condenser C.1. This charge is communicated to the grid of the triode section which depresses the anode current correspondingly. When the signal ceases the charge leaks off the condenser and the grid of the triode returns to normal. The time constant of the condenser on charge is very short, depending mainly on the resistance of the diodes, but on the discharge period, the time constant is much higher depending on the value of the shunt resistance R.1. With the condenser at 0.5 microfarads and the resistance at 2 megohms, the discharge time constant will be one second which permits the needle of the indicating meter to swing close to the peak value even for very irregular peaks of complex wave forms. A suitable valve is the type 2A6 or equivalent in the 6.3 volt series of glass or metal envelope. At zero grid bias on the triode the anode current, with a series anode resistance of 100,000 ohms from a 250 volt supply, the anode current will be approximately 1.5 milliamperes, while for a resistance of approximately 200,000 ohms from the same source, the current will be approx. 0.9 ma. A peak potential of 3 volts will generate sufficient bias to depress the anode current of the triode section closely to zero.

If the diode-triode peak indicator is connected to a circuit through a transformer either direct or through an amplifying valve it will be possible to measure the peak values of audio tones and speech. Assuming a coup-

ling transformer of 3:1 ratio it is possible to cause the anode current of the triode to drop from approximately one milliampere to near zero with a line voltage of one volt peak corresponding to a signal level of below minus six decibels in a 600 ohm circuit.

Should this range be too sensitive a lower ratio transformer can be used or either a switch fitted to permit the triode grid to be tapped down the resistance R.1. If the latter consists of a 2 megohm unit in series with a 0.25 megohm resistance, approximately one tenth sensitivity will be secured, corresponding to a reduction of 20 decibels or a net value of 14 decibels above zero reference.

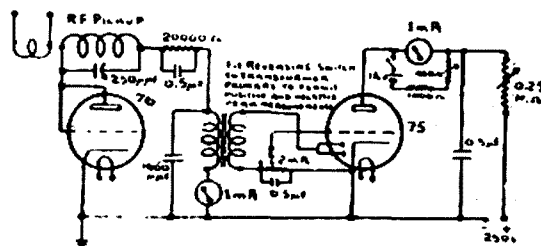


Fig. 3

Inspection of the characteristics of diode triode valves will enable experimenters to modify circuit values to meet special circumstances.

If this form of modulation indicator is to be operated as a monitor to the transmitter, its input transformer should be connected across some section of the sub-modulator having a suitable signal level, and a calibration for 100 per cent modulation conditions made. Once having determined a value on the meter scale for the 100 per cent position, it is possible to mark other values by interpolation or by calibration with a 50 cycle low voltage supply and standard a.c. voltmeter.

Special connections are made for the meter to permit it to read in the normal direction, with the needle at "O" for zero signal, and towards maximum for full signal. A simple balance circuit requiring one small flashlight 1.5v. cell is given in Fig 2. A switch should be fitted to break

(Continued on Page 11)

Break-In Operation

By Roth Jones, VK3BG.

Any system of operation that can lessen the evergrowing problem of QRM on our already crowded bands is a thing to be encouraged. Nothing is worse than to be working a chap and when he starts on a decent "over" when some fone station or chirpy T5 note gets on top and makes most of the dope impossible to copy. We say to ourselves, if only we could stop and tell him to QRX for a few minutes, what a blessing it would be to one and all! Then there is the case of the chap who calls and keeps on calling. What a waste of power and unnecessary QRM. Surely there is some way of getting rid of this problem, lessen the QRM, and make the QSO much more enjoyable. Well there is, and its a pity every chap in VK did not use it. Yes its ye olde Break In. Years ago they tell me (am only a kid myself and can not remember long back) break in operation was used regularly as clockwork for in those days the boys had 50 watt TNT rigs. When the key was up the receiver was on and he could easily be interrupted. But of late it seems that the p.a. is the only stage to keyed. Naturally the oscillator and associated doubler stages are running and if the receiver is switched on it is blocked out. This may not be the same with a good S.S. Super but even then the oscillator is working and will occupy sufficient space to blot a station that is being called. There is only one way out of the problem. The oscillator must be keyed. With high power final stages they will naturally have to be biased to at least cut off. But why have this high power! 50 watts is ample for international communciation and with the advent of the power pentodes such as the 6L6, 6L6g, 807 etc. a pair of these tubes will readily give 50 watts output and require only a few volts bias or it may be got by the cathode system and utilise few of the precious volts. So for cheap and efficient break in operation an excellent rig can be made up with

a small oscillator such as 59 tritet and a pair of the beam power pentodes in the final. Now for a few of the advantages of this system.

Naturally a separate antenna for the receiver is necessary but with any efficient receiver only a small wire is necessary. The insertion of "BK" in short means that you can hear the other chap when your key is up (and it is always up between words) he need only send a few dots and you will immediately stop transmitting and see what is wrong. May be it is QRM he need only send "QRM QRX" and when it is all over an OK enables the QSO to be continued in fine style. Imagine if you have continued your over and you were giving some lengthy dope the QRM came on early in the over. Besides the needless waste of power there is also unnecessary QRM being caused. A further advantage is that of calling a chap using the "BK" method. It might be your misfortune not to clock a called station and your friend a few 100 yards down the street does. But the receiver is on and soon as you hear the station called start up it is no use calling him and you can go off on another CQ.

With a few minor accessories our great system of operation can be made to work a trifle better and we one and all will get a little more "kick" out of our QSO's. Without the assistance of some kind of monitoring equipment we can carry on our QSO's but it is only natural to expect some form of clicks in the receiver no matter how efficient the filter system may be. Personally the writer always likes to have an idea of the keying. The monitor system in use here is an audio oscillator, similar to the one we learnt the code on in the old days. The output of this monitor, if we may call it such, for it is not really a monitor, as it is not monitoring the emitted signal but, for all practical purposes it is as efficient as we need with crystal

control. The oscillator is placed in parallel with the output terminals of the receiver which has a transformer in the output to keep the "juice" out of the fones. When the key is placed down, the oscillator is keyed and the P.A. stage is working. The key also is placed in the lead of one of the phones to the plate on the oscillator and makes the circuit thus registering an audio oscillation in the fones. As soon as the key is up the audio oscillator stops, the transmitter is off the air, and the receiver is operating. The antenna is periodically taken off the receiver and the receiver tuned to one of the overtones and monitored to see if the note is all that can be desired. The writer shortly hopes to build an efficient monitor with reasonable output and place it in parallel with the phones instead of the audio oscillator. What clicks there are are soon drowned in the audio oscillation volume is increased. In conclusion I would urge all operators in Australia who have not already tried this great system to revamp the old rig and, if they do not think biasing high power triode finals warrants the cash, then revamp her up with some of these beam power pentodes and see what a thrill you will get out of break-in QSO's. The QSO is much more intimate, private, and it is just like talking to a chap over the telephone, for you will soon get "broke" if there is anything wrong. Without fear of contradiction, I can honestly say that if break in operation could be used by all those who operate on the 20 and 40 metre bands, especially the former, the QRM, which can be noted especially when the W's are coming through, could be reduced, thus further helping to provide enjoyment for the brasspounders. Little can be said about fone operation. Naturally, break-in can not be used, but with the push to talk process, QRM can be reduced. The writer not being a "fone hound," cannot write about this method, so perhaps one of the "hounds" will.

(Continued from page 9)

the circuit of the dry cell when the level indicator is not in operation.

It is possible to operate this form of indicator in conjunction a radio

frequency carrier indicator. Once this unit has been calibrated it is possible to couple it to any transmitter, and make a rapid analysis of carrier shift, also peak modulation percentage of both positive and negative modulation is possible if the transformer is fitted with a reversing switch. The circuit for this combination instrument is given in Figure 3. together with suitable circuit values. For economy employ one meter in conjunction with a change-over switch for use in carrier or modulation positions.

The tank circuit associated with the r.f. rectifier should be link coupled to the output circuit of the transmitter, and the coupling varied until standard indication on the r.f. carrier rectifier is obtained. A reasonable value of "C" in the monitor tank circuit ensures ample volt-ampere capacity to handle the damping effect of the diode rectifier during modulation peaks.

Having adjusted the instrument for a steady carrier modulation should be applied. If carrier shift is present, it will be indicated by a movement of the meter.

Transferring the meter to the audio section will permit the modulation percentage to be measured, either on the positive or negative side.

While it is not possible to furnish data to permit a direct calibration of the instrument, the following information will serve as a guide to those sufficiently interested to build one of these outfits.

With one milliamperere d.c. through the 20,000 ohm anode resistance in the r.f. diode, 100 per cent modulation will cause an audio frequency voltage of 10 volts peak to be generated across the primary of the coupling transformer T.1. The diode potential in the audio section will be 10 volts with a coupling transformer of 1:1 ratio, and if this is reduced by the potentiometer connection across the leak resistance R.1 to approximately one third of this value, the anode current of the triode section will be depressed to near zero. With the special reversing current from the

(Continued on Page 28)

Sydney Sesquicentenary Celebrations

W.I.A. Officially Recognised.

For the past two years Federal Headquarters of the Institute has been located in Sydney, and this year's Federal Convention was held in Sydney on January 30th, 31st and February 1st.

At that Convention the N.S.W. delegate was successful in having Federal Headquarters retained in Sydney for a further period of two years, and also in having the usual order set aside to enable next year's Convention to be again held in Sydney. This was done in view of the celebrations to be held during 1938 in connection with the 150th Anniversary of the foundation of the colony of N.S.W. and city of Sydney by Governor Phillip. The Institute was desirous of taking an active part in the celebrations and so the other States waived their claims to having the Convention held in their respective cities.

Following on this decision the N.S.W. Division entered into negotiations with the N.S.W. State Government with a view to having the Institute's activities during 1938 officially recognised, and as a result of this it is now learned that next year's Federal Convention has been accepted as one of the Official functions forming part of the programme of celebrations.

This indicates that the Government has an appreciation of the part the radio amateurs and the W.I.A. are playing in forwarding the development of wireless communication by experimenting along lines not ordinarily covered by commercial services. Other aspects are the establishment of a network of stations suitable for emergency work and the training which we receive as operators.

In addition to this recognition of the more formal part of our activities the Government has approved of the 1938 VK-ZL DX Contest, to be held in October 1938, as a means

of creating a world wide interest in the Sesquicentenary of the foundation of the nation. This contest is to be conducted by the N.S.W. Division, permission having been given by Federal Headquarters some time ago, and it is expected that it will arouse an interest never before taken in any such contest. Publicity on an extensive scale will be commenced before the end of this year, with a view to presenting the facts of the contest and of the Sesquicentenary before the amateurs in every country of the world.

To show its appreciation of the value of this Contest in advertising N.S.W. and Australia, and also as a means of promoting international fellowship and good feeling the Government has given the Division a substantial monetary grant. Three special Sesquicentenary medals have also been given in connection with the celebrations.

It is indeed gratifying to find the Government taking such a practical interest in the work of the Institute and our thanks are due to those who have had the foresight thus to help forward our amateur movement.

Further information will be made available as received, and full details will be announced immediately after the conclusion of the 1937 Contest. When this is known let us all start to work and make the VK-ZL Sesquicentenary DX Contest the greatest contest of all time!

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R. E. Jones, VK3RJ, QSL Manager.

Arch Woolnough, VK3BW, having had his appetite for sea voyages whetted by a cruise to Fiji last year leaves on Oct. 18 for a cruise to New Zealand on the "Orion."

Dr. Santangeli of Milan, Italy whose call I1ER has been temporarily suspended reports good reception of VK stations on the 14 mc band. He reports receiving the following stations:—

2 HO, FM, NO, GV, CL, HP, ZF, GM, AE, AEK, AH, TF, QX, LD, XU, XJ.

3 JT, YP, EO, UX, UH, BJ, ZZ, CN, ZJ, HR.

4 RX, GK, EL, WL, ER, HG, EO.
5 HM, WK, FM, 7LZ.

Roth Jones, VK3BG is enthralled by results on 14 mc and is considering abandoning all other bands.

G5TR advises through one of our foremost YL listeners—Miss Buscar Rowe—that any station on 14 mc signing G5TR, is a pirate.

The new QRA of the QSL Bureau for New Zealand is:—QSL Bureau, N.Z.A.R.T. Box 489, Wellington, N.Z.

This Bureau requires the QRA of the following Victorian stations:—

3BE, BN, EA, IX, IV, LV, PZ, RL, SQ, TI, TW, UC, VM, XC, XN, XE, XV, ZE, ZY.

Owen Williams, VK3OU claims his new QRA in Brighton Vic., as the best yet except for 3PH and 3YG.

Dave Duff, VK2EO, VK3EO is gracing the decks of H.M.A.S. Sydney as a P.O. Telegraphist. The Sydney is on an extended cruise.

Norm Buzzacott, VK3TD and ex many VK2 and VK3 call signs is at present hibernating at Lubeck, Vic., where he helps to keep 3DB's offspring 3LK, on the air.

The once strong Laverton contingent has scattered to the four winds and now consists only of 3HT, 3DS, 3TQ, and 3EZ.

A stamp to this bureau, 23 Lendale St., Box Hill, Vic., will secure cards for the following:—

3AT, AP, AQ, BJ, BS, BV, CU, CX, DQ, EN, ES, FK, FT, GA, GM, GP, HE, JN, JR, JV, KG, KP, KT, NG, NI, NT, PH, QB, QJ, RD, SB, SG, SE, ST, TB, TZ, UF, UJ, VB, VM, XD, XE, XU, XN, YS, ZB, ZC, ZF, ZW, ZG, Dyoon Webb.

Cards for the undermentioned "have but a little time to stay." The grim reaper claims all on hand on Sept. 30.:—AD, AX, BL, BX, CM, CS, CW, DJ, FM, FN, FS, GJ, GO, IL, JE, JS, KA, KY, LN, LY, NB, OZ, PA, PN, QX, RE, RL, RW, RQ, UN, VK, XA, XQ, XG, XK, XZ, YF, ZO.

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Telephony Operation

(By T. L. Danks, ZL3BK, Publicity
Officer, N.Z.A.R.T.)

Looking through recent issues of this magazine, I have noted some excellent technical articles dealing with telephony transmitters, but, for some considerable time, no article as appeared dealing with the operation of this type of transmitter. I feel, therefore, that a few remarks upon this matter would not be out of place.

An amateur may have the finest transmitter in the country, but it is of little advantage to him or his fellow amateurs unless he operates it efficiently. I do not profess to be a model of efficiency, for all of us have our faults, but, having been consistently on telephony for some time, I have noted several matters which I consider could be improved to the advantage of all.

The giving of reports on telephony is generally rather poor, and many amateurs obviously either do not understand the QSA-R system of reporting or are too lazy to bother about giving them correctly. Common practice has developed an unofficial interpretation of this system which, being incorrect, is better rectified. The R strengths are generally given reasonably well, but generally, to my way of thinking, too much on the high side, and there is no such report as R "Max," meaning a point above R9. The QSA portion of this reporting system should be the easiest to give, but, for some reason, is the part most abused. QSA5 does not mean 100 per cent. readable only; it means more than that. QSA5, according to one well-known text book, means "perfectly readable," and this definition, whilst correct, rather lends itself to misconstruction on telephony. The correct definition of this report is that the incoming signal is such that, irrespective of what static or interference there is the transmission is syllable—not word—perfect. In other words, not one minute detail is missed. QSA4 means 100 per cent. readable from a

sense point of view, or, expressing it in a different way, QSA4 means that the signal is received so that the listener is able to make complete sense out of all being said to him, even though a syllable or word here and there may be missed through static or interference imposing itself on the signal. QSA3 meaning 50-75 per cent. readable, and QSA2 less than this, are generally given fairly correctly, and so call for no comment. I think the reason why QSA5 and QSA4 are given incorrectly is because on telephony one is more easily able to imagine, or construct, what is being said than when a Morse signal is being received.

Far, far too much time is wasted in the average contact through verbosity in calling, going over to or signing off with, the station, or stations, being worked. How many times do we hear a station calling "CQ" something like this?—"Calling CQ—calling CQ—calling CQ—VK2AA calling CQ," and etc. Why the necessity for the repetition of the word "calling"? A better, quicker, and more efficient way would be simply, "CQ—CQ—CQ—VK2AA calling." When "coming back" to a station after he has called "CQ" all that is necessary is this, "VK2AA—VK2AA—VK2AA—VK2AB calling you," with a suitable number of repetitions. When you "go over" and find you have contacted, waste no time, exchange reports immediately, and then, once both know how these are being received, go on with the contact. Too many amateurs make a practice of making their first over a long one, without first ascertaining how their signals are being received. During the contact, when going over one to the other, make it as brief as possible. "VK2AA—VK2AB over" and "VK2AB—VK2AA back" is really all that is necessary.

In the multi-way contact this becomes even more important. Many and varied are the styles adopted

during this type of contact, but try to avoid needless repetitions. Suppose VK's 2AA, 2AB, 2AC and 2AD are in a multi-way contact, VK2AA is talking, and has to "go over" to VK2AB. "VK2AA working VK2AC—VK2AD and going over to VK2AB" is all that is necessary. By adopting such brief, though efficient, methods, much more time is then available for talk on other matters, and it to the advantage of all. Of course, circumstances vary, and such a brief method would not be applicable where signal strengths are low, but the foregoing may be of some use to those who spend too great a portion of their time in this matter.

"Signing off" is a five or ten minute matter with some stations. There is no necessity, surely, for a long and involved signature, nor is it, I think, the time for a resume—often not brief—of all that has been said. Make it snappy and to the point. Many amateurs often neglect, when signing off first, to add the words, "—and going over to so-and-so to sign off." If you neglect to do this you often cause another amateur who has been waiting to call you after the completion of your contact to call you needlessly, as often one is able to copy but the one station in a contact through interference or the such like on the other station. In a multi-way contact this may be even more annoying to the station waiting to call.

I have often heard a station "sign off" half a dozen times before finally closing down. This is bad operating, and, unless something important makes you "come back" after "signing off," do not put your station on again, but listen around the band and see if any other station is calling you.

When "coming back" to a station, do it quickly. Too many stations have not made provision for this in their construction, and no station need take more than five seconds to "go off" or "come on" unless, of course, generators have to be contented with. The use of "break-in" on telephony is not as general as it might be, and its adoption would help to speed up communication con-

(Continued on Page 28)

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28 and 56 M.C. Notes

A. Pritchard, VK3CP.

Ten meters has shown a decided improvement these last few weeks with all continents once more coming through. VK3HK contacted HK1JB at 11.50 a.m. on the 18th July, and sigs were r5. VS1AA in Penang is an interesting contact round 7 p.m. during the week-ends. G2XC and G6DH are on every evening at the usual time, i.e. 7 p.m. J2IN is r8 at 6 p.m. most evenings, J8CF in Korea T8 r8 at 6.30 p.m. on app. 28400 KC. ZE1JU, ZE1JJ, ZS1C and ZS1H are also on during the week ends from 4.30 to 7 p.m. VK3BQ is receiving r5 with phone to G2XC, showing a marked improvement with the new European beam. Also Max has a 70 deg. angle V Beam on the States with 4 full waves over all, hung from the 80 feet stick and getting identical reports to 3YP. At 3YP Patto is kept busy with around 40 phone qso's each Sat. and Sun. morning, the H type beam putting in r9 signals. The car QRM problem was solved here at 3CP with the potentiometer limiting control on the screen of the 2a5 audio tube (Amateur Radio. 3YP. Nov. 1936) with honestly no weak contacts lost. W6GCX is probably the most outstanding sig from the states; his line up is 6L6G, 40 Mx tri-tet., 801 doub. RK20 buff, PP 150 T's final, 800 watt input.—xtal mike, 57 56, PP 45's grid modulation 4½ waves H type beam. VK3HK is putting in remarkable phone, giving us real 100 per. cent. modulation, tested by his 3 inch screen cathode ray oscilloscope outfit. The line up on 10 mx is, 6a6, 6a6 Jones exciter, RK25 buff, 210's PP class C—mod. has xtal mike, 57, E435, 27, PP 27's class A, 4 2A3's class AB—80 Mx zepp on the 8th harmonic. The best sigs. from the States are W2TP, 3GQL, 4EEV, 5ALK, 6ITH, 6NDC, 7MB, 8DYE (CW), W9EKD. W9LQ has a Collins outfit with a 201 final amp. frequency controlled by the Rubber xtal system. Regarding 56 mc, W5EHM has put up an enviable record, 50 contacts of over 1000 miles each. 600 watts input was used,

although the receiver was only a super regen. On 10 mx his antenna is a V beam with 5½ waves on each leg. VK3BW has completely re-built his 9 tube RX; it is a copy of W6DOB's in May '36 Radio. The HF osc. uses the 4th harmonic on all bands for stability. The super here at 3CP has the HF osc. on 30 mx for 10 mx operation and on 15 mx for 5 mx work. Using this 3rd harmonic output requires the HF osc. gang condenser to be app. twice the size of the rf and det gang condensers, if they are across all the coil turns. W6LBX has excellent sigs. with 15 watts from an RK20 sup. mod. TI2RC in Costa Rica has excellent phone with PP 210's final. G6DH contacted YL2CD on 56 mc receiving r5. The input was 60 watts to an ESW501 with a long lines osc. circuit; the antenna has 8½ waves tapped directly on. VK3CZ has been experimenting with his 10 mx final PP 800's in the Push Push circuit on 56 mc; although no modulation has been used a very good resonance dip is obtained and should give us another xtal controlled rig on 5 when the new super is under way. G5ML is also on each Sunday between 11.00 and 13.00 B ST with phone and cw using 300 watts to a rotating beam ant. G6ZQ is xtal controlled also on 56 mc with 25 watts. In Mexico there is considerable interest on 56 mc; XE1AY, XE1G and XE2N are keeping a constant watch for dx. W3GLV will be testing with a 1000 watts on 56 mc in December he has heard most W districts. If the present good conditions keep up, a one-day WAC should be obtained on 10 mx within the next few weeks.

Notes for August issue from VK5 and Western District sent by radio to VK3MR arrived too late for inclusion owing to 3MR being mistaken about the closing date. Snow is now au fait with the position and September's notes arrived before the 18th.

Divisional Notes

To ensure insertion all copy must be in the hands of the Editor not later than the 18th of the month preceding publication.

N.S.W. Division

W. G. Ryan, Secretary, VK2TI,
Box 1734 JJ, G.P.O., Sydney.

Country Zone Officers.

Zone 1 (Far West).—J. Perooz,
VK2PE, Hope Street, Bourke.

Zone 2 (North-West).—H. Hutton,
VK2HV, Byron Street, Inverell.

Zone 3 (North Coast).—R. J. Berry,
VK2NY, 54 Bacon Street, Grafton.

Zone 4 (Hunter River and Coalfields).—R. W. Best, VK2TY, 57 Hunter Street, Newcastle.

Zone 5 (South Coast and South-West).—R. Ross, VK2IG, 673 David Street, Albury.

The Division has adopted a new system of obtaining station reports whereby each member receives each month a printed report sheet which is to be completed and forwarded to the Zone Officer. It is hoped that this will create a wider interest in reports for this magazine, and it should assist the Zone Officers in the compilation of notes. The result of this innovation should begin to be noticed in our next issue.

At the July meeting of the Division Mr. H. W. Caldecott VK2DA tendered his resignation from the Divisional Council on account of his increased work as Federal Secretary of the W.I.A. Mr. Caldecott's resignation was accepted with regret and appreciation was expressed for the services rendered by him in the past, extending over several years. Mr. J. B. Corbin VK2YC was elected unopposed to the vacancy. Mr. Corbin, who has been N.S.W. QSL Officer for some years, has been an

unfailing supporter of the Institute and has worked very hard in its interests. As QSL officer he is of course popular with all.

Some mention was made in last month's issue of having obtained the original Certificate of Incorporation of the Institute. The negotiations leading up to this were handled by Messrs. Moore, Goyen, Power and Ryan, to whom must go the thanks of the Division for the able way in which they carried out the work. The memorandum and Articles of Association are being discussed at present with a view to altering them where necessary to conform with the needs of the present Division.

Prominent members of the Division who have been taking an active part in the D.A.S.D. contest are VK2DA, 2EL, 2HP, 2JX, 2RA, 2TI, 2VN and 2YC and some good scores are anticipated.

Results are to hand for the 1937 B.E.R.U. Contest, the outstanding participants being as follows:—

Senior Trophy, VK3EG.

First Seven in Australia, VK3EG, 3MR, 2AE, 6LJ, 4YL, 2TI, 4EL.

First Three in N.S.W., VK2AE, 2TI, 2EG.

Junior Trophy, G6RH.

First Seven in Australia, VK3MR, 2XT, 2YC, 6LJ, 4AP, 4GK, 2XL.

First Three in N.S.W., VK2XT, 2YC, 2XL.

U.H.F. interest continues to increase, and the idea of a monthly 56MC test has been received with approval. Our congratulations go to the Queensland Division on its recent highly successful 56MC Field Day.

Amateur Radio

N.S.W. DIVISION U.H.F. SECTION.

Possibly the most important feature of the month's U.H.F. doings was the receipt of a letter by Mr. Knock 2NO from Cecil Mellanby of Pwllheli North Wales who reported hearing a signal on 22nd November, 1936 signing VK2N and the second letter was unreadable.

It is interesting to note that within a quarter of an hour of this time 2NO was using a Reinartz rotary beam pointing approx. NE in communication with 2HL of Chatswood. The receiver used by Mr. Mellanby, who by the way has verification from four American 56 MC stations, uses "two stages of super-regeneration with crystal rectification and quietest push pull audio." Just what is meant by this expression is not quite clear.

At the last meeting of the U.H.F. Section of the Institute, held at the Y.M.C.A. Building on August 5, the regular monthly tests from 11 a.m. until 8.30 p.m. were confirmed, and will continue until further notice. The next of these tests will take place on Sunday the 29th inst., and the schedule to be followed is given herewith. It is hoped that as many stations as practicable will be included in future tests, and notification of their availability to operate on the test periods will be much appreciated when making up schedules.

The last test was held on Sunday, August 25. Sydney stations participating were 2TI, 2NO, 2JU, 2HL, and 2LZ, several other Sydney stations also being on the air. In the country, 2GU, 2DN, 2PN and 2AFB were active, while 2UV was heard and worked in Sydney, from Avalon. Unfortunately, no Newcastle stations were available on this occasion, and only local working was possible.

Following on successful tests made in other countries, the N.S.W. division is inaugurating U.H.F. tests to be held regularly at night, in an endeavour to hear something of country and interstate signals. Each Saturday night, commencing from August 28, N.S.W. stations will be calling and listening for such signals, between 12 midnight and 12.30 a.m.,

and where-ever possible, will be active until 2 a.m. on the Sunday morning. It is hoped that systematic tests of this nature will eventually result in longer contacts, and later, it is hoped that more definite interstate schedules may be arranged.

The week-end of September 25 and 26 has been set aside for special tests with New Zealand stations. The co-operation of the N.Z.A.R.T. has been obtained, and N.S.W. stations are requested to make arrangements which will allow them to participate in these tests, so that we can adequately do our part.

Suggestions regarding these and other tests are cordially invited from any stations interested in 5 mx activities.

It is the intention of the U.H.F. Section to keep a comprehensive record of activities in N.S.W., past, present and future. The work will be in the hands of Messrs. M. H. Meyers, (2VN), J. M. Doyle (2JU), and H. Peterson (2HP), President of the N.S.W. Division. This committee is particularly anxious to gather as many authentic details of early efforts as can be traced. Any amateur who can assist is asked to communicate with any of the above committee.

The N.S.W. Secretary, (W. G. Ryan), has informed the U.H.F. Section that Mr. D. Knock (2NO) has, on behalf of the "Bulletin," made available the old "Australian Radio News" Cup for annual competition among Institute members. It is to be awarded to the individual amateur judged to have contributed most to the advancement of U.H.F. work over a 12 months period. The U.H.F. Section offers its sincere thanks to Mr. Knock, and the "Bulletin", for this splendid offer.

Meetings of the U.H.F. Section are held in the Y.M.C.A. building on the first Thursday of each month at 8 p.m. Every Institute member is welcomed. The next meeting will take place on Thursday, 2nd September, and Mr. Lusby, VK2WN, has kindly consented to deliver a lecture "Automatic Receiving Apparatus." The Lecturer is Final Year Student in Radio Engineering at the Sydney University and an authority upon his subject.

56 MC RECORDS

VK2ZC and
VK2NO lay Newcastle Bogey."
By 2NO.

June 27th, 1937, will be a memorable and historic day in the annals of the N.S.W. Div., of the W.I.A. It was the occasion of a 56 MC Field Day in which several stations co-operated. It was hoped to work direct across water from Port Kembla to Newcastle, but much to everybody's regret, this tie-up did not eventuate. During this day, each station had a definite time-schedule to work to on a test transmission, and the views given here are from the writer's experiences. It was fitting that the writer should have been assisted throughout by Eric Ferguson, Ex VK2BP, famous for his Blue-Mountain-Sydney 5 metre work. Sharp at 11.45 a.m., VK2ZC's ICW signal was logged clear and solid. The signal varied from R6 to R8 plus and when he changed to phone just before completing his schedule, he was as loud as a local station. From 12 noon to 12.15 p.m., VK2NO followed with an ICW transmission. No other station in the schedules than VK2ZC was heard, but two stations, VK2UV and VK2VB were heard at R7 phone. It was assumed that these stations were in Sydney and working locally, but it was later learned that 2UV was at Bulli, and 2VB at Sublime Point! A pity they didn't let us know they were going out with mobile gear. In the early afternoon, Eric and myself scoured the 56MC range of the receiver without hearing anything of VK2ZC. Considering this strange, it was decided to listen on 7MC and see what was doing.

VK2WI at Port Kembla and VK2ZC at Newcastle were heard in QSO checking results and stating that so far only 2NO had been heard there on 56MC. We camped on 2ZC and at last managed to get in on the confab. I told 2ZC that he was OK with me on 56MC and to go ahead. At this stage 2ZC and 2NO worked duplex. 2ZC on 56MC and myself on 7MC. On changing to 56MC at 2NO, two-way contact was at once established. Later, we made a sked for

9 p.m. This was kept and again contact established. In sharp contrast to 2ZC's morning signals, these night-path signals being much reduced. R2 to R6 with a most peculiar form of fading giving a five or ten times a second re-modulation of a single dash. 2ZC had exactly the same effect on my signals. 2ZC worked from a house on my signals. It must be understood that the two stations were not up on any special hilltops. 2ZC worked from a house in the Shepherd's Hill district of Newcastle, elevated it is true, but a normal residential suburb. 2NO worked from the home location in Bronte, Sydney. The climax came during the following week, when a letter was received from VK2DN at Deniliquin to the effect that he logged a 5 metre ICW signal very weakly at 12.5 and 12.11 p.m. on 27/6/37. All he could identify was "De VK" as the signal faded swiftly. It so happened that the bi-directional twin dipole array at 2NO was pointing due SW and NE, being on the Northerly direction for working 2ZC. VK2DN used a three valve super-regen; with an aerial five half-waves in length sloping toward Sydney. The time corresponds to the time when 2NO was the only station on the air on the ICW test period, and is fairly conclusive. The U.H.F. section in Sydney is very bucked, and this two-way work with Newcastle 70 miles away over mountains, and the reception in Deniliquin 360 miles airline from Sydney, are the foundation stones of protracted concentrated effort. We shall be running almost monthly special week-end scheduled transmission tests for zoned country districts before long. It is strange in view of 2DN's reception that nothing was heard of 2GU in Canberra as the beam angle would take in this location reasonably well at the distance. The fascination of 56MC work is that one never knows where signals are likely to re-appear, and mostly they do so in places where nobody happens to be on the job. That is a matter that all really keen experimenters, and that goes for receiving men too, can rectify by proper organisation. The 10 metre band was an unknown quantity until everybody took a genuine interest and 5 metres is now in that trans-

ition stage. The gear used at 2ZC and 2NO is right up-to-date. 2ZC's transmitter uses a long line control P-P 800 oscillator followed by two 800's as the final. Modulation is by a Class AB 6L6G system. The R.F. input is 60 watts. His aerial consists of four dipoles in HH array with reflectors, and fed by a 600 ohm line with matching stub. Receiver is a super regen: with 955 and 76. This was found to be more efficient than a 9 valve superhet. At 2NO the transmitter consists of a three stage MOPA with 6L6 EC oscillator (10 to 5) and RK25 buffer. This exciter drives two 35T's in P-P with up to 100 watts, Class B 46's supply modulation. The array in use on 27/6/37 consisted of the faithful twin-dipole with half-wave spacing, linked by twisted pair, and fed by 600 ohm line at the centre. The system is out of phase giving end-fire directivity. The receiver is the new de-luxe super-regen with 956 acorn TRF stage capacity coupled to a 6K7 EC detector, 76 interruptor, and 41 audio. This receiver takes in 2½, 5, and 10 metres by plug-in coils on WT/22 insulation.

It is better than any superhet yet tried, but a new super is to be built with 956 R.F. stage and 954 detector ganged, and separately controlled 955 oscillator, 5,000 KC IF stages, noise suppressor, BFO etc. Despite the results obtained with the twin dipole array, the writer is convinced of the superiority of a correctly adjusted Bruce array with four half-waves. If a reflector could be conveniently placed behind such a Bruce, and the whole arranged for rotation, it would be about the ideal. Ideas of using a bamboo frame are rapidly materialising, plus a commutator feeder connection for the 600 ohm line. In the very near future VK2NO will arrange for automatic transmitter keying on 56MC for lengthy periods in pre-arranged directions, to give the countrymen a definite successive week-end signal to look for.

LAKEMBA RADIO CLUB—VK2LR.

By 2DL.

At the time of writing these notes it is learned that two of our club members were successful in the last A.O.P.C. exam., including the Sec-

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46

Amateur Radio

retary, Mr. Brown. The Hurlstone Park and Canterbury district is fast becoming "ham infested." For the benefit of those in other districts who continually complain of local QRM, might it be mentioned that, taking Hurlstone Park tram terminus as centre, there are no less than 12 amateurs within a radius of half a mile. Supers are fast becoming the order of the day; 2CL has just installed an 8 valve communications type of receiver which is giving very excellent performance. 2VA has had one of these in operation for several months and also reports most satisfactory results.

At the last meeting of the club, Mr. Freeman, 2AS delivered a most interesting lecture on Speech Amplifiers and Modulation. He was requested to give further talks along these lines at some future meetings. A new transmitter and receiver for use at the club rooms is being constructed by VK2VA and should be in operation at an early date.

ZONE 4 NOTES. VK2TY.

Well Newcastle calls you from sunny N.S.W. where we are now basking in the warm spring sunshine.

The Silverthorne Cup has been won by VK2BZ scoring somewhere in the vicinity of 5,000 odd points. This is a remarkable score when it is considered that one point is allowed per thousand miles. The total is then multiplied by the number of countries worked. Previous best scores have been somewhere about 2500 points (as scored by the writer last contest.)

Contests have become very popular in the Newcastle District and quite a number are under consideration by the committee of the NARC.

These notes naturally contain more news of Newcastle than other parts of the Zone as there are more hams here.

I hear that VK2KZ up in the coal-fields is now using 6L6G C.O. 6L6 doubler 841 Buffer 830 B in final.

2ZW here in Newcastle still allows his 852 to take up space in the transmitter and uses the previous stage (A 6L6G) as P.A.

He occasionally works local such as 2BZ who makes a specialty of 6L6's and Reiss mikes. 2AEZ works quite a bit of dx these days. I was very surprised to see 2XQ of Maitland come to light to take second place in our contest. 2DG has sked with K7? each week and continues to get across to him Keith has about 90 countries in two years. 2AES tells me he has joined the Cuckoo Club a new idea in N.S.W.

The idea is to encourage the boys to get on the air on 40 mx early mornings.

The club here in Newcastle extends an invitation to any ham who happens to be in Newcastle on Thursday nights to attend its meetings at 101 Tudor St., Hamilton.

Incidentally any ham who is in Newcastle at any time and is looking for some of the boys, just pop in to Martin de Launay Pty. Ltd. and ask for TY.

Had a good tip given me the other day re modulation transformers for low-power rigs.

Two Speaker Transformers turned back to back i.e. voice coil secondaries joined together might be useful to some.

ZONE 5 NOTES. VK2IG.

Though the DJDC contest on, there is not much activity here. Europeans at R8 during the afternoons but still rather hard to raise.

20J is on his 40 metre skeds with W9JO again but rather qrl.

2QE has EC osc with 6L6 buffer 45, and final 10, and has it doubling to ten metres in good style.

2EU going to try 20 metre fone and qrl winding coils etc.

2QD has pair lens as osc and using fone on them working very fb.

2AFD not heard yet as still qrl business.

2IG building tal rig but not finished yet.

Here's a couple to look for XZ20B Burma about 14150 and FP8PX and VS4JS on the other end of 20. They appear fairly easy to raise except FP8.

Victorian Division

U.H.F. SECTION NOTES.

By 3JO.

At the first meeting for the year held on July 20, the election of office bearers for the ensuing year resulted as follows:—

Chairman, Ivor Morgan, 3DH.

Secretary, Laurie Hoobin, 3VH.

Technical Advisers, Alec Clyne, 3VX and Val Barnes, 3OT.

3VX reported on progress of the frequency meter and after some discussion the gang were assured that this piece of apparatus would soon be ready for use.

At this meeting it was decided to discontinue the Saturday meetings as, at the last few held, the attendance had been very poor.

Another field day has been mooted but, as it is unlikely to be held before November, there is still plenty of time to discuss and arrange details. All interested in the ultra-highs are asked to assist to make this one of the best field days yet held. For further details watch these notes or, better still, come along to the next U.H.F. meeting and bring your suggestions.

Activity on the band, at present used by the U.H.F. gang, has, at this location, been confined mainly to the week ends with an occasional mid-week flutter, and the impression thus gained has been that things are very quiet. The most regular at present are 3PS, 3OJ, and 3LG others not so regular 3VH, 3PL, 3SJ, 3EM, 3XM, 3QJ and those not heard at all 3OT, 3OF, 3JD, 3LL, 3UX, 3NB, 3VX, 3CP, 3BQ, 3YP although the latter's harmonic from 28 mc is very strong here.

3PS is the most recent arrival on the band and has threatened to bring down some of the RAAFWR boys to keep him company.

Last night Aug., 17th was the UHF meeting night, but, as there were insufficient present for a quorum, the evening was spent with the W.I.A. short wave receiver just completed by the Short Wave Group. It is hoped that the next meeting on the 21st Sept., will be better attended, as it is expected that the freq meter will be well advanced, and that something

definite will be available re the 56 mc transmitter for 3WI, the construction of which has been delayed pending experiments by various members of the section.

Don't Forget—56mc Field Day in November and next meeting night 21st September.

'PHONE SECTION.

By A. L. Johnson. (VK3FL)

During the last weeks there have been signs of greater activity on the 200 metre band and several of the stations were to be heard testing late at nights. 3RI has been heard operating on Saturday evenings and running into the early hours of Sunday morning. They appear to have improved in their strength but the quality as received at Camberwell does not come up to the standard of some of the other stations, although no doubt if they continue their testing there will be improvements in their tonal quality. 3AM is another who has been burning a hole in the aether as well as the midnight oil and he seems to be settling his gear in its new QRA quite to satisfaction, as it still retains the quality of its previous locations. After the zero hour 3BY and 3AM have had some very interesting QSO's. It has been suggested that these two stations could possibly QSO over the dividing fences providing they could generate sufficient lung power. 3PA has been testing with two turntables and pick-ups and struck some trouble through upsetting an earth return but has since located the trouble and continues in the usual 3PA style.

The fone section held its meeting at the Institute rooms on the 27th July and it was indeed a most interesting night. After the general business had been dispensed with there was a discussion by Mr. Thompson 3TH on the Balance Sheet of the Institute for the benefit of those who were unable to attend the general meeting. This was followed by a debate as to the merits of power input to R.F. amplifiers.

Unfortunately one of the older members of the gang 3LM has decided to discontinue his activity on the 200 metre band and his decision will be regretted by this section to say nothing of those who have listened to his transmissions over the past years.

Amateur Radio

As Mr. George Thompson our friend 3TH has done quite an amount to assist the boys and the Institute as a whole, they decided some time back of providing him with some token to remind him that what he had done was appreciated. This thought materialised and it was the pleasure of our new chairman Mr. Sievers 3CB to present George with a smoker's outfit suitably inscribed. It appears we had chosen an appropriate moment as it was his birthday on the previous Saturday.

After distribution of crystals our evening quietly closed.

SHORT WAVE GROUP NOTES.

By O. E. Davies.

The meetings of the Group during the past few months have been drawing very good attendances. The main item of business being the completion of the High Frequency Receiver for 3WI.

and has been installed at 3WI. A

The Receiver is now completed complete description together with circuit diagrams and mechanical layout are being drawn up and will be published in the Mag in the very near future.

July 28th was the Annual Meeting of the Group; the attendance was not as large as could have been desired although a fairly representative meeting was held. The election of Office Bearers resulted:—

Chairman: Mr. H. Stevens, 3JO

Vice-Chairman: Mr. H. Burdekin.

“ “ “ Mr. D. Ayre, 3KP
Secretary: Mr. O. Davies.

Tech Adviser: Mr. D. Ayre, 3KP

During Mr. Ayre's absence abroad Mr. G. Budden was elected to act as Technical Adviser.

The Group were the guests of Messrs. McIlwraith, McEacharn on July 15th, when a visit was paid to the MV “Kanimbla.” The Group had the pleasure of inspecting the Short Wave Broadcasting equipment and also the Ship's Wireless Room, this was followed by an excellent Supper in the Saloon. Anyone who missed this visit was indeed unfortunate. May I again thank the Agent's of the vessel for their kindness and thought in making this visit possible.

Denys Ayre (3KP) has left these shores on a six months tour to “G” Cherio and good hunting Den.

Colin Harvey (3UO) swotting to be a “B.C.” Op.

Herb. Stevens (3JO busy on Council and 5 mx.

Bert Burdekin just built a new shack (sorry shed.)

Alan Anderson built a new Super and does it go? Ask Alan.

George Budden finished his Super and then fell off the Mo bike.

Vick Smith studying for his A.O.C.P.

Ron Chard busy learning the in and outs of our new Super.

Self trying to get Group on to 80 mx for Traffic etc., might succeed soon. Hope so anyhow.

GIPPSLAND NOTES.

By 3WE & 3DG.

VK3BR.—Still qrl but might put qrp rig on air to join the gang, as the bug is beginning to bite again.

VK3GO.—Not heard on lately, expected to be rebuilding rig since having shifted to new qra. Lets hear from you Graham.

VK3SS.—Keith has now got going on 3.5 and 7 mc and getting over to ZL fb. If you chaps using 6P6's want a new circuit ask Keith he has a new one of his own.

VK3LY.—Ron last heard of taking lessons in German, so lookout when we next hear his fone.

VK3QB.—Jack getting out nicely on 3.5 and 7 mc wid his 802 Tri-Tet xtal Osc and half wave 40 mx Zepp, worked a couple of W's last week-end.

VK3IL.—Bob still on 7 mc getting his share of contacts, has cleared note up a bit, but still room for improvement.

VK3DI.—Still plugging along wid QRP fone very patchy at times Jim. Erecting new ant and hopes to try 20 Mx been collecting dope on it from 7 RC.

VK3JE.—Not heard since having vacated 200 mx band.

VK3EA.—Was reported to be on 7 mc cw some time ago but not heard lately.

VK3XZ. — VK3HZ. — Ops at B. Class 3UL Warragul, a couple of Scots with a Scotch mitter make an ell of a noise on 80 mx and very anxious to work 3 WE on 5 Mx and break VK 3 record.

VK3DG.—On qrp fone 3.5 mc, hopes to go gro shortly when can

get time to build new power supply.

VK3PR.—Has souvenired some B Batts. and paralled wid the vibrator, but little difference to sig Ron. Been sprucing up shack and rig, going to try 10 mx shortly.

VK3EG.—The dx king vy quiet but understood to be building a super rig for fone what oh dx Ivan.

VK3WE.—Bill been qrl since VK-ZL contest knocked up a gud score but not like some VK 2's did not work any pirates. Lost one of his ever faithful TCO/410's Bills pace in contest too much for it, but still getting out wid a pair of tens in final. Had a visit from 5 KD during week-end and has talked him into trying 80 Mx fone when he goes back.

Leave that to Bill.

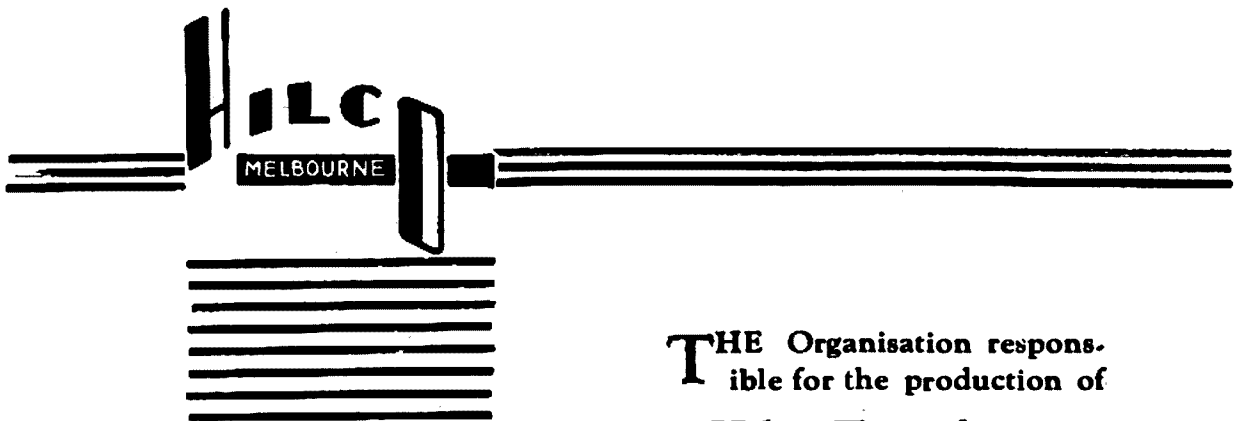
Gang advise 3 DG or 3 WE of your doings and keep Gippsland on the map.

South Australian Division

by 5KI.

South Australian Divisional Notes During the month, the president Mr. Marshal Hyder, resigned from his office owing to pressure of business.

Members are eagerly awaiting to see who will succeed Mr. Hyder. Winners of the VK5 code copying contest were as follows—City member : Mr. Joe Kilgaraff, VK5JT. Country member, Mr. Wally Govan, VK5WG. At the general meeting Mr. Kilgaraff was presented with the cup for winning the above contest. No news has come to hand of the ham feast held at Crystal Brook over the week-end of August 14th and 15th, but owing to the extensive rain storms, the outing was not attended by city hams. The German dx contest is at the moment interesting the local dx hounds, and the air is full of all types of signals calling for contacts.



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Amateur Radio

Mr. Pearn 5PN, is still doing good work for the country members by his transmissions each Sunday morning. The local 5 mx band is simply alive in the evenings, the reasons for the activity is the contest organized by U.H.F.'s. This contest stipulates that contacts are not counted unless they last the duration of a quarter of an hour.

Queensland are to be congratulated on their recent success of covering a distance of 70 miles.

Arrangements are in hand for a big social and dinner to be held at Xmas time, its a bit early yet, but you will hear more about it later. All readers are brought to notice that a back to 40 meter week will be held after our own dx contest. It is sponsored by American hams also the national field day to be held in December. Get that portable rig going chaps. Interest is being shown in the all band CW test next month, and competition should be more keener in VK5 this year. W.A.S. certificates are now available, so send in your cards to the Secretary Mr. Walker. Those present on August 11th enjoyed a talk by Mr. Cheeseman on model motor aeroplanes and was accompanied by motion films demonstrating their ability.

COUNTRY NOTES by VK5PN.

5QR.—Reg. of Jabuk, was recently heard discussing with 5RT possibilities of a Radio chess match. Should be very interesting but let us hope the carriers will not be left running whilst pondering over next move.

5WG.—Winner of Hobcroft Gold Medal for the Sth Aust. 1937 Code Copying Contest. Congratulations Wally.

5HR.—Runner up in above. Bill was rather unfortunate in losing several words whilst looking for more paper.

5RE.—Hobby going to become very active on 5 metres. Ambitious too: Together with 5BF he is planning big things. Watch out for startling developments.

5RJ.—Heard recently with particularly good 'phone. He has built up a new frequency meter and is asking all the boys the frequencies of their crystals, for calibration purposes.

5NW.—R. H. Bailey, Crystal Brook, Bob has started up; is using

E406 TNT osc and E4O6EA 20 watts input on CW and 12 watts on 'phone Mike is a G.E.C. Speech amplifier 6C6, and the modulator an F443 Heising modulation. The antenna system is single-wire matched impedance. The signal-trap used is a Philips 4-Tube receiver.

5FB.—Frank has been very busy organising a ham-feet which eventuated Aug 14th and 15th at Crystal Brook. Country members present included 5BK, 5LC, 5YM, 5FW, 5WG, 5NW and of course Frank himself. Rain prevented 5SL and 5HR from going along.

Now chaps, you all know about the QSO contest being conducted by 5FB. It is essentially for Sth. Aust. country amateurs. The prizes are worth while, so please do your part towards making this contest an outstanding success.

Further information and progressive scores will be announced as they come to hand, in the Sunday Country Sessions.

Tasmanian Division

VIA 3MR/7DH.

By 7KV.

The August general meeting was held at the Y.M.C.A. rooms on Thursday 5th, and, although the attendance was only fair, those present voted the accommodation as much more comfortable due to the efforts of 7HM in providing the necessary fuel for an R9 fire.

Following the usual business, a general discussion on 5 meter work took place with Gil Miles 7KQ as leader of the choir. With such an ardent enthusiast in our midst, it is hoped that a more organized method of attack on this band can be formulated, as up to the present, progress has been retarded by lack of active participation on the part of most of the gang. VK7 offers considerable natural advantages in the shape of some fairly high mountains at distances of over 100 miles and within visual range, and it is considered that the first genuine attempt on the VK 5 meter record could be attempted.

Our tireless secretary's drive for new members continues to meet with great success, although the ad-

Amateur Radio

vantages have lately been unfortunately off set by a couple of resignations. The council deeply regret such happenings and trust that the ex members concerned will again join, and place the division in the happy position of a few years ago when every licensed experimenter was a member. As from the beginning of the current financial year, institute activities had to be curtailed chiefly by relinquishing tenancy of our regular rooms, but as revenue for the year proves to be more buoyant than previously, next year may, in the words of our politicians, see a return to prosperity.

Arrangements have been made in collaboration with the local model engineering society for the holding of an amateur radio and hobbies exhibition during December. As good prizes are on offer, the fraternity are urged to polish up their receivers, transmitters or any other pieces of apparatus in readiness.

The Doings.

7YL threatens to become a nervous case for a few weeks by having more than a passing interest in the forthcoming dx contest. Commiserations on behalf of the troops JOY?

7JB has heard that dx with high power offers no lure and has reverted to the use of only one 800 tube! Curiosity is being exhibited as to the whereabouts of the other one. No prizes for solution.

7CM has served the six months probationary period on CW and is getting satisfactory results with grid modulated 46 in PA.

7DH in between capably managing traffic channels, fills in time with fone. Some assorted watts into 210's as final amplifier.

7CL still as active as ever judging by the frequency with which his call appears in the dx departments of overseas magazines.

7CK Roly has given up hope of getting the AC mains installed so intends to install a private power supply.

7HM has been putting in every available week end in attending his country mansion, and as spare time in between is occupied with secretarial duties—has little time for the bands.

7KQ and 7KV still persisting with 5 mx. The latest achievement being duplex over about a distance of 8 miles. Surely a VK7 record.

Conditions. — 10 meters shows signs of improvement as good signals have been heard from G6DH, ZE1JU, J2IM in addition to the usual flock of W ones.

20 meters at the time of writing is full of European stations in the DJDC contest.

40 meters is receiving plenty of attention from the fone gang.

80 meters has been the battle ground for the fone contest with ZL and the mainland—7YL and 7JB being the southern representatives but unfortunately most of us can only indulge after broadcast hours.

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District Commanders—

Second District, N.S.W.—A. G. Henry, Clareville Avenue, Sandringham (VK2ZK).

Third District, Victoria—Pilot Officer V. E. Marshall, 3 Myrtle Avenue, Kew (VK3UK).

Fourth District, Queensland—A. E. Walz, Sandgate Road, Nundah (VK4AW).

Fifth District, South Australia—F. M. Gray, 52 Ormond Grove, Toorak Gardens (VK5SU).

Sixth District, West Australia—J. Mead, 111 Gerrard St., East Victoria Park, W.A. (VK6LJ)

Seventh District, Tasmania—R. Cannon, Goldie Street, Wynyard (VK7RC).

3rd District. (VK3UK—3Z1.)

3Z1 is away on holidays at Jervis Bay, N.S.W., and the most difficult task possible is to be sprawling out on the sand with the roar of the surf in one's ears trying to think of Reserve doings of the past month. Melbourne, and all the life that is normal for 50 weeks of the year, seems very far away and intangible during those other two weeks. If a holiday is going to be what the name implies, however, that is exactly how things should be.

VMC as a whole is having a holiday, or perhaps one should say a spell. It is a well-earned spell, too—the first for nearly eight years. During that time there have been only two Sundays in the year on which a schedule has not been held, the Sunday in Christmas week and Easter Sunday. It was felt that a break of five weeks would have a thoroughly beneficial effect on the whole district, and at the end of that time a changed form of schedules would lend a novelty and freshness to ordinary training that is the very essence of a successful organisation.

As an increase in operating ability is one of the resultants of Reserve membership, two of the contests arranged by FHQ will be of interest to Reserve men, because both will call for operating ability of a high order. The handling of traffic by the laid down procedure does indicate how little plain language need be used, and the resulting snappishness of each "over" is of inestimable help in any contest.

The outstanding event of a personal nature during the month was the practical demonstration and explanation of the cathode ray oscilloscope by 3DV at the August K.P. meeting. It proved to be one of the most instructive and interesting lectures we have ever had.

RESERVE NOTES.

Sixth District.

(By 6B1—VK6JE.)

VMF considers itself cast to the outer darkness in the affairs of Lady Luck, having to record the resignation of 6Z1 owing to business requirements. This is the second occasion in a few months that VMF has been deprived of its leader. We are mighty sorry to lose you, Jack, OM, and wish you every success in your new sphere. We will miss your copperplate fist, but trust that your absence from the air is only temporary, and that you will take over Reserve affairs again when you settle down in the new location. In view of the above, 6B1 has been deputed as scribe, so no brickbats, please! 6Z1, 6A1, 6A2, 6A5, 6A6, and 6B1 are on watch every Sunday, and the new recruits are showing great promise, although progress is hampered by the absence of training manuals. This, we hope, will be rectified in the near future. Interstate watches between 5A2 and 6B1 have been rather uncertain lately, owing to extremely erratic conditions, signals varying from R7 to R2, with complete fade-outs at times. August notes contained an error in reporting 6B1 on BC work; this should read 6A2, who is staff man on BC station 6AM.

The Avro Avian created a deal of interest, and naturally the radio equipment was the centre of attraction for members. 6A1 still suffering from shock—one of the gang heard a PY calling him, but Frank was not listening. Hard luck, OM; you will have to instal an automatic device for registering calls from South America.

(Continued from Page 15)

siderably. Duplex, though interesting at times, is, at its best, but a poor second to "break-in," besides causing double the occupancy on the band.

The grammar and pronunciation used is, unfortunately, not of the best in many instances, and all amateurs on telephony would do well advised to study these matters. Several words are consistently mispronounced, especially two common ones—reiss and amateur. Reiss is pronounced rice, not reece, and amateur is ama-ter, and not ama-cher. If you doubt me, consult a dictionary. Heising is hi-sing, and not hee-sing. Of course, there are the letters "h" and "g" in the English language, though often these are dropped or added in the wrong places. However, one of the most noticeable features from this point of view is the use of the expression "er." Listen to almost any contact, and count up the number of times this expression is used, and you will be due for a surprise.

Last, but not least these Morse abbreviations. "QRM" for interference, "QRN" for static, 73 for best wishes—incidentally the code is 73 and not 73's—and a host more. They are totally incorrect on tele-

phony, and, besides, often lead to mis-reception. One often hears "QRN; N for Nellie," which is longer and no easier received than the one word—static.

In conclusion, may I say that I consider the average station of telephony transmissions is on the improve, and I trust these comments will further this.

(Continued from page 11)

small dry cell the meter will read in the normal upward direction. Adjust the value of the R1 bias potentiometer so that 100 per cent modulation causes approximately 2/3 of the full scale movement of the meter. This will permit the meter to be calibrated to values in excess of 100 per cent for the measurement of positive peaks. Care must be taken with the polarity of the diode potentials to ensure correct indication of positive and negative modulation. The latter is made evident by its inability to exceed 100 per cent as indicated on the meter.

The writer trusts that this information will be of value to experimenters, and offers assistance to all interested either by letter—don't forget the stamp—or by direct QSO on 20 or 40 metre band.

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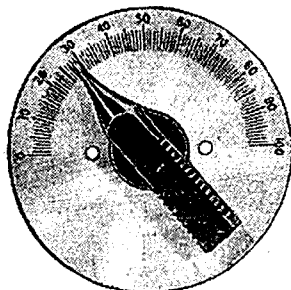
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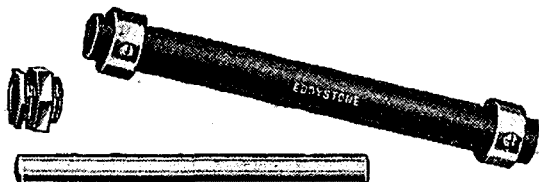


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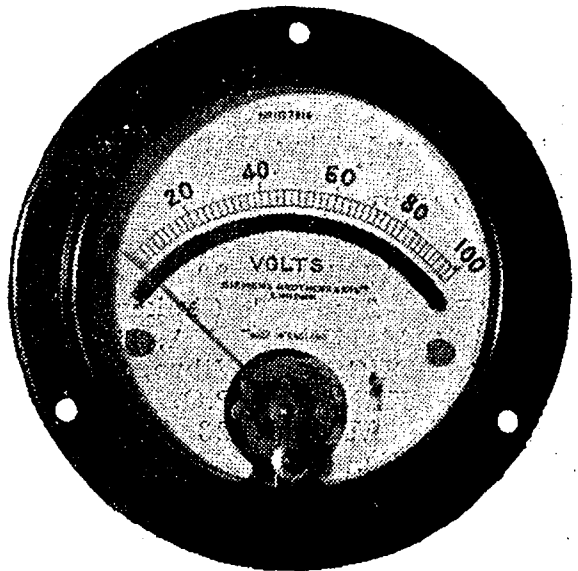
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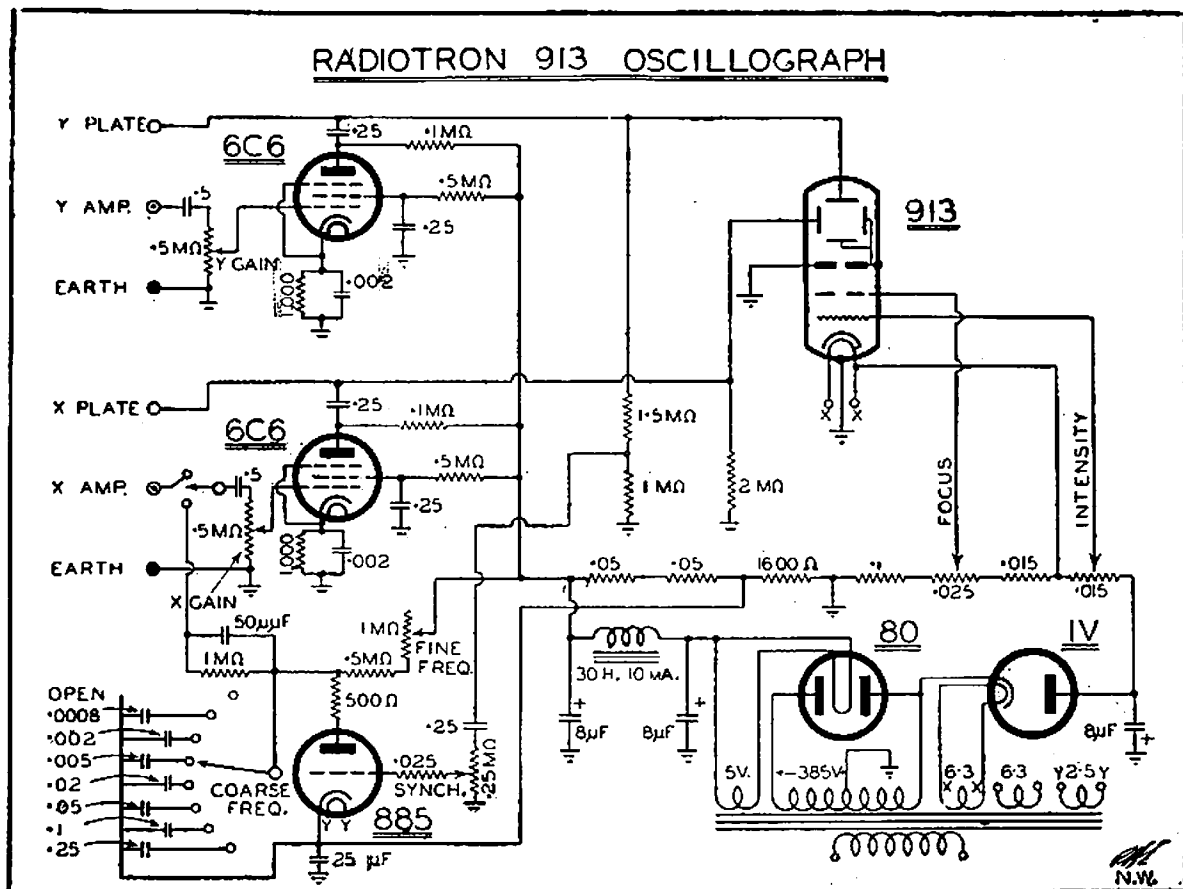


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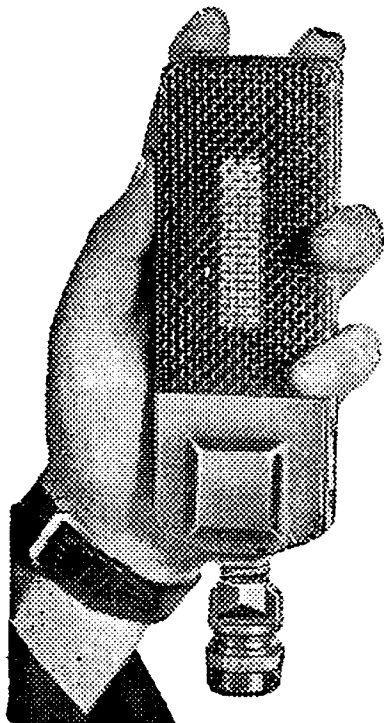
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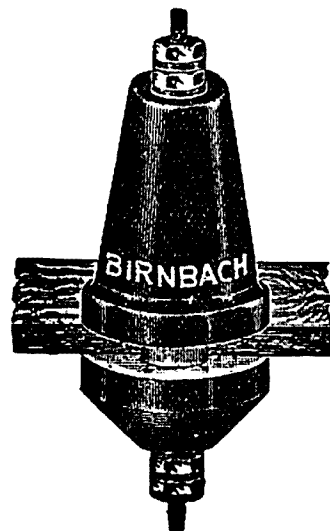
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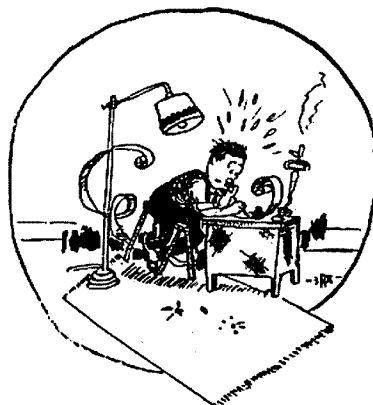
In this issue are published details of Australia's first National Field Day and Federal Headquarters are to be commended on filling such a long felt want in the Ham Life of this country. A National Field Day whilst being a contest in the sense that a keen competitive spirit will be present, is far more than a mere competition. In a Ham world over run with contests it should become, and we forecast will become, the most popular event in the year and should remain an Annual event when many other contests are being scrapped. Federal Headquarters are to be congratulated also on the rules they have framed which, whilst providing ample latitude in every way, ensure that the stations competing will be true to the title of 'portable.'

To those Amateurs who have participated in local field days, on various occasions no word need be said as they are certain starters, but to those who have never experienced the thrill of QSO's from a field location, you can take our word for it you will only need to try once to be a regular competitor.

Here is a test where everyone starts from scratch. A missed QSO cannot be blamed to the other fellow's QRO; if he is working DX that you cannot hear there is only one person to blame, you chose the location. The winner will be worthy of the title National Field Champion in every sense of the word, for he will have to bring into play, as well as possess, every requirement of the real Ham. He will have to be a good operator with a pair of 'DX ears,' he must use all his ingenuity and radio knowledge in order to design a receiver and transmitter flexible enough to avail himself of all that rules allow and yet still have power equipment that IS portable. In addition his equipment must be

rugged and efficient to stand the racket of a portable location and twenty four hours continuous operation.

There is the aspect of emergency operation also that will be brought out during this week-end. We are fortunate indeed that Australia has never suffered the appalling disasters that have befallen other parts of the world from time to time and thus as Amateurs we have never been called upon to play part that some W.'s ZL's etc. have during a sudden tornado, earthquake or flood. Our first National Field Day will not only provide the reason for many who do not possess portable equipment to build some, but also will bring home forcibly the potential value of Amateur Radio in supplying vital communications at a moment's notice. So we make one plea, design this portable gear with the idea of permanency in mind so that a holiday, a Sunday outing or the next National Field Day will find you with an outfit ready to take along. In addition you will have the certain knowledge that you are prepared if ever you should be called upon for assistance in a time of National disaster.



Break-In Operation

by "Long Line."

This article has been written as a follow up, on the excellent case for Break-in as put by 3BG in the September issue of "Amateur Radio."

Most that has been said is very true and to the point.

There is, however, one remark to which exception may be taken.

That is the statement that Break-in can NOT be applied to Phone.

Perhaps the greatest claim for the universal adoption of Break-in is the fact, that it is only necessary to use one channel when working a Two-way contact.

Who, amongst us, has not at some time or another heard a working single way; on coming back start his reply with "Sorry O.M. Only got a little of that over. Bad QRM Here."

How different would have been the case had Break-in been in use. During silent periods, such as deep (?) thought, etc., the Mitter would be off and the Receiver on. It is, then, only necessary for the other party to call and ask one to QRX until the channel clears.

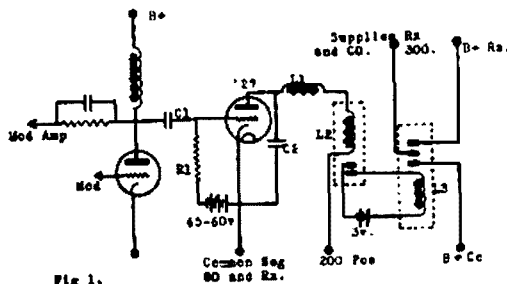
The application of Break-in to a Phone Transmitter is in fact an extremely simple matter.

Fig. 1. depicts a system requiring very little gear that cannot be produced by the average Ham.

A brief study of the circuit will indicate the theory of operation. When the transmitter, and consequently the Mod., is at rest the bias applied to the '27 reduces the plate current to zero, hence the relay L2. is open, so also then, is the control relay L3. This places the plate voltage on the receiver. Immediately the microphone is excited there is an audio frequency voltage appearing across the condenser C1, this bucks the bias and results in a flow of current in the plate circuit of the '27,

thus closing the relay L2. This in turn results in the relay L3 being closed thus removing the voltage from the receiver and applying it to the C.O. plate.

The speed at which the transmitter is thrown on the air depends on the adjustment of the tension



- C1. .01mf Mica
- C2. 1. mf Paper
- R1. 50,000 Carbon
- L1. 30 henry
- L2. 4,000 ohm s.p.s.t. Relay
- L3. Low resistance s.p.d.t. Relay, normally closed one side. (B+ Rx.)

spring on the relay L2 in the plate circuit of the '27. The lag, or abruptness, with which the C.O. plate supply is cut off depends on the value of the grid resistor R1 in series with the "C" bias of the '27. The 50,000 resistor specified, allows a pause in the conversation of approximately 1/2 of a second before the carrier is cut off.

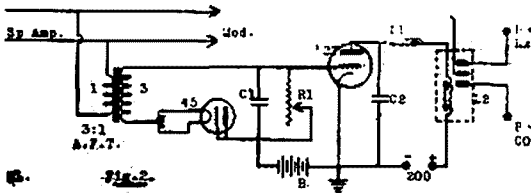
Phone station using this system of Break-in consider that it more than repays the initial cost of installation.

Before leaving this method, it would be well to mention that the control tube may be connected across the Mod. Driver or Sp. Amp. provided that sufficient voltage swing is available.

The second system of Break-in shown in Fig. 2. dispenses with one

relay but involves the use of another tube and an audio transformer.

Its system of operation is equally as simple as the previous one. When the microphone is excited there is, of course, audio frequency energy in the line Sp. Amp. to Mod. A small part of this alternating current goes through the audio transformer and hence to the '45 (any two or three element tube will work as well). This tube acts as a half wave rectifier and charges the condenser C1. Now the '27 is biased to cut-off and normally no current flows through the relay L2. This charge on the condenser C1., however, bucks the



- C1. 4.mf Paper
- C2. 1.mf Paper
- R1. 100,000 Carbon Pot
- B. Bias to Cut Off (approx. 45 v.)
- L1. 30 herry
- L2. 4,000 ohm s.p.d.t. relay, normally closed one side. (B+ RX)

A separate supply for the '27 is desirable.

N.B.—The transmitter and receiver Negs. must be common.

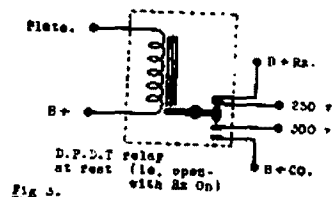
bias and allows plate current to flow in the relay winding L2. At this stage the receiver is made inoperative and the transmitter is thrown on the air. With a good relay all this takes place in a fraction of a second and little of the first word is lost.

The adjustment of the 100,000 resistor in the '27 grid circuit determines the length of time that the charge will remain on the condenser C1. after voice excitation ceases. The transmitter can be made to hang on for several seconds should the operator so desire. With the resistor R1. set to about half way the condenser C1. will hold its charge for about 1 to 1½ seconds. This is usually sufficient for normal pauses in conversation.

It would be well to note here, that if the transmitter hangs on for too long a period the value of Break-in is lost. The whole object of break-in is to allow the receiving party an opportunity to stop the transmitting party when QRM, or other reasons, oblige. It will readily be seen therefore, that if the Mitter is on during long periods of no Modulation the object is defeated.

Fig. 3. depicts the method of voltage connections when using a D.P. D.T. relay. The connections must be made in such a manner that when the relay is at rest the receiver contacts are closed. One advantage of the d.p.d.t. relay is that it is not necessary to connect the receiver and transmitter high voltage negatives to a common connection. A further advantage is the ability to use separate supplies for the receiver and C.O. high tension.

Although, in both the cases submitted to the reader, a high impedance relay has been specified, it is possible to obtain good results with a relay having an impedance of 1,500 ohms. It is, however, to be understood that the higher impedance relays are much more sensitive although they are not as strong in action as those of low impedance. This is due, of course, to the electrical set-up, which involves a consid-



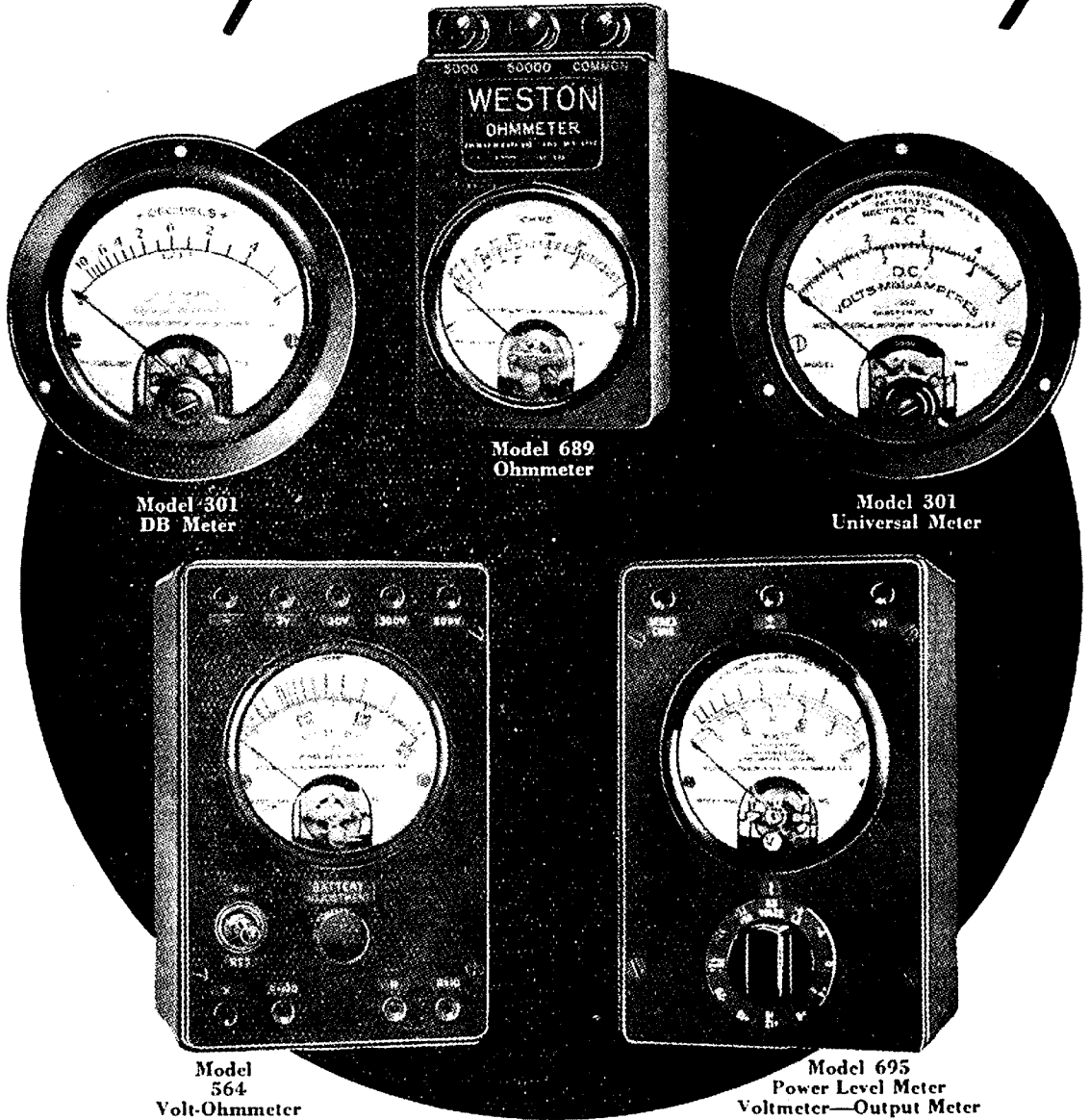
eration of the current flowing in the circuit and the ampere turns on the magnet winding.

Some stations have had quite good success with old P.M.G. telephone relays revamped to suit their individual requirements.

In many cases although fine adjustments of the system in use have been made, the first part of the spoken word has been lost, viz: "How's that." becomes "Ow's That." This can be corrected by either drawing out the first syllable of the first

(Continued on Page 8)

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M.O.P.A. Rig using 58 Type Tubes

By Les. Tanner—VK2ABL.

Being interested in low powered transmission and about to build my transmitter my attention was drawn to the tubes of 57 and 58 types. I wondered if satisfactory output etc. could be had with these tubes as they did not require neutralizing and required very little drive. However very little is available on the subject using the tubes mentioned.

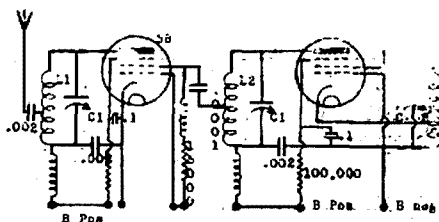
I then built an electron-coupled oscillator using a 58 tube and the output was very satisfactory. The plate milliamperes were 12 mc dropping to 8 mc with the plate and grid circuits in tune and rising to 12 mc loaded. The plate voltage was 330 volts and the screen fed through a 100,000 ohm resistor by-passed by .1 ufd condenser. The suppressor was connected to earth. The stability of this oscillator was remarkable. It was unsatisfactory to use it as a self-excited transmitter as key clicks could not be stopped although inductance resistance and capacity were connected to the key also RF chokes etc.

A power amplifier was then added using again 58 tube and the results were all that could be desired. Clean keying, no clicks at all, enough output on 3.5 mc and 7 mc to blow 3.5 pen lamp. changing to 14 mc one has to change the PA and Osc plate coils and there is no neutralizing to be done.

The osc grid is set on 3.5 mc, the plate on 14 mc and the PA is a straight amplifier on this band. On 28 mc the osc plate is on 4th Harmonic, grid on 7 mc. Of course other methods could be used but this way suits me and cuts down coils to a minimum. The input to the PA is 8 ma rising to 12 ma with the aerial coupled with 330v on the plate. The power input is about 4 watts. Fair operation can be had with voltages as low as 150v at which the osc. draws 3 mc unloaded. As 6C6 and 6D6 tubes have the same characteristics as 57 and 58 filament except

of course, there seems no reason why they could not be used if one had them. Working from 250v dynamotor and using 6D6 E.C. osc and 6D6 PA and input of about 3 watts could be had and would be a fine little job for a country ham considering the rigs simplicity. Although the power input is low the output is rather high.

A 57 tube was tried in place of 58 but apart from reduction of plate mills no difference was noticed.



The 58-58 Transmitter.

—	3.5	7	14	28
L1	25	—	8	—
L2	20	—	6	—
L3	12	—	—	—
Tap			direct	
—	10	—	from	
L2			Pend.	
Tap				
	3	—	—	—
L3				

All coil except L3 Cover two bands.
 L1:—22 swg 1.5" former.
 spaced to cover 1.5"
 L2
 L3
 24 swg 1.5" form close wound.
 from B+ end
 from "E" end.
 C1.00015
 C2.00035

Plate mc with 57 as E.C. osc were 6MA unloaded. Link coupling could be used but as only very little drive is required capacity coupling is quite ok. A 67' matched impedance aerial is used here with this transmitter and changing bands is a pleasure, one does not have to find many

Amateur Radio

coils (2) and then only when changing from 3.5 to 14 or 28 mc and as neutralizing and aerial tuning are absent the simplicity of this outfit speaks for itself. The rig is built on rack and panel lines here and is quite satisfactory from all angles.

If more power were needed two 58's could be used in push pull. I will gladly send any further information to any ham interested on writing to me. I understand that these tubes (58) can be used on 56 mc using the grid circuit of an E.C. oscillator on 28 mc and the plate on 56 mc followed by another 58 as buffer (or final) exciting further tubes but I have not gone that far yet.

As for the results with this transmitter, it is bad practice to talk about results as location, calling habits aerial etc. change so that a transmitter that is first class in one place will not necessarily be the same somewhere else but I have obtained R6-8 reports interstate with this rig and have not yet had sufficient time for decent results.

By using the oscillator plate circuit on a harmonic of the grid one obtains buffer action between the osc. and PA enabling the two stages to be run from one power supply without any difficulties whatever.

As the current to the PA does not exceed 15 MA the voltage variation should be small and the E.C. osc will take care of that.

(Continued from Page 5)

spoken word, or by resorting to that time honoured practice of whistling into the microphone before commencing to speak. For instance, instead of "Hullo" one would say, "HHHullo;" thus giving the relay time to close and put the carrier on the air.

A FEW THINGS TO WATCH.

Always use a Xtal that goes into oscillation quickly.

Grid-leak bias cannot be used on stages following the C.O.

In the case of a Class "B" Linear, a good bleeder resistor across the

power-supply is advisable. This may save your filter condensers while the carrier is off.

A separate supply is, of course, necessary for the C.O. In cases where the following stages are run from the C.O. supply this will stop that, and perhaps lessen the tendency to frequency modulation.

As the voltages to the Buffer and Finals are on all the time strict attention should be paid to the bias supplies, otherwise damage may occur to these tubes.

Well fellows here's the scheme. Let's hear some Break-in on the air in the very near future. And remember you will be doing your fellow Ham a great service by helping to clear up some of this QRM on the Amateur Bands.

Article Contest Results

The Magazine Committee has decided to award the donation of one guinea, as announced in the April issue, for the best technical article received by the end of August, to Mr. E. H. Cox, VK2GU. The N.S.W. Division generously donated the prize as an encouragement for more technical articles.

We would like to take this opportunity in openly thanking this Division for its support in this direction.

Mr. Cox has contributed some interesting articles dealing mainly with aeriels and has succeeded in throwing more light on this particular phase of experimental work.

His winning article entitled "Multiple Unit Antenna" in the August issue created much comment from the point of view of why some 28 mc aeriels are not as successful as they might be. As stated in the text, the old formulae for antenna lengths have not been found accurate enough for the higher frequency bands, and certain other factors must be taken into consideration. Those readers who have not closely studied his remarks are well advised to read Mr. Cox's article once again if they are desirous of bigger and better DX. Congratulations VK2GU.

Australian National Field Day

There seemed a definite need for a time set aside when Amateur's whose main ambition is to experiment with portable equipment, could try their skill. At the 1937 Federal Convention held in Sydney, it was decided to hold each year a National Field Day similar in many respects to the one held annually by the R.S.G.B. in the British Isles. As a matter of fact it was hoped that the Australian one, would coincide with the English one, but it seemed too much to ask Australian Amateurs to camp out in the middle of our winter.

December has now been selected and we hope to see at least 3 or 4 stations out from every division. The rules are concise, and don't forget to notify your divisional Secretary, re your location and call before November 1st.

RULES:—

1. The contest will commence at 1800 E.A.S.T. on December 4th conclude at 1800 E.A.S.T. on December 5th.
2. The contest is limited to portable stations operated within the commonwealth and its Mandated Territories.
3. A portable station shall be defined as one, whose power is not derived from either public or private supply mains, and shall not be located in any occupied dwelling.
4. Operation may be on any Amateur bands viz: 56, 28, 14, 7, 3.5, 1.7 M.C. and a station may be only operated on one band at any time, (two or more transmitters are permissible, but only one to be used at a time.)
5. No apparatus is to be erected on the site of the portable station earlier than 24 hours before the commencement of the contest.
6. The input to the final valve

coupled to the antenna, shall not exceed 25 watts.

7. A complete change of reports (R.S.T.) is necessary before any points can be claimed.
8. Application to operate portable stations must be made to the Secretary of the division of the Applicant by November 1st, giving Call and proposed location of the station. Copy of applications shall be forwarded to F.H.Q. and a complete list will be posted to all competing stations.
9. For the purpose of the contest N.S.W., Victoria, Queensland, Sth. Australia, W. Australia, Tasmania, Northern Territory and the Mandated Territories will constitute districts.
10. Contacts within a district are not allowable.
11. Points will be awarded as follows:—
 - a. For contact with a fixed station within the Commonwealth, outside competitor's state. 1 point.
 - b. For contact with a portable station within the Commonwealth, outside competitor's state. 4 points.
 - c. For contact with stations in Asia, North America, and Oceania outside Australia. 5 points
 - d. For contact with stations in Europe. 7 points.
 - e. For contact with stations in Africa and Sth America. 10 points.

Bonus A bonus of 25 points for each Continent worked shall be added to the total score.

The extent of each Continent to be decided as per the official I.A.R.U. W.A.C. Map.

12. Logs supplying the station worked, date, time, band and

(Continued on Page 28)

“Radio — and How!”

(By “Keypounder.”)

It was a warm November night—or should I say morning?—and on looking at my wrist watch I noted it was just on 2 ack emma. I switched down the rig to “twenty” and licked out a “CQ DX,” and was fortunate in landing an F8 and getting an R7 report. Which same made me quite elated.

After I finished with him, I went across to the map and looked up, with a ruler, the distance between myself and that F8. And when I got back in my chair I began brooding over the wonders of amateur radio.

All of a sudden I heard a scuffling noise at the door of my shack, and

I turned to see a strange looking figure entering the room.

He must have been nearly six feet high, and, to look at, had the physique of a champion wrestler. He wore some kind of close-fitting material, which covered him from head to foot, leaving only his face and hands free. He carried two small boxes under his arms.

“G—good evening,” I stuttered, surprised.

“Oh, hello, old man,” he greeted. “You VK4AXZ?”

“Uh-huh!”

“Great!” said this he-man. “I’m PLX4AR, but, of course, you wouldn’t know that!”

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Amateur Radio

"T—take a seat, feller," I said. "No, I'm sorry, I've never heard of PLX. Where's it situated?"

"Oh, I'm from Mars," he said, quite nonchalantly.

Now, I'm not the kind of guy that's easily bluffed, so I sez, quite angrily, "Now, don't give me that stuff, feller."

"Oh, I am telling you the truth," he smiles, "but for a moment, of course, you'll find it hard to believe. You see, I came down in my spaceship."

"Your what?" I exclaimed.

He beckoned over to the door, and, going outside, I took a peek at the spacious backyard, and there, to my surprise, saw an ultra-streamlined vessel, made of some kind of metal, and resembling somewhat a Navy blimp.

"It's radio-controlled," said my Martian friend.

"Gee! How long have you been coming down?" I asked.

"Well how long is it since you started with that FS?" he asked.

"About twenty minutes."

"Yes, I guessed it was about that. You see, I heard you call CQ, but I knew you wouldn't be able to receive my answering call, so I thought, having nothing better to do, that I'd drop down and have a look at this rig of yours, OM."

"Did you hear my twenty-metre sigs in Mars—on the level?" I gasped.

"Sure!" He tugs at a pocket in that queer suit of his and produces a small note book, which same is literally covered with call signs—PK, FS, G, OM, OZ, VE, Yanz, and nearly every country on the globe.

"You heard all them?" I asked.

"On twenty metres. Of course, forty isn't so hot on Mars now. I only heard about sixty countries on forty to-night."

"You heard sixty countries on forty?" I shrieked. "Ye Gods! If I hear five in one night its marvellous."

He nodded to one of the aluminium boxes he had with him. "That's my new superhet receiver," he told me.

We got it under the light, and Mars opened up the lid. It seemed to have about four tubes, with about five grid clips poking out of them each. Only had three controls on the front. One, so he explained, for volume, one for station selector, and one to switch in the beat oscillator.

"I'd like to hear it going," I said, "but, of course, our power lines may not fit."

"No power lines needed," he smiled, taking from the other box two small pieces of gear, somewhat like crystal holders. One had three pins, and was about two inches in diameter. The other had only two pins, and was about an inch in diameter. He plugged these into the respective sockets at the back, and then, taking a speaker, about the size of a microphone, plugged that into another socket, and switched on the set.

All the tubes warmed up, and presently we heard code signals coming through the speaker about R7.

"Only quarter volume," he said, advancing the volume control until it nearly deafened me. The signal we heard signed G5WX, and was calling TEST DX, so I slammed back on the rig, grabbed the bug, and ripped out his call as fast as I could hoot.

We told that G5 he was r-double max plus, and he called us all the ten different types of liars he could think of just then.

My Martian friend then went round the band, and if I didn't hear enough call signs to make a miniature log book, I'm nuts.

We clicked a few more fellers, after that. We told an LU, who was using six and a half watts, that he was R9, and a South African who was on portable work with suppressor phone on a 59, told us he couldn't possibly be R7 on phone on 20 in Australia. But after he got us to repeat some of the things he said he believed us.

(Continued on page 9.)

Federal and Victorian QSL Bureau

R. E. Jones, VK3RJ, QSL Manager.



"Hans" Hansen W9KNZ is surely unique. He writes Have been on the air since 1916 and never cared for DX, but all at once I find you VK fellows answering my early morning CQ's and find myself getting a great kick out of it."

Congrats to Ted Jenkins VK3QK who has just made W.A.C.

"Morrie" VK3BZ is staging a comeback after some years of inactivity, and has not forgotten the knack of landing DX.

Alf. Adams a listener for many years has now joined the ham ranks with the callsign VK3VJ.

Geo. Damman W9JO after some years of good work as the W9 QSL Manager has handed over to W9KA, Roy McCarthy, 11 S Michigan Ave., Vila Park, Ill. This advance information arrived through VK4GJ.

John Mills, VK3QB didn't like his fellow Maffra ham purloining his pet QSL design.

Another old timer to get under way is VK3WA, Warne Wilson of Ballarat. He is again amongst the DX. Lots of water has passed under the bridge since 3WA exchanged his first QSL in 1923 when he signed A3RY.

Rumours of a big International DX contest in 1938 are in the air. Prizes are reputed to be something special. F.H.Q. will probably spill the beans shortly.

Alan Brown, VK3CX, anxiously awaits a card from Delaware so he may add the letters W.A.S. to the

string already behind his name. My offer to supply him with a Delaware card in exchange for 12 contact QSL's from Iceland has not been accepted so far, although Alan offered 500 W cards.

Last month's list of cards awaiting a summary fate produced a fair response.

Cards for the following have been temporarily reprieved:—3AD, BL, CW, FN, GO, IL, JE, KA, KY, LN, LY, OZ, PA, RE, RL, XG, YF, ZO.

A stamped envelope to this Bureau, 23 Landale St., Box Hill, claims the undermentioned cards:—3AP, AT, BE, BS, BV, CA, CU, DJ, EA, ES, EW, FA, FB, FF, FM, FS, FT, FZ, GM, HB, JN, JR, KP, KT, LQ, LV, NB, NI, NF, NT, OX, ON, QB, SG, SQ, TB, TW, UF, UJ, UO, UY, VW, WB, WW, XU, XD, XZ, YG, ZB, ZC, ZI, ZZ.

ERRATUM

It is pointed out by Mr. E. H. Cox, that an error occurred in the printing of his notes on the determination of antenna dimensions in the August issue. Formula (2) on page ten should read:—

$$L = \frac{(N - .05) \times 492}{F}$$

The misprint in the original article would have been evident to all who read the text.

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A Brief Description of VK4RF

VK4RF obtained its licence in September, 1936 and since then has been very active on 7 and 14 mc.



Various types of rigs have been tried, the first being the good old T.N.T. which was scrapped after a month and was replaced by a "59" Tri-Tet straight into the aerial which was a $\frac{1}{2}$ wave zepp.

All VK and ZL districts were worked with this osc but the op got the DX brig and added a "45" P.A. which was link coupled to the Tri-Tet.

Operating on 7 mc when conditions were "not so good" this station made W.A.C. in approximately one month.

Not satisfied with the DX on the Mc the op decided to build a new 14 mc rig this was done and is still in use.

The layout is as follows:—

6A6 osc and dblr, 6A6 push push dblr, link coupled to a "45" buffer—

The antenna is a $33\frac{1}{2}$ feet vertical matched impedance job es is superior to other types tried hr for 14 mc.

The receiver is a 3 tube T.R.F. using 58,57 and 2A5 which uses a indoor vertical aerial.

VK4RF will hve been on the air 12 months on the 18th September during this period over a 1000 QSO's have been made, 450 of which were W's and the remaining 550 with 40 countries scattered over the globe. Some of the choice DX wrked hr is:—

ES, TF, OZ, OE, OK, PA, YL, LU, VU, CM, U, UK, F, VQ, D, ZT, ZS, KA, J, G, GM, XU, LY, OH, VS, CR, YR, ON and MX.

4RF and WAC WBE and is an active member of the W.I.A. and B.E.R.U. and has just finished hitting up a good score in the D.J.D.C. Contest.

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“And out of the Mouths of Babes”

by “Old Hombre”

Funny isn't it, some of you year, or two-year old acquirers of experimental licenses, when you come to think of it—how those pioneers of amateur radio literally sweated blood in laying the seeds of a playboys art, so that you and your kin could open up an entirely new era in this amateur radio game? So easy wasn't it; to get some unsuspecting amateur pal to get enough radio fundamentals into your belfrey inside those few expectant months, plus enough morse code coaching to make the examining R.I. take compassion on you, and reluctantly accept your fee for the coveted A.O.C.P.? You were more fortunate than your very recent brothers, who, after graduating, have perforce to actually do something about punching a key for six months, before being allowed to hurl their “personality” or “feetchure” voices into the air! even though some of them did think that all they had to do was to keep mum until the probationary period was lapsed. You got in just before the reg amendments, and so you are able to smile superciliously as an exalted person, and in fact, a seasoned veteran, at your lesser lights. Of course though, you realise that by the time these fellows have stuck their probation through, they actually will know something about the morse code, and will probably delight in using it occasionally—poor saps. Not you though. You are going to show the world just what the modern ham is made of, and to you key work is just a penance and totally unnecessary. From the word go, you intend to spend all your amateur radio time just barracking for QSL cards on 20 metre phone, and when you get fed up with using your established call sign, you will conceive the bright idea of taking out another portable call. Of course you won't really do any portable work, but you will have long spells on both calls, so that the QSL cards will pile up and up. Friends Romans and Countrymen will know just what a marvellous fellow you are to have literally shattered distance thus, and will vote that Marconi and

his ilk were born long before their time!

Then when this DX business is a bit slack you will call in the girl friends and their swains as guest announcers, and will really have a wonderful time on both 20 and 40 metre phone along with Joe's station just across the way. Go QRP Not you The public just loves to hear your eloquent and intelligent voice, and so, if anything, you bump things up a bit on that final. You will never conclude any phone QSO without frequent splatherings of “That's the dope on that,” “Okey Dokey Hunkey Dorey,” “Kay someone please” and all the mysterious utterances that make your station so popular with John Q and Betty public, to say nothing of other hams. Other hams, on hearing your station, will immediately forego anything they might be doing on the air to listen spellbound to your clever emanations, and when you do reluctantly decide to pull your switches, and stay pulled for the night, they will sigh so deeply that such magnificence should be lost to the world! At times you will beat gongs as a demonstration that the BC stations don't have anything on you, and will pass knowing remarks with double meanings to the YL's at the other station. Oh it is all so splendid that those old time fellows who struggled along for so many years with more interest in morse code or apparatus design blazed the trail for you to indulge in all this splendour. They must have been saps not to see what would happen in the end (they darned well were!) and how you and your generation would change the whole status of amateur radio generally. And that indulgent old-timer you got so many good ideas from, and who showed you the blatant faults in that first receiver of yours—he will take it in great fun when you refer sneeringly to him over the air or even openly criticise him when he is old-fashioned enough to

(Continued on Page 25)

28 and 56 M.C. Notes

A. Pritchard, VK3CP.

During this month the 10 meter band has been excellent. The skip has lengthened giving us remarkable signals from all over Europe. Apart from G6DH, G2XC, D4XQF who are on each evening around 7 p.m., the VK3's contacted D4SLX, G5QY, G5Ri, OH3NP, YL2CD, U9AV, UK1CC, OE1EK, PAoAZ, OK2RM, G5JA, U9ML, between 7 and 10.30 p.m. On Wednesday 15th September, G5JA, PAoAZ, U9ML, G5QY were contacted here at 3CP from midnight until 12.45 a.m. 5QY reported a qso with ZL4DQ even later than this local time. Conditions are peaking now; there are dozens of w-cw harmonics from the HF end of the 20 mx band, showing that practically any power will give strong signals. VS6AH, VU2BA and SU1SG are also putting in fine signals. VK2UD is receiving good reports and qso'd PAoPN at 5 p.m. on 9th September. 2UD has 4 stages, '59 ECO, 59 buff., 46 buff., PP 46's final. VK2UC and VK2RA also have good sigs. From the States W9TTB and W6MDN are always r9. The former has 1 KW input with a Rhombic antenna on Australia and is putting the equivalent of 30 KW's our way !!!

The latter has quite a line up, 53 CO, 40 mx, 53 doub. 10, 756 buff., 808, 354 buffers, 354 PP class C.—800 Watts, modulated by Class B. '03A's—an H type beam on Aust. W60ZH has a vertically polarised beam, rotating on a 35' pole, a Johnson Q, with a director and reflector giving the extra gain. From VK6-VK-6FL, 6AA and 6SA keep up the good work. VK6SA made a good contact during the recent contest. K6iCL, K6OTH, K6CMC, L6LCV have been improving their transmitters. K6iCL has PP T 55's modulated by class B, T55's; K6CMC has PP HK154's with 250 watts input; his phone signals are r8 at 6.30 p.m. L6LCV has PP Taylor HD203A's k KW input, the modulator has a T55 driving Taylor T200's in class B, with a 500 watt varimatch mod. transformer. VK7AB

and VK5HG are on 10 again getting good results. As far as we know VK4 is the only State without activity. VK2GU has been improving the doubler stages in his outfit. A T20 doub. from 40 to 20 mx with 600 V on the plate, has a resonance dip from 140 to 7 mills; and an 808 doub. from 20 to 10 mx, with 1700 V on the plate, dips at resonance from 170 to 18 mills, showing wonderful efficiency. 2GU can work duplex up to 100 AC from his own frequency. PP 100 TH's final!!! Our old pal Snow of 3MR has been on 10 again for the contest—hi!—with a 6L6G doub. to 10, the grid current to the 50T final has doubled giving greater efficiency. From New Zealand ZL4FW, ZL1JD, ZL1HT, ZL4GN, ZL3DJ, ZL2Ci are giving us fb phone; the latter has a 3 stage rig. 6L6G co. 807 doub. HF100 with 100W. ZL1HT has a very small rig. although his phone is often r8, 6L6ECO, 45 final 10 watts input, modulated by a 2a5; the antenna has $2\frac{1}{2}$ waves, with $\frac{1}{2}$ wave counterpoise. ZL1JD and ZL3DJ have 100 watts on 56 mc, the former with PP T20's and the latter's line up is 6A6 CO, 6A6 doub. 5 mx, 807 buff., 35T final. The receiver is a National NC 100 with a converter to 5mx, 58, 57, 58— $4\frac{1}{2}$ waves H type beam antenna, for 10 and 5mx. ZL4A0 has a diamond on Europe for 10 mx and this antenna should be excellent for Aust. on 5 also. At present J2iS is the only station from Japan; his signals peak at 6.30 p.m. Our old marker TDC in Manchuko is now JMN3 and is still on the same frequency, just out of the low frequency end of the band.

Dinner !!

Remember Annual Dinner of the Victorian Division on the 30th October at Hotel Federal. Tickets are 7/6 and may be obtained from 3UK

Divisional Notes

To ensure insertion all copy must be in the hands of the Editor not later than the 18th of the month preceding publication.

N.S.W. Division

W. G. Ryan, Secretary, VK2TI,
Box 1734 JJ, G.P.O., Sydney.

Country Zone Officers.

Zone 1 (Far West).—J. Perooz,
VK2PE, Hope Street, Bourke.

Zone 2 (North-West).—H. Hutton,
VK2HV, Byron Street, Inverell.

Zone 3 (North Coast).—R. J.
Berry, VK2NY, 54 Bacon Street,
Grafton.

Zone 4 (Hunter River and Coal-
fields).—R. W. Best, VK2TY, 57 Hunter
Street, Newcastle.

Zone 5 (South Coast and South-
West).—R. Ross, VK2IG, 673 David
Street, Albury.

At the August meeting of the Division a lecture was given by Mr. A. Freeman, of the A.W. Valve Co., on "Transmitting Valves." Mr Freeman discussed the use and operating characteristics of various materials used in valve manufacture, dealing more particularly with cathodes and plates, indicating the service to be expected with different types of valves.

Another interesting lecture was given by Mr. M. Lusby, VK2WN at the September meeting, the subject being "The Reflecting Layers." The members were introduced to an explanation of the manner in which the Kennelly—Heaviside and Appleton layers function in reflecting and refracting electromagnetic waves. Mr. Lusby also described some of the apparatus used by the Radio Research Board for examining these layers and their properties.

At this meeting the Division congratulated its Vice-President, Mr. F. M. Goyen, VK2UX on his approaching marriage and extended to Mr. Goyen and his future wife its best wishes for their continued happiness and prosperity. Mr. Goyen also received a presentation from the members of the Council.

The DJDC Contest produced some good scores from N.S.W., the number of contacts made by the leading stations being approximately as follows:—2ADE, 225; 2JX, 113; 2TI, 106; 2TF, 65; 2DA and 2VN, 45 each. A number of others "also participated."

The interest taken in this year's All-Band C.W. Contest was very disappointing. This contest would be one of the best if we could have about four times as many entrants from each state. The competition was keen for first place in N.S.W., 2RA winning by a narrow margin from 2NY.

By the time this appears the 1937 VK-ZL Contest will be in full swing, and from all accounts there will be a record entry from this Division.

We might mention in connection with the rules, that G8 and GW (Wales) constitute the 5th and 6th G. districts.

The Contest Committee for the 1938 VK-ZL Sesquicentenary Contest has been appointed, consisting of 2T1 (contest manager), 2HP, 2RA, 2VN, 2YC. As an initial move the Committee has offered a prize of £1-1-0 for the best design for a QSL card advertising the 150th Anniversary Celebrations and the Contest.

Interest in 5 meters continues and the members are co-operating with the NZART in their trans-Tasman test at the end of the month.

STATION REPORTS

2DI Building new rig for 7 and 14 mc, using 808 final. Is the proud possessor of an oscillograph.

2JX, resting after DJDC. Puts out a very nice signal (ask 2YC, who lives a couple of blocks away) and works any, DX that's on the air.

2NO has redesigned his 150 watt 56 mc transmitter and is now driving his PP 35T's with PP 801's. His 56 mc activities are chronicled elsewhere. Using automatic sending device for tests.

2PV works DX on 7 mc, best to date being a 3-way with VK6WH and ZT5G. Busy with exams, but manages to mix in a little stamp collecting. Receiver 9 tube super.

2T1 with PP 808's and a 10 tube super is a force to be reckoned with in any contest. Would appreciate information on how to straighten a pipe mast that curled up in the last windstorm.

LAKEMBA RADIO CLUB — VK2LR

By 2DL.

The following is the latest revised list of transmitting members of the above club:— VK's 2LR, 2AS, 2CL, 2DL, 2ED, 2EH, 2EV, 2FG, 2GM, 2HE, 2HB, 2IC, 2IO, 2JT, 2KS, 2LW, 2MH, 2NJ, 2OD, 2OI, 2OW, 2PX, 2QP, 2QX, 2SX, 2TG, 2TQ, 2UB, 2UC, 2VA, 2VW, 2WB, 2XD, 2XZ, 2ZR, 4XM, 2ABI, 2ABT, 2ACE, 2ACS, 2ACY (ex 2CY), 2AFU, 2AGR, 2AHE, 2AFK. Non-transmitting members number 28.

A graphic account of the recent New Guinea earthquakes was given by ZL4GL who visited the club last month. 4GL was operator on board a ship which was cruising in the vicinity at the time of the eruptions, and he did very good work in relaying the messages when land stations had been put out of action.

As a departure from the usual lectures on radio, Mr. J. Warren, 2QX, gave a talk on "Air Condition-

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Amateur Radio

ing" at the last meeting. The lecture proved very popular as was evident from the number of questions which were asked.

PUBLICITY NOTES.

WAVERLEY RADIO CLUB.

By VK2ABS

Our new 10 tube receiver is in action, raking in the DX in fine style, consequently the club's transmitter, VK2BV, has been very active lately on 7 MC CW. Work has been started on our new transmitter under the able direction of our President Mr. G. Wells, and promises to be something "out of the bag." We advise DX listeners to instal wave traps tuned to our frequency!

The meeting held on 7th September, was the occasion of a very interesting lecture by Mr. A. Gibbons, VK2BT, on "Antenna Design" and everyone is now contemplating installing concentric cables and vertical radiators!

Two of our most enthusiastic members, George Patterson and Arthur Pearce, have obtained their tickets—congratulations from all the members. We predict severe QRM in the Randwick district very soon.

2AHB lost no time in getting on the air, and has already filled a few pages of his log. Good luck, Arthur. 2AFG has gone all QRO with a 6L6 oscillator and an AL3 P.A. with 15 guaranteed watts input, but finds it difficult to get good efficiency with plug-in tank coils.

2EG has been rather scarce lately—is it YL-itis?

2OH paid us a visit from the backblocks. Welcome, Bruce, even if we can smell the gum leaves.

2AFZ when not entangled with the law, works duplex with 2YF, who lives 250 yards away—some DX Eric!

2ABS has packed up all the junk and gone to live at Artarmon, and finds it a good place for DX and also

key clicks. Local hams—please note!

George Patterson has parted company with his 30/- and is now feverishly awaiting his call. He intends to use 6L6 osc. and 210 P.A.

ZONE 4.

By VK2TY

2DG got quite a write-up. Apparently 2DG has been keeping a sked with a K7 for weeks on end and some news hound sniffed it and lo: 2DG in the news. Contact with outside world and all that dope.

2JZ of Singleton has become a big BCL owner. "The Voice of the Hunter."

Heard 2YO from Pelaw Main calling CQ on 40 the other night. Nice fone too.

The NARC has decided on some competitions for the entertainment of its members. Philips Lamps (Aust). Ltd., gave a very nice 15 watt Pentode with a type number, which would fill this column. Lawrence & Hansen Elec. Co., donated an open order for £1-1-0, and Martin de Taunay Pty. Ltd., an open order for 10/6. These will make good prizes for the boys to get enthusiastic over.

The Club is also donating a couple of bottles for 2nd and 3rd prizes in the contest for the Philips tube. Incidentally Philips have always been exceptionally good to the NARC, and never fail to come to light with something for the gang

2ZW is back on the air using one of those QRP bottles—An 852.

2QS got his cart wheel double-button mike working, or so he says, I think, from what the Wireless Bird tells me, that it was a P.M.G.

Say Gang, what about those report sheets?

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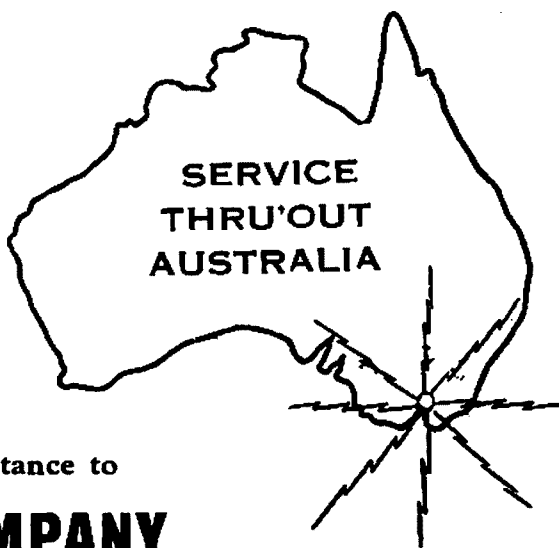
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ZONE 5 NOTES

VK2IG

DX rolling in here in great style and conditions good for the DASD test. Plenty of new Europeans worked by 2QE.

2QE remodelled rig and is getting out better than ever and doing a good job in the German test. Has YR, I, PK6, 5P for new ones. F.B. Alan o.b.

J20. Only on for fone skeds on Sundays, has fine big fone now.

2EU still on fone on 40 meters, but going on 20. Gets a gud signal to W.

2QD not much heard from Hilton, but is getting out O.K. on SE.

2AFD too busy for Albury Show to do any xmitting.

2IG Qrt while altering rig. Was on in DJDC with fair results.

No reports from rest of the ENTHUSIASTIC Zone 5 chaps.

Victorian Division

UHF SECTION NOTES.

By 3JO

Once again we have to report very little activity on 56mc, however, now that warmer days and nights are here, we can be sure of increased activity in the near future.

Stations at present operating, are always on the lookout for others to join in multi-way contacts, and it is suggested that calls be made at half-hourly periods starting from 1900 in the evenings, and 1000 on Sunday mornings.

One of the most active stations, 3PS, is on the job nearly every evening at 2030, and at 1100 on Sunday mornings. He is also active on 3.5—7—14 mc and will be pleased to have a call from anyone interested, but not yet active on the UHF's.

No further information is to hand re the frequency meter or the trans-

mitter for 3WI, but we expect to have something definite after the UHF meeting next Tuesday.

It has been suggested that the 56 mc field day, be held on the National Field Day, December 4. It is thought what this arrangement offers greater opportunities for 56mc, DX and the country gang are especially asked to co-operate. Again 3PS, on the lower frequencies, will be pleased to hear from any country chaps interested and will be able to advise of further details and arrangements.

A 56 mc test, VK2—ZL has been arranged for September 25, but, no details of this are as yet to hand, however, we will be on the look-out for anything that may come through.

We are very pleased to have our chairman, 3DH, with us again; Ivor says he is rebuilding all his gear and will be glad to be on the air again. will be held on Tuesday 19th, so roll up and bring your ideas.

MALLEE AND NORTHERN DISTRICTS.

3ZK—3HX

3EP still working on 80 mx and putting out a very FB sig. Ted has taken to Xtal grinding like a duck to water as evidenced by the number of Xtals Ted has.

3FF & 3TS are mainly working on 20mx with excellent results. Tom and Jock are busy on a modulator.

3BM has made his debut on 80 mx fone with first-class quality. Bruce tried nearly every type of mike before deciding on a Xtal.

3KR on a recent visit to 3BM didn't like the look of Bruce's sky-wire so procuring a pair of pliers generally rebuilt the sky-wire much to Bruce's delight. The result was stability and alround better performance.

30R has not been very active as Murray has had a bad attack of 'flu. Murray has a special high frequency rig in the course of construction, but the 6L6G refused to oscillate.

Amateur Radio

3HR is back on the job again with fone on 80 mx quality rather good.

3WN is usually on sked on Sunday mornings on 80 mx otherwise Jack is not very active; is pleased with the possibility of getting AC.

3CE has been working plenty of Dx on 20 mx. Keeps a sked with 3DG on 80mx every week.

3KI we understand is still on 20mx and getting excellent reports from W. Jack has a particularly fine V beam directed towards that place.

3IH working mostly on 80mx fone. Fenton has decided to rebuild his rig. Had a CL4 flash over and give up the ghost.

3ZK makes an appearance two or three times a week in spite of being QRI.

3HX not particularly active, but is planning alterations in preparation of taking 20 mx by storm. Some don't believe it but nevertheless its true.

GIPPSLAND NOTES.

VK3BR: Jack has made a start, layed out rig but very QRL.

VK3DG: Working usual sked with 3CE on 3.5 mc, but not on much.

VK3GO: Not heard of late, want to hear from you Graham.

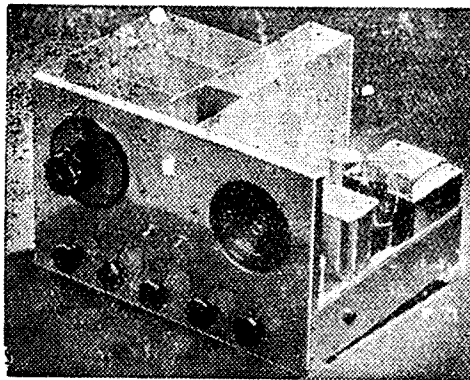
VK3LY: Not heard of late, qrl at 3 TR B class.

VK3SS: Keith on with 6P6 Osc and 6L6 PA now and putting fb sigs into ZL on 80. complains that he can-

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not work any VK's on that band. Fone on the way so look out then.

VK3QB: Jack has also rebuilt rig now using 42 CO and 802 pa and going to apply for fone permit, had over 100 qso's during first month on, but has eased off of late.

VK3XH: A new ham at Sale, Stan Johnson, not on air yet, but will be accorded a welcome as since getting his ticket has taken pity on hams and has cured that R max harmonic of TR local broadcast station on 80 mx. Congratulations om hpe to hear you soon.

SHORT WAVE GROUP NOTES.

by O. E. Davies.

Members of the group continue to show their interest in Ham Radio. And the meetings of the past few months have drawn very good attendance.

At the meeting on August 11th Mr. Stevens gave a very interesting address on "Inductance and its application to Wireless Communication." This was so much appreciated by the members that Mr. Stevens obliged with a further talk on the same subject at the meeting on August 25th.

At the meeting on September 8th, a very interesting discussion took place on the merits and operations of "Grid v Plate Detectors." Several members took a keen interest in the debate and much valuable data was discussed.

At the next meeting in October an endeavour is being made to secure an interesting lecture for the evening. The Council have allotted this night, October 13th, as the Quarterly General Meeting of the Victorian Division. Remember the date and make a genuine effort to attend.

A roster has been drawn up and every member is responsible for a talk, or lecture. The present roster is complete to December 22nd, so don't fail to attend the fortnightly meetings. Remember, the Second and Fourth Wednesdays in each month.

Ron Higginbotham has now completed his Super-gainer. Gets good

sig's too, at least so he tells us.

George Budden logging DX on 20 mx. Heard some Gs t'other night.

Herb. Stevens reports 5mx pirates. Says they sign VK3OK. Well at least they sound OK.

Alan Anderson busy cleaning house.

Vic. Smith still swotting A.O.P.C.

Ron. Chard ditto.

Rest of the Gang trying to rake in the weak sig's that you never seem to hear sign a call. Some of these lads go on for hours at a time it seems.

By the way look out for us on 80 mx, We hope to make a show up there any time now.

Queensland Division

via 4AW-3ZC.

Fresh history was written in ultra high frequency communciation in VK when in August contact was established between parties at Montville and Springbrook, a distance of 109 miles.

VK4AW and VK4HR were responsible for this good work on 56 mc. Contacts were also established between Springbrook and Brisbane 58 miles Montville and Brisbane 52 miles and Springbrook and Toowoomba 99 miles. The elevations of Springbrook and Montville are 3,000 ft and 1,500 ft respectively.

Those taking part were VK4RY Mt. Cootha, VK4WI Mt. Gravatt, VK4LX Ascot of Brisbane, VK4UZ Toowoomba, and the previously mentioned 4HR and party Springbrook and 4AW and party Montville. This success was the result of an organised field day on the part of the Queensland Division. Another effort is set down for 26th September when the distance is hoped to be increased.

Several members have signified their intention of attending the ham-fest to be held at Toowoomba 16th and 17th October where the local

Amateur Radio

boys will be met and much reg-chewing is eagerly anticipated.

Arrangements have been made to visit the local shacks, broadcast station, and other places of note.

Conditions during the all-hand cw contest were fairly good although there did not seem to be the number of stations taking part that should have been. VK4AW, 4CG, 4UR, 4JF, 4NO were prominent in VK4 apart from 4AW's score of 880 the others are not known as yet.

The sudden burst of activity on 56 mc seems to have left its mark permanently at least we hope so. Sunday evenings at 7 p.m. has been set aside for across town ragchews and it is quite common to hear 4LX, 4GU, 4RY, 4AW, 4RC, 4WT and gang contacting from home locations.

The boys journeyed once more to the Kingston motor-cycle circuit 11th September to attempt the impossible i.e. contact through 5 miles of densely timbered country at low elevation. About 3 miles appears to be the limit through this class of country.

Talking of new rigs 4LX is all het-up with the new outfit, 6L6G tritet 6L6G doubling 801 final. He has been getting out well on 56 mc using 801 self excited into a Sturber beam. 4GU has a Bruce beam working on 56 mc and a portable for all band operation.

4WT building a new receiver and taking up wrestling. We understand some prominent mat men have been reported leaving for other states.

4UL replaced his 6L6's with G type with an improvement in his modulation.

4UR has been burning the midnight oil and working the DX. Don't overdo it Jack.

4JF seems to specialise in 80 metres least so in the last contest.

4AP has been off quite a time and we believe for quite a while to come yet.

4RY has 807 working on 10 and 5 modulated too. Just at the moment off to Sydney for a week or so.

4WH Longreach was in ViB on holiday and visited some of the shacks. He reports some fine doings on 28 mc with a Reinartz beam.

4LK and 4GU have both deserted the ranks of bachelorhood. 4LK and 4GA just returned from holiday at Cairns where he met all the local gang.

4JW of Charters Towers brewery and spark coil fame has shifted to Cairns where we hope to hear him on AC.

4AW reports contacts on all bands from 5 to 160 on 12th September. Pity the 5 metre was not interstate. Has a 5 and 10 super working to a nicety except for car ignition QRM.

South Australian Division

By VK5KL via VK3MR.

During every year some very interesting lectures are placed on the syllabus for members to attend, but the popularity of those given by Professor Kerr Grant leaves nothing to be said.

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Amateur Radio

On September 8th, in the physics room of the University members attended a demonstration of the uses of the cathode-ray oscilloscope. These proved most learning to those chaps who had never before seen one in action. Professor Kerr Grant and his assistants were heartily applauded at the conclusion and thanked by Mr. Luxon and Mr. Whitburn. An inspection of the gear then followed. Arrangements for an outing on Labour Day have not been finalised, but no doubt something will eventuate. So far, a new president has not been chosen for this division. It is surprising how these positions are rushed to be filled! A competition over a period of three months is in progress between country and city hams. This should bring those chaps in the country in closer touch with the city chaps. . . . The all band cw contest proved a tustle between VK5KL and VK5JT for leadership in VK5. Final scores are not to hand. Those also heard going strong were 5LD, 5ZX, 5LL and five hot dogs! A demonstration of 5 mx oscillators was held on September 15th by the U.H.F. section. The output for a given input was measured on each individual oscillator and some very interesting data was gathered by those present. The members of this section intend co-operating with VK2 on their Saturday night 5mx skeds. Many intensions of putting up Yaggi beams are in the breeze. Mr. Bourne 5BU during a holiday at Kangaroo Is. took a 5 mx receiver with him. Except for parking himself each night at the end of the jetty in pouring rain, nothing was heard! This month sees once again the dx contest with the numerous contacts with our friends across the sea.

Conditions on ten metres is improving and several yank fones are coming through well. One afternoon, VS1AA and ZE1JU were heard at good strength. This band should be more used than at present. Try it chaps and gain the thrill of exploring pasture anew.

Some good scores in recent all band cw test.

Conditions were good on all bands except 28 mc. 6SA had it all his own way on that band by working

all states, whereas it is almost impossible for the Eastern states to work more than three and perhaps only two . . . Scores. VK3MR. 1480 pts. 5KL 1230, 2RA 1318, 6SA 1430, 2NY 1250?

6SA's work is as follows.

5 States on 28 mc.
5 " " 7 mc.
5 " " 3.5 mc.
4 " " 14 mc
3 " " 1.75 mc.

3MR's work.
2 on 28 mc.
6 " 7 mc.
5 " 3.5 mc.
5 " 14 mc.
5 " 1.75 mc.

It will be interesting to learn how much better VK7AB has done these, as he showed good operating sense and should easily beat the above. Others who are inclined to be above are 3ZC, 3HG and 4AW and 4UR.

VK5 COUNTRY NOTES.

By VK5PN.

VK5FB.—Frank reports that the QSO contest is going well and is extremely popular with the Country men.

Believe Frank will be sitting for the 2nd class ticket soon.

5GW.—Still dormant, but will soon be on the job.

5LC.—Les very active, both on fone and C.W. usually on 7146kc. This is a real low-power station, not more than 5 watts; lowest in VK5.

5RE.—Must be about the most experienced of the Country "hams." Been on C.W. and fone for many years, but still finds honest enjoyment in rag-chewing. A Returned Soldier; I wonder how many Ret-Sold. "hams" there are altogether.

5WG.—Wally studying for 1st Class ticket.

5PB.—Quiet lately. but will soon be busy again.

Amateur Radio

5NW.—Bob keen on winning the Brandon QSO contest and after having alternate weeks silent, manages to annoy the boys by catching up again.

5BK.—Heard consistently on very nice fone; somebody said, power $7\frac{1}{2}$ KW, but we have not heard him keying it yet ! !

5QR.—Met Reg. in the city recently. He attended a lecture on Cathode Ray Oscillographs, together with 5RT.

5RY.—Gone from Whyalla to new QRA near Sydney.

5RJ.—Darce heard piling up points in the contest.

5MP.—Len also hard at it on CW. Must have a good number of points now.

5YM.—New man gradually breaking through the ice: Give him a call chaps.

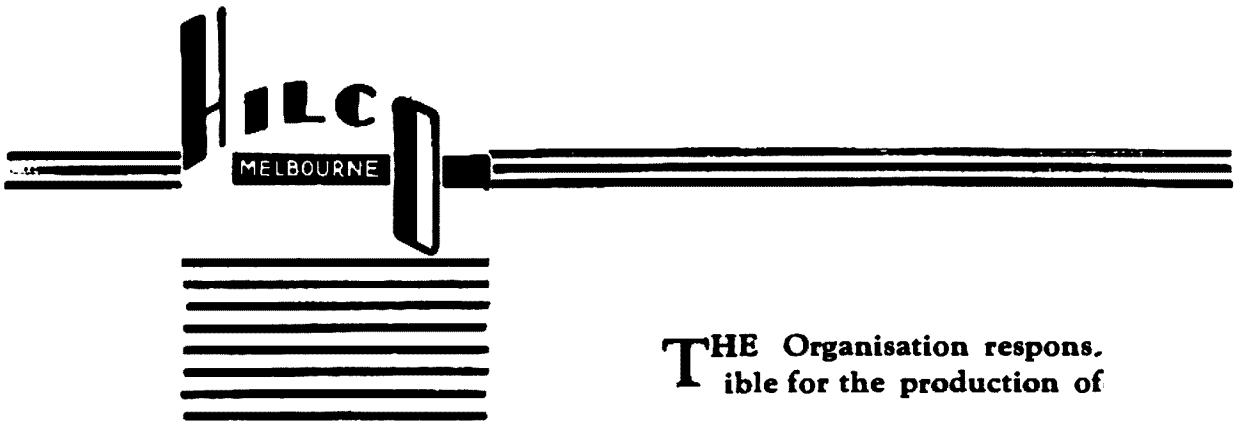
5FW.—Very nice new rig nearly ready for the air.

5JK.—Should soon be on the air.

5XR.—Cam and 2nd op still do a bit, but busy re-building receiver and preparing for AC.

(Continued from Page 14)

observe occasionally that there should be some law and order about amateur radio. His ideas that amateurs should be really proficient operators in case of emergency are only said for the sake of saying something. He surely cannot mean it. Earthquake, fire, flood, War—they can never come to Australia. His "Be Prepared" motto based on actual experience of emergency work and even War years ago, are really not important. In any case, you have been on the air a full six months or a year, and know all about this amateur radio game. And so you just switch everything on, grab that mike and go on and on and on—Until!



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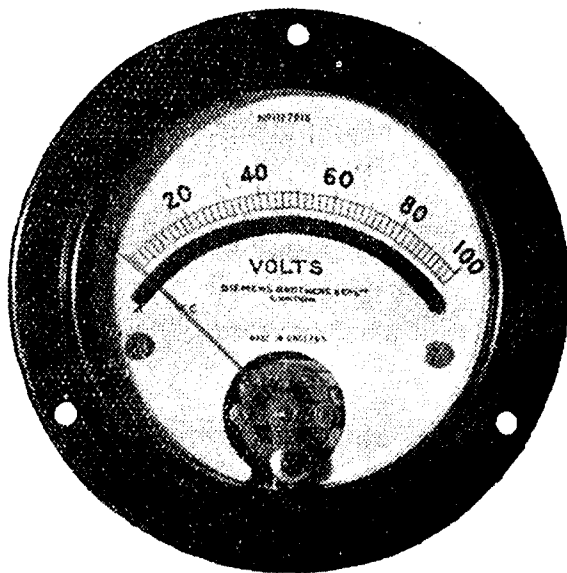
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Third District, Victoria—Pilot Officer V. E. Marshall, 3 Myrtle Avenue, Kew (VK3UK).

Fourth District, Queensland—A. E. Walz, Sandgate Road, Nundah (VK4AW).

Fifth District, South Australia—F. M. Gray, 52 Ormond Grove, Toorak Gardens (VK5SU).

Sixth District, West Australia—J. Mead, 111 Gerrard St., East Victoria Park, W.A. (VK6LJ)

Seventh District, Tasmania—R. Cannon, Goldie Street, Wynyard (VK7RC).

VK3UK-3Z1

Owing to the fact that the details of the new organisation have not yet been finalised, the holiday that VMC has been having has been extended for a further three weeks. Thus the Sections will be able to start off immediately on the new schedules. 3Z1 has a twelve weeks training program. The October meeting of this section drawn up so that every member will be at the same standard as the others and 1938 will start with everyone having a thorough grip on the new scheme.

The details of the National Field Day, published in this issue will be received with delight as we have long felt the need for such a test. Practically all VMC members have portable equipment available and we will be running a side contest at the time. The opportunity is a great one for putting the experience gained in the use of portable gear to practical use and for those who will be 'on location' for the first time, a lot of valuable information will be gleaned. Apart from ordinary Ham ranks Victoria's entry will be around the twenty mark from the Reserve alone, so you interstate fellows should have no dearth of VK3's to swell your total.

3F9 made a hurried trip to the city this month and we were able to have a long talk about Reserve doings. Since Ivan took up golf, he finds it hard to decide in his mind whether golf or tennis holds pride of place. To those of us who play golf (I was nearly going to say 'were golfers'), we have no doubt in our minds.

3D3 spends a great deal of time on 56 mc these days and gets out well.

3Z1 has two Eimac 50T's in PP ready for the Trans-Tasman tests. Only ICW will be used and the automatic sender will be left running during certain periods.

1A1 will be taking a receiver to Geelong with him during the Trans-Tasman tests, but he will only be using a $\frac{1}{2}$ wave portable aerial on the car. It will be interesting to see if he hears any of the Melbourne gang, as no 56 mc signals have yet been heard down there across the water.

We are hoping to have a number of the country men down in the city at the end of the month during the period of the Show. So far word has not come through of who will be down.

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Amateur Radio

(Continued from page 11)

Then this Martian gink swung in some other special gadget for DX (????) reception, and we began hearing all the strange call signs imaginable. PLX's, JPD's, VKL's, and a host of others, that he calmly informed me were inter-planetary calls. We finished up working a chap on Mars, and got R6-7 from him.

This seemed all too good to be true, and suddenly—I don't know how, but I got across my high tension voltage, and let out a helluva "Wow!"—and when I came back to my feet I was alone in the shack, lying on the concrete floor, holding the bug in my hand.

I went outside, but I utterly failed to see any "space ship," so I'm getting round to the conclusion that I fell asleep and dreamed it all.

What say you, OM?

(Continued from page 9)

power used, signed by the operator or operators shall reach F.H.Q. not later than 31st December, 1937.

12. The decision of F.H.Q. in all matters pertaining to the contest shall be final.

13. Awards.

A cup will be awarded to the outright Australian winner by F.H.Q. and suitable certificates to the winning station in each state.

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A general meeting of the Victorian Division will be held at the W.I.A. rooms on Wednesday, October 13th.

The Short Wave Group, who are the hosts for the evening, have undertaken to provide a lecture. The winner of the Gadsden Trophy is to be announced, and other important announcements are to be made. All members are urged to attend.

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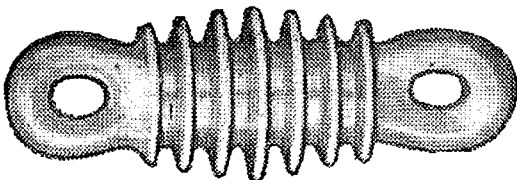
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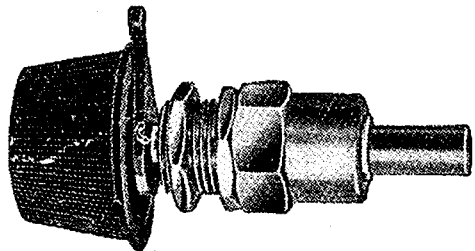
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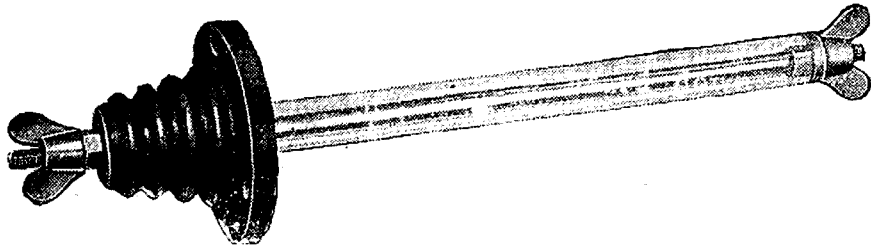
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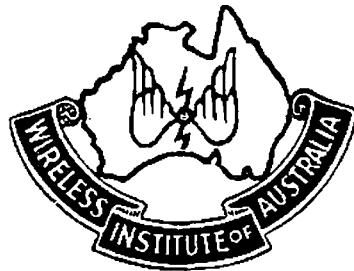


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AMATEUR RADIO



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NOVEMBER, 1937

Amateur Radio

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AMATEUR RADIO

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Vol. 5 No. 11

1st NOVEMBER, 1937.

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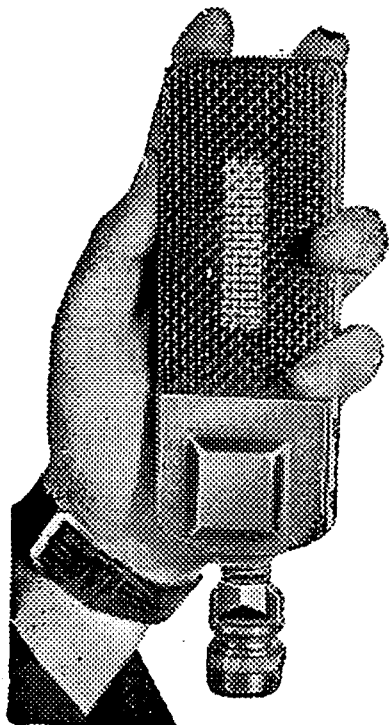
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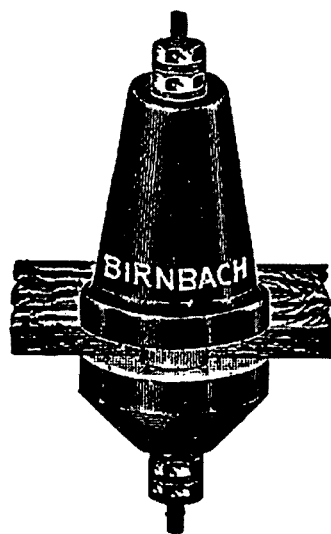
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EDITORIAL

With "Amateur Radio" well into its fifth year, an exposition of a few aspects of its publication is timely. Whilst the needs and requirements are identical with those of a commercially produced monthly, the collection of the matter necessary to fill each issue is very different in our case. We must depend entirely upon voluntary contributions for our copy, and whilst one might feel that a steady flow of articles would be assured from such a large and enthusiastic body of amateurs, the reverse is the case. "Amateur Radio" has one enemy—procrastination. In promises of articles—genuine promises from hams who have every intention of fulfilling them—it would be within the bounds of possibility to say that we could fill fifty issues. Unfortunately that old "thief of time," procrastination, whispers in the ears of all these well-meaning hams, "let the other fellow do it this month," and repeats the words next month and the following. All State Councils, in particular those of Victoria and New South Wales, have done a great deal to assure a steady flow of articles but, in the main, the position remains very little changed. There must be literally hundreds of interesting matters which are just crying out to be written up by some of you, there must be many details of your own transmitters and receivers, points of which would prove of value to your fellow hams if they could only see the light of day. The fact that you may not have a literary bent or may not be sure of some technical detail should deter you not at all. That is one of the reasons for the existence of the Magazine Committee.

The next matter is that of Notes. It can truthfully be said that the compilation and production of "Amateur Radio" would be a comparatively easy matter if it were not for that unknown factor—Notes. One month the quantity sent in is half that of the previous month, another month

the majority arrive late and we don't know where we stand, and NEVER does an amount equivalent to the previous issue come to hand. The Magazine Committee has many ideas for improving the general layout and set-up which cannot be put into practice until this problem of Notes has been successfully laid. We realise the difficulty in which the Divisional correspondents find themselves, how they are dependent on other men for portions of their Division's quota. You can believe us, we realise only too well what a job yours is. It is a thankless but an essential job, for on your shoulders is the responsibility of presenting details of your Division's

Finally we come to the subject of general improvement. Constructive ideas are always most welcome and if those ideas are practicable you can be sure that they will be incorporated. Some excellent suggestions from VK3 country members this month have been responsible for the formation of two new sections of the Magazine, a DX page under the able guidance of VK3MR and a Questions Column. Both will add interest and variety to the pages, but both, naturally, depend upon one thing for their continuance—your support. Interstate DX men are wanted to forward regularly to 3MR information of DX conditions, etc., in their States, so that he can present an all-Australian survey that will prove of value and interest to hams throughout the country. The same remarks apply to the Questions Column. If you require information, the Magazine will help you all it can, but unless we hear details of your query nothing can be done. If you desire your question to be inserted anonymously we will see that it is arranged.

Boiled down to a single sentence, the foregoing means: "This Magazine is yours, if you want it improved you must help us improve it."

Efficient Doubling to 5 Metres

ENTRY FOR GADSEN TROPHY CONTEST

A. Pritchard, VK3CP

A super-heterodyne receiver, designed for our congested lower frequency bands, has a very high order of selectivity. If this receiver is also used on 5 metres the first thing noticed is the tremendous frequency band width of the high C. modulated oscillators and MO-PA's. This frequency band extends over several hundred Kilo-cycles and on the super-heterodyne sounds like AC hash or in the case of the better wobblers (!) an AC T2-3 carrier (heard with the beat note on the receiver) which jumps about during modulation. With our receivers of such a high order of efficiency at the ultra-high frequencies, surely it is time we changed from 1927 transmitters to 1937 Crystal controlled or Electron coupled oscillators to supply the fundamental frequency; then the efficiency of the following doublers is our greatest problem. Many systems of doubling have been tried here with varying results as to the output and tube heating, etc. In the lower frequency stages the output was very considerably increased by the ultra-audion system, i.e., the cathode bias resistance wound in the form of a choke—also a combination of ultra-audion and feed back via a small neutralizing condenser. Excellent output doubling from 20 to 10 metres was obtained with the push-push circuit using type '46 tubes (the elements connected as class B tubes) using cathode bias and 750V on the plates. All of these systems fell down badly when attempting high power doubling from 10 to 5 metres and the following circuit was designed and has given excellent efficiency and power output. With an RCA 801 type tube a resonance dip from around 200 mills to 40 is easily obtained. With all neutralized RF amplifiers, fair efficiency is obtained using the stage as a doubler because of feed back through the small neutralizing condenser. It is noticed that each time this condenser's capacity is altered,

the grid tuning condenser must be adjusted to bring this grid tank back to resonance with the excitation frequency, as the neutralizing condenser-coil combination is in parallel. The idea is to remove this grid tuning condenser and its losses and tune this circuit to resonance by the neutralizing condenser alone, which

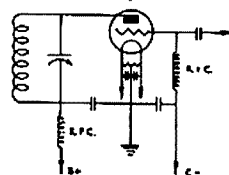


Fig 1 Ordinary doubler circuit with no provision for feedback

is also the feed back agent. In the majority of amplifiers or doublers feed back cannot be increased until the output frequency self-oscillation state is reached, but with my doubler this is possible. In circuit No. 3 it is noticed that the grid circuit is from the link coupled end of the grid coil where by-passed to earth, via the tapping to the grid of the valve, through the feed back condenser, and through half of the output tank, coil-condenser combination and by-passing to earth. The last portion has small effect at the excitation frequency (the circuit tunes perfectly) although being tuned to the output frequency, supplies the regeneration voltage admirably. It was also found

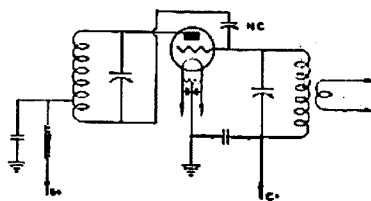


Fig 2 Neutralized amplifier giving some feedback when used as a doubler

that more feed back could be used when the link coupling was connected directly to the coil (also earthing one side of the link), putting a slight damping effect across both tanks.

Amateur Radio

Good coupling is obtained with the link across 2 turns and a coil of 2 turns, 1½" diameter at the other end. In the case of this 5 metre doubler, the amount of feed back is adjusted by altering the tap on the grid coil, for instance, tuning the grid circuit to the excitation input with, say, 8 turns tapped in, will require the grid condenser in a certain position, if the resonance dip is not good enough, needing more feed back; putting the tap on, say, 6 turns requires the feed back condenser to be turned further in mesh to restore input resonance and automatically giving more feed back, caused by the extra capacity in use. It will be seen that if too much feed back is already being used, more than our example 8 turns will be necessary, thereby causing the feed back condenser to be turned more out of mesh to restore input resonance again, automatically giving less feed-back voltage. Removing the ordinary grid tuning condenser not only reduces the losses but gives a bigger coil with increased impedance at the second harmonic feed back voltage, which is very necessary because this grid tank is in parallel having a shorting effect to the regeneration voltage. The split stator plate tuning condenser is most important, in fact the doubler will not work using a single section condenser in its place. My condenser is a re-modelled twin having originally .00035MF. each section and all double spaced. Bolts (with wing nuts) are soldered to small strips of brass, which in turn are soldered directly to the bars holding the fixed plates, giving low loss coil connections. It was found that in the case of the 801 type tube, the feed back adjusting tap is very critical, requiring a grid coil tapped each turn and not over ¾" in diameter—10 turns in all. The feed back condenser was originally .0001 MF. and is double spaced. It must have really good insulation; bakelite is unsatisfactory, as blisters and heat are developed, causing heavy losses. The plate coil has 6 turns of 12 SWG—1" inside diameter, with the turns spaced 5/16" between each and the tap in the centre. Coupling the output to an antenna or other load is accomplished by the two turn 2" diameter coil placed around the centre of the plate coil. The Collins coupler was found to load the set and appeared

to put the output in the feeders, but actually the cause of the loading was the tuned circuit. The best system is to use the link coupling to another tuned tank and clip the feeders on to this. This outfit can be modulated by the grid bias system and under modulation the carrier stays T9X as received by 3BQ and 3YP on selective super-heterodyne receivers. The most satisfactory system of

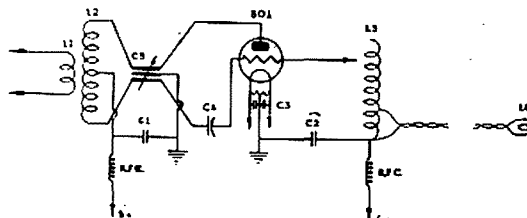


Fig 3 New Doubler circuit

- L1—2 turns, 2" diam.
- L2—6 turns, 1" diam., 5/16" between turns.
- L3—10 turns, ¾" diam.
- L4—2 turns, 1½" diam.
- RFC—½" diam., 1" long, close wound 36 SWG.
- C1—2 .01 MF mica in series.
- C2—.001 MF mica.
- C3—.001 each.
- C4—Double spaced .0001 MF.
- C5—Double spaced .00035 MF each section.

modulation is the plate or Heising method. With an 801 driver on 10 metres the doubler runs continuously with efficiency comparable to a straight neutralized amplifier with 750 volts on the plate, 300 volts bias (power pack) and loaded up to 100 mills. The above-mentioned amateurs can vouch for the efficiency of the system.

Remember the National
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December 4th, 5th

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- 40 Watts maximum input
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- Amplification Factor 20
- Plate Voltage 425 max.
- Plate Current 70 ma. max
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- Typical output
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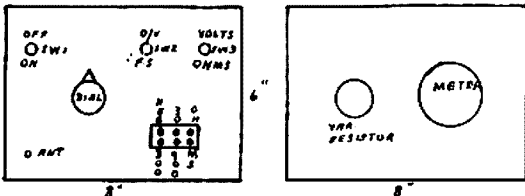
Field-Ohm Voltmeter

By J. Coulter

The Field-Ohm-Voltmeter presented here is the result of my effort to overcome one of the ham's greatest afflictions—a sad lack of milliameters.

The milliammeter is mounted, together with a variable resistor, on the top of an aluminium case, 8" x 6" x 5". The controls on the front panel, left to right, are:—SW1, antenna connection directly below tuning condenser; SW2, SW3 and the ohm-voltmeter terminals beneath SW2 and SW3.

A leather handle is bolted to the top, just off centre to obtain balance, four rubber feet and a banana socket mounted on the bottom. The banana



socket is for attaching an earth spike.

The circuit is self-explanatory. One question may, however, be asked—why the separate resistors for each voltmeter range?

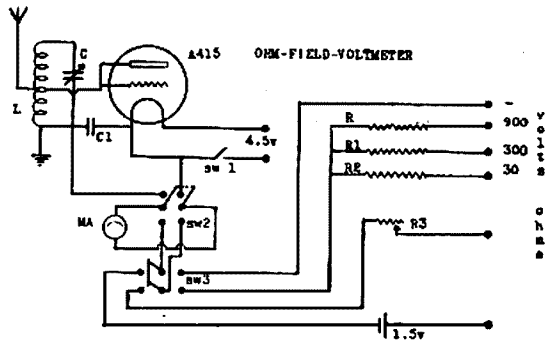
Resistor ratings were found to be unreliable, and in order that the error would not be additive the series connection was not used.

The circuit will also make operation quite clear, but one point might be mentioned in connection with the field measurements.

The antenna used must be the same length for each test, as these are only comparative readings.

This meter has been in use for over nine months, and although the cost was only £2/10/- I would not sell it for double that amount. So in gang. You'll find it useful.

- L—For desired frequency.
- C—For desired frequency.
- CI—.01.



- SW1—SPST Toggle Switch.
- SW2—DPDT Toggle Switch.
- SW3—DPDT Toggle Switch.
- M.A.—0.1 ma Triplet.
- Ohm scale.
- 0-30 volt scale.
- 0-300 volt scale.
- R—900,000 ohms.
- R1—300,000 ohms.
- R2—30,000 ohms.
- R3—2000 ohm potentiometer.

Federal and Victorian QSL Bureau

(R. E. Jones, VK3RJ, QSL Manager.)

PAOLB, J. F. Diepstraten. Loopschansstraat 74, Breda, Holland, would be delighted to receive a QSL for the following contacts:—VK2UD, 2VQ, 3DP, 3KS, 4AP, 4BB and 2UU.

Don McKinley, VE3AU, has been on 14 mc daily each morning for VK contacts. August to October produced 76 different VK stations for him.

Dave Duff, VK2EO-3EO, is back in Sydney after a nice cruise around Australia. The movements of the Navy controls Dave's future plans.

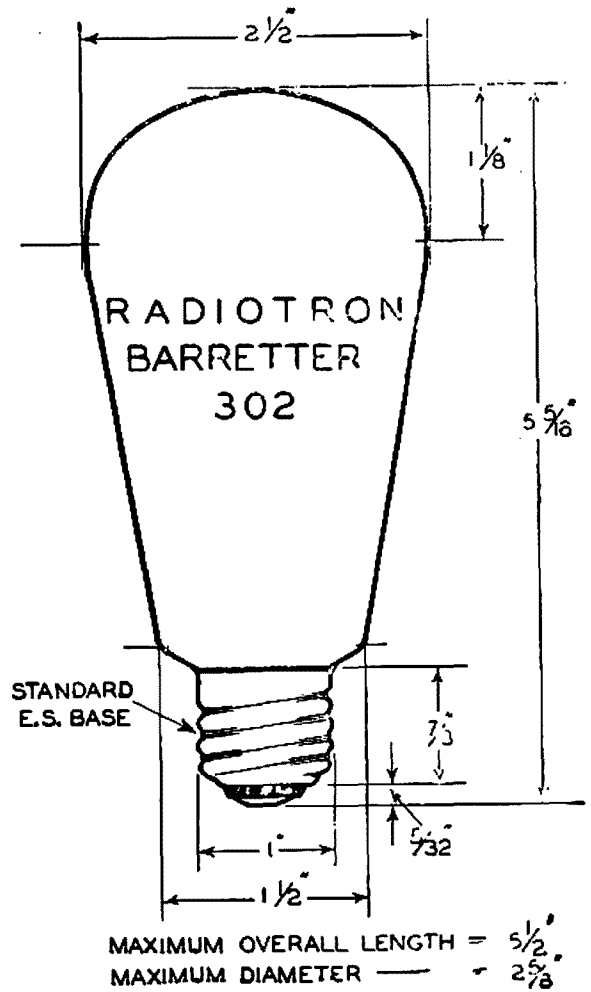
Qras of the following VK3 stations are required:—B1, NV, TT, WU, WR, ZE.

Cards for the following Victorians are on hand:—AT, BS, BV, CA, CU, CV, DI, DJ, DK, DS, DU, EA, EF, EH, ES, FL, FM, FS, FT, GA, GM, HE, JA, JN, JR, LL, LQ, LV, NG, NS, NT, OX, PA, QB, QM, SE, SF, TB, TW, UF, UJ, UO, WL, XD, XE, XG, XU, XZ, YG, YM, ZC, ZY.

Radiotron's New Barretter Tube

The problem of A.C./D.C. receivers has from the first been one of difficulty. In America, where 110-volt supply is usual, and where practically all mains supplies are between 110 and 125 volts, the problem has been an entirely different one to that in Australia where we are confronted with a fairly wide range of voltages, and in many cases extremely pronounced fluctuations. The Australian voltages are all between 200 and 260 volts, which therefore eliminates the necessity for voltage doubling as is used in America. A minimum voltage of 200 permits this voltage to be applied, through a filter system generally incorporating the field coil of the loud-speaker as a choke, to the plate of the power pentode valve. This method has many attractive features, and is a very simple one to adopt, and is the one almost entirely used at the present time throughout Australia. The number of components in the filter circuit is a minimum, and the voltage applied to the power valve is sufficiently high to enable ample power output to be obtained. There has, however, always been a difficulty in the use of the 0.3 Amp. series of valves in that a suitable Barretter was not available. A Barretter is a resistance lamp, the resistance of which varies with the current flowing through it, so that when the current tends to increase the resistance increases much more rapidly, and the current is thereby maintained almost constant. In an A.C./D.C. receiver the heaters of all valves are connected in series, so that a voltage of approximately 70 Volts is required, for a 5 Volt set using a typical combination of Radiotron valves. The difference between the 75 Volts required by the heaters of the valves and the voltage actually available from the mains must be dropped through some resistance device. In the past it has been usual to employ a fixed resistor with two or more tappings to suit various supply voltages, so that an approximately correct voltage was applied to the heaters of the valves. This method, while quite satisfactory in

cases where the mains voltage are constant and where correct tapping is available to suit the mains voltage, has tended to give trouble when used with badly fluctuating mains



supply voltages. It is unnecessary to stress the fact that valves should always be operated with the correct voltage applied to their heaters of filaments, and this is even more true in the case of an A.C./D.C. receiver. One reason for its greater importance with A.C./D.C. receivers is that it is necessary to consider the valves in terms of the current flowing through the heaters rather than the voltage across one heater. Due to the fact that most of the resistance and therefore most of the voltage drop is not across the heaters but across the dropping resistor, the whole arrangement will tend to follow Ohm's law fairly closely. That is to say, the current and voltage drop

are proportional. The tolerance in current of a valve heater is plus or minus 6%, which means that the current of one 0.3 mp. valve should never increase above 0.318 or drop below 0.282 Amp. The reason why a tolerance of 10% is permissible when the heaters are connected in parallel is that under these conditions a 10% change of voltage only produces a 6% change of current due to the heater not obeying Ohm's law.

The problem in an A.C./D.C. receiver is, therefore, to keep the heater current of the valves within a tolerance of plus or minus 6% under any conditions of mains supply voltages. This can only be done successfully when an automatic device is used, and a Barretter is a very satisfactory as well as being a very simple solution. Although many Barretters have been used and are being used, none has been available on the Australian market for operation on the local range of mains supply voltages and at the same time suited to the standard 0.3 Amp. series of valves. Amalgamated Wireless Valve Co. Pty. Ltd. are pleased to announce that a Barretter Radiotron Type 302 is now available at a list price of 14/6. This Barretter has a range of voltage drop between 112 and 195 volts and the current flowing through it is 0.3 Amp. within the tolerances necessary for the operation of the valves. The use of the Radiotron 302 will undoubtedly assist in the design and satisfactory operation of A.C./D.C. receivers for Australian conditions. One of these Barretters has been used for several months past in a receiver which has been subjected to all the ill-treatment which could be imagined, and the set has stood up splendidly through it all. It can therefore be recommended as being both mechanically and electrically ideal for A.C./D.C. receivers.

The outline and dimensions of Radiotron 302 are shown in the drawing, and it will be seen that the overall dimensions are 5-5/16" x 2 1/2" and that an Edison Screw base is employed. A standard Edison screw socket (as used for electric lamps) provides good electrical contact and mechanical support.

In conjunction with the Radiotron 302 Barretter it is recommended that Radiotron 43 power pentode be employed so as to permit a power output practically identical with that given by most A.C. receivers. There is no reason why an A.C./D.C. receiver cannot be as satisfactory as an A.C. receiver, either as regards power output or quality. As a rectifier, Radiotron 25Z5 is recommended with a resistance of 100 ohms in series with each plate, and with the two units connected in parallel. With this arrangement, a permissible D.C. current of up to 170mA may be drawn and this would be sufficient for any normal applications while giving an ample margin. A suggested valve combination is:—

Converter	6A7
I.F. Amplifier and Diode Detector with A.V.C.	6B7S
Audio	6C6
Power Output with series inverse feedback	43
Rectifier	25Z5
Barretter	302

A complete "G" series of valves has been added to the Radiotron range, so that manufacturers for the coming season may be able to use these Octal based glass valves in their receivers. In addition to the American "G" series there have been added the following "G" equivalents of the existing Australian types:—

Existing Class Types.	Equivalent "G" Types.
1C4	1M5G
1D4	1L5G
1K4	1K5G
1K6	1K7G
6B7S	6G8G

We wish to point out for your information that with the exception of the 1M5G these types are identical electrically in every respect with the existing glass types.

The 1M5G incorporates higher plate resistance, higher amplification factor and an improved A.V.C. characteristic, enabling receivers fitted with this type to be capable of handling large signal voltages without overloading.

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There are also two additional types not included in the American Radio-tron range, namely, the 6U7G and the 6B6G, being exact equivalents of the 6D6 and 75 respectively. These two types will be manufactured in Australia.

Stocks of the American types are already available, and supplies of the Australian-made "G" series are due for release in the early part of November.

The complete range to be manufactured in Australia is:—

1C7G	1K5G	5Y3G	6G8G
1D5G	1K7G	6A8G	6J7G
1F5G	1L5G	6B6G	6U7G
1J6G	1M5G	6F6G	6V6G

It is expected that the "G" series will be adopted throughout Australia as the standard for all new sets.

TRANSMISSION SCHEDULES.

November, 1937.

VK2ME, SYDNEY.

Sydney Time.	G.M.T.
Sundays: 4 p.m.-6 p.m.	0600-0800
" 7.30 p.m.-11.30 p.m.	0930-1330
Mondays: Mdt.-2 a.m.	1400-1600

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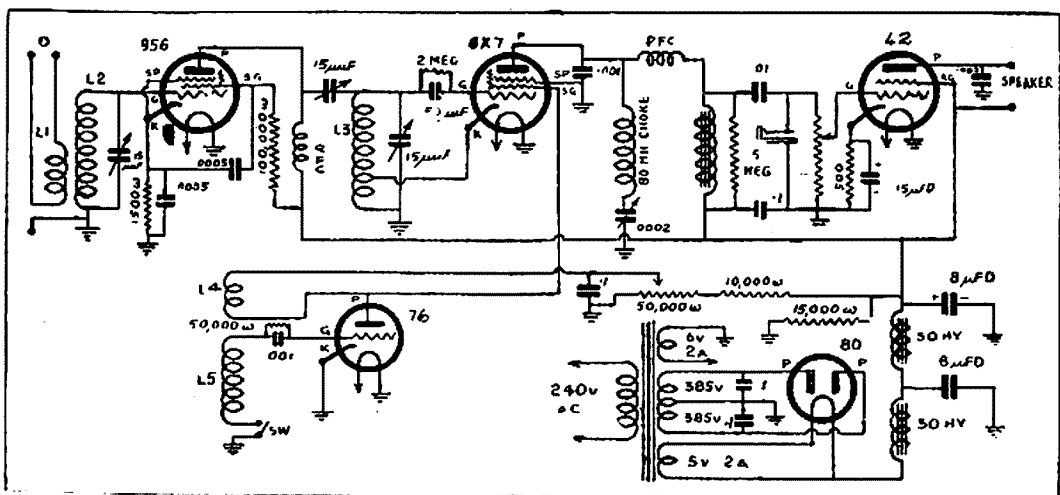
by VK2NO

The receiver here described won first prize in the ultra-high-frequency receiver section at the 1937 Amateur Radio Exhibition in Sydney. It represents a distinct step forward in modern super-regenerators, and the design is recommended as a standard for this class of receiver.

The search for R.F. amplifiers for use at five metres and below has been a long one, and although fair results can be obtained under some conditions with ordinary valves, there

very efficient super-regenerator or a "straight" receiver as required. The interrupter is a 76.

The usual 42 pentode output and rectifier-filter arrangement can be used as in the diagram, but if a 41 is used in place of the 42 an excellent power supply for this receiver is comprised of a Philips 3003 "B" eliminator and a six-volt two-amp. filament transformer. With the exception of coil data all necessary values are indicated in the diagram.



is no question about the superiority of the R.F. pentode "acorn." The 954 (pentode) and 955 (triode) have been available for some time, and recently the 956 joined the family. The difference between the 956 and 954 is that of a 58 to a 57 or 6D6 to a 6C6. It is more correctly an R.F. amplifier than the 954. It was decided therefore to incorporate this valve in a receiver with the object of securing effective amplification over a wide frequency range. Al-

though a 954 could be used as detector, the 6K7 was used in this position with the object of reducing cost. The 6K7 proved a remarkably efficient ultra-short-wave electron-coupled detector.

"Self-squegger" detectors are at the best a makeshift, and so a separate interrupter valve was used. As this is arranged to switch on or off at will, the receiver is either a

The original receiver was made up in rack and panel form, with the receiver in the top rack and permag. speaker and power supplies in the bottom. It looks like a commercial job, and works even better than it looks. Plug-in coils are used for the three bands, and the mountings are made up of WT/22 insulation (loaded ebonite) with G.R. type sockets and plugs.

The R.F. stage is separately tuned. It could be ganged, but there are pitfalls in the way of so doing. As the R.F. stage tunes fairly broadly, the extra dial is no handicap. Capacity coupling is used between R.F. and detector stages, and this method was found to be the best after trying all couplings. The 956 is mounted through an interstate partition and carefully by-passed, direct at the socket. Heater and all "live" leads are braided and earthed throughout

(Continued on page 14)

Wireless Questions

1. What is the function of an I.F. amplifier?

(The point that is not clear in my mind in regard to beat reception of an undamped wireless wave is the function of the first detector.)

Assume, for example, a signal is being picked up on 7,000 kc., and the beating oscillator 7,500 kc., the resulting beat note formed is thus 500 kc.

Now, I understand that the function of the first detector is one of rectification of the "mixed" frequencies. The output of a rectifier is one of unidirectional current, pulsating at the beat frequency. When this beat is applied to the grid of the first intermediate amplifier tube, would it be correct to assume that there can be no negative excursion of the plate current of that tube? If the input signal only varies from zero to maximum positive (being rectified, DC), how can the I.F. tube function as a straight amplifier and produce a wave form of 500 kilocycles, which will later be impressed on the grid of the second detector? I am at present under the impression that the signal on the grid of the second detector will be purely an amplification of the pulsating output of the first detector.

Answer to Problem

The more commonly used term "mixer" is a more appropriate one for the first detector in a superheterodyne receiver than the older term, although a process akin to rectification actually does take place in that tube in the impression of the beat frequency on to the primary winding of the first intermediate transformer.

In considering the operation of the first detector, three different frequencies can be regarded as being developed between the plate and cathode of that tube as a result of the application to the grid or the space charge of the incoming signal frequency, and the mixing frequency.

One of these output frequencies is the signal frequency, the second is the mixing frequency, and the third is the difference between the two, or the beat frequency or intermediate frequency.

The primary circuit of the intermediate frequency transformer is tuned to the third of these. As a parallel tuned circuit, its impedance to the beat frequency is very high. Consequently, the beat frequency develops a relatively high alternating voltage across the winding. The impedance of that transformer primary to the signal and mixing frequencies is low. Hence they do not develop an appreciable voltage across the transformer primary, and are, in fact, by-passed to earth through the condenser tuning the primary.

The current flowing through the plate circuit of the first valve, therefore, is a pulsating direct current. But a pulsating direct current can be analysed into its direct and alternating components, and if the valve is operated as a class A amplifier, and is not overdriven, the alternating component will be of perfectly good wave form. The transformer, of course, can deal only with the alternating component, although the direct component is also flowing through its primary winding. Hence the output of the secondary winding will be an alternating current only.

The first intermediate amplifier tube is operated as a class A amplifier, and, if the receiver is correctly adjusted, it will not be overloaded. Hence there will appear in the plate circuit an alternating component identical in wave form with that of the e.m.f. applied to the grid of the tube. There can be no negative excursion of the plate current as you suggest. If the valve is incorrectly operated, or overloaded, it is possible for the current in the plate circuit to drop to zero on strong negative excursions of grid pressure, and to remain there for an appreciable angle of the cycle. If this happens, it is clear that the wave form of the alter-

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Amateur Radio DX Notes

by VK3MR

I have been asked by the mag committee to write each month a few words about this DX racket. Included in my notes I hope to be able to drop a hint or two that may interest you dx hounds, and also to keep those interested in contests, well informed with the latest scores in the various tests held from month to month. It is up to you chaps that take an active part in these tests to drop me a line as soon as the test is over so that it will be in the mag as soon as possible, and so that we will not have to wait 9 months for the scores to be made public. Also you chaps that are content to pile up the list of countries worked, drop me a line with the latest dope, who you work and all about it. Thanks a lot in anticipation and have in my hands by the 12th of each month for publication in the following months mag. Well, the first section of the VK/ZL dx test is over. Conditions were very poor both week ends in VK, but seemed a bit better in ZL. The ZL's certainly rolled up in numbers and what notes! Oh ye ZL hams how can you! The Hf end of the 14mc band is 14,400 kc/s. ZL mag please copy! It is funny how the band widens during a contest, can't see why the IARU need go to Cairo for wider bands when they automatically widen! Aint right chaps Poor old GMR.....ZL's were not the only offenders by the way! There is one thing I can not understand and that is why the notes of certain stations get rough during contest periods, apart from causing terrible

local interference it is to their detriment because the owner of a consistently good note is respected, whereas those rotten rac ripply notes, well you can draw your own conclusions.

Another very important thing about having a consistently good note or even a consistent one, whether good or otherwise, is that you get known throughout the world by your note and fist, and that is one big advantage. We in VK are known by the characteristics of our signal the same as we can pick out the W's, G's and the D's. So it looks as if you will have to have a good note because if it is consistently bad you will tread on the vige comm's corns!

Some new stations heard in the test were, VQ8AS ex VQ8AH from Chagos Is. chirpy dc hanging about the LF side of the W fone band—easy to raise. VR4OC Solid sig T9, about 14,100. kc. not sure where he comes from, but not so far away. F18AC, T9 about R6/7 at the HF end of the W fone band. French Indo China he is looking for a VK on fone too. Who managed to raise HS1BJ? where does he tune from! He has a solid sig both of fone and cw about 14,070 kc.

Our friend OA4J was very active on 14,280 kc and can always be worked by using the HF xtal, also LU9BV, both easy. The VS7 chaps are a puzzle to me, don't know where they

(Continued on Page 28)

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(Continued from page 12)

nating pressure presented by the plate of that Valve to the primary of the succeeding transformer will depart from that applied to the grid of the valve in that the negative peaks will be "clipped"—that is, their relative amplitude will be curtailed and they will be flat-bottomed. It does not follow, however, that the output from the transformer will repeat this distortion of wave form. The transformer is designed to have as high as possible an order of merit. This property can be considered virtually as a factor of electric inertia. This inertia, or fly-wheel property of the transformer, causes the alternating current flowing in the tuned circuit to complete each cycle as a substantially normal wave, even though the exciting voltage applied by the valve plate does not follow exactly the same wave form. This effect is commonly used in transmitting applications.

In the so-called class C radio frequency amplifier employed in radio transmission, the grid of the amplifier tube is biased to a value at least twice the cut-off value for the tube at the operating plate pressure. It therefore follows that when an alternating potential is applied to the grid, current can flow in the plate circuit only on the tops of the positive peaks of the grid potential, because only on the tops of these peaks does the grid pressure reach a value of less than cut-off value. In other words, current flows through the valve for considerably less than 180 degrees of each cycle applied to the grid. The plate circuit includes a condenser and coil tuned to the same frequency as the grid frequency, and the flywheel effect in this circuit completes each cycle, and a substantially accurate replica of the exciting wave form actually exists in this tuned circuit, although a valve operated in this way produces harmonics of the fundamental frequency rather prolifically. In commercial applications this disadvantage is overcome by the employment of a push-pull amplifier, in which even harmonics are cancelled out and an excellent wave form is reproduced.

Correspondence

AUSTRALIAN AIR LEAGUE

The Editors
Amateur Radio
Dear Sirs,

I would like to bring before the notice of amateurs and would-be amateurs the fact that the Australian Air League provides certain advantages which may prove of interest.

During recent weeks a series of scholarships leading to actual flying training for the pilot's "A" licence has been introduced for members. Many radio enthusiasts may also be air-minded with regard to aviation as well as to "ham" radio, and may therefore desire to participate in League activities with a view to contesting such a scholarship.

Arrangements for regular "skeds" among "ham" members of the League are being made and are in the hands of Mr. R. Corthorn (VK 2VG).

The League has arranged for a series of slow Morse transmissions weekly by Mr. D. Reed (VK 2DR) on Friday evenings at 7.30 p.m. on the 80 metre band and all persons interested in learning the code are invited to utilise this service.

Readers who may be interested in the activities of the League are invited to write to me, and further information will be supplied.

Yours faithfully,
R. C. BLACK,
(VK 2YA).

(Continued from page 11)

the receiver, with the exception of grid leads.

In the plate of the detector is a special interrupter filter, consisting of an 80mh. choke and series .0002 pre-set condenser. This combination must be determined by trial. It must tune to the interruption frequency, and in so doing keeps this from getting to the grid of the audio stage. The iron-core choke used for coupling can be the secondary of a Philips audio transformer or any high-impedance choke. L4 and L5 are the I.F. coils, and can be adapted from an old 175kc. intermediate superhet transformer.

28 and 56 M.C. Notes

(A. Pritchard, VK3CP.)

Ten meters is still giving us good DX, although the peak condition is passing. At present the Europeans are showing up towards midnight and fading out a little after 1.15 a.m. We have been surprised to hear many W stations at good strength around 11.30 p.m. These Americans were first heard on Sunday, 26th September, when conditions were exceptionally good, a 599x report being received here at 3 CP from OK2OP at 11.15 p.m. At the half-hour W4EFS was heard qso GM6Xi giving him 599. At the same time W9 GBY was r6 calling CQ. D4XQF was r5 qso OH3NP. VK3YP had a fine list of DX on the 3rd October, contacting GM5KF, VS1AA, VU2AN, VU2AU, G5Li, PAoKZ, PAoUN, PAoMQ, OK2oP, SM6WL; later the same night, app. 11.30 p.m., Ingram heard W1DBR, W8CNC, W9WJD, with far greater strength on the European beam than the U.S. beam, showing that these W signals take a different path at this late hour. The following Sunday, at 3BQ, Max had a fine bag, receiving very good reports from the following:—G8MU, VU2CQ, VU2AU, OK2RM, SM6WL, SM5YH, OK1AA, U2NE, F8BS, ZU6P. These lists will give an idea of the chaps who are consistently on 10 meters. G2OA, ON4HC, CM2OP, CM2FA, VE3TY, J2CE, XE1CM (rac), KA1MM, VE5Bi, VS6AH, ZE1JU are also heard quite often. During this last contest the VK's, although rather weak here in VK3, as can be expected, due to skip, have been keeping VK on the map. VK2SD, 2ZW, 2AZ, 2RA, 2UD, 2ADE, 5HG, 5FM, 4BB, 4WH, 6SA, 6AA, 7AB, also VK3iW and 3TU have been doing fine work with the DX, the latter's line up having four stages—'59 tri-tet, 80 xtal, 6A6 doub. to 10 mx, 6L6 buffer and PP 35T's final. The antenna is being designed for 10 mx, with the two quarter wave sections in series, i.e., the Johnson Q copper bars feeding the open wire section, feeding voltage to the antenna proper, this

feeder acting as an ordinary Zepp system on other bands, SV1RX, in Greece, had his only contact with VK here at 3CP on the 21st September, at 10.45 p.m. He has been heard a few times since at 7 p.m., but no contacts. Also, on the 19th September, OA4J was contacted on r5 phone; he is usually on at app. 1 to 2 p.m. most Sundays, and will give many the South American phone WAC contact, VK2RA having a fine contact first. On Tuesday, 13th October, at 11.30 p.m. until 1.30 a.m., many Europeans were r7; G6FL's phone was r8 at 3YP; PAoAZ, who is using only an 860 doubler final with 25 watts input, being r7. G6DH was r8, and during a half-hour contact reported exceptional conditions on 56 mc., and many commercial harmonics on 41 mc. On 30th September, W2JCY heard his automatic cq test, on 56 mc at good strength. G6DH heard LSE on 41 mc r6 at 1800 GMT on the 12th October. RiS was r7 at 0930 GMT on 41.5 mc, and at 1345 GMT PPX and RiS r4 on 13th September. Hs is looking for VK on 56 mc at 1000 GMT each week-end. VK3JO is improving his fb 56 mc outfit with the added stability of crystal control, and Herb is re-building at present. Since the W 10 mx phone stations have been moved up the band a little, the long-lost CW stations are returning, and during the contest W5QL, W9ARL, W6 NiK, 6GCX, 9GBY, 9TB, 6CXW, 6GRX, 6FZA, 9UBY, 9AEH, all put in r8 signals. W3CBT has excellent phone; his rig had PP RK28's final with 450 watts modulated by calls B '03A's, an H type beam and National HRO completing the outfit. From New Zealand ZL3DJ is one of the most outstanding; he has excellent antennae on both 10 and 5 meters, which probably accounts for the fb results. On 5 meters he has 10 half waves in phase, and on 10 meters a V beam with 260 feet in each leg. ZL3AS is also xtal controlled with PP 210's on 5 meters. We are looking forward to good 10 mx contacts on the coming National field day.

Divisional Notes

To ensure insertion all copy must be in the hands of the Editor not later than the 18th of the month preceding publication.

N.S.W. Division

W. G. Ryan, Secretary, VK2TI,
Box 1734 JJ, G.P.O., Sydney.

Country Zone Officers.

Zone 1 (Far West).—J. Perooz,
VK2PE, Hope Street, Bourke.

Zone 2 (North-West).—H. Hutton,
VK2HV, Byron Street, Inverell.

Zone 3 (North Coast).—R. J. Berry,
VK2NY, 54 Bacon Street, Grafton.

Zone 4 (Hunter River and Coalfields).—R. W. Best, VK2TY, 57 Hunter Street, Newcastle.

Zone 5 (South Coast and South-West).—R. Ross, VK2IG, 673 David Street, Albury.

Information is to hand that the 14th Annual Federal Convention to be held in Sydney will occupy the week prior to Easter, 1938, the Annual Dinner to be on Easter Saturday night. This should assure a large attendance of country as well as city members.

The Senior Section of the 1937 VK-ZL DX contest has concluded, and attracted a large entry from N.S.W. The outstanding performance was that of 2ADE who had 316 contacts in 46 countries, and whose score, therefore, should be in the vicinity of 100,000. Some other approximate scores are:—2HF, 40,000; 2TF, 34,000; 2RA, 31,000; 2JX, 23,000; 2TI, 21,000; 2QE, 21,000. It is expected that some of the country members will have good scores. Conditions generally were rather poor.

As a means of advertising the 1938 Sesquicentenary Celebrations and the DX contest in October of next

year, "stickers" will soon be available for attaching to QSL cards or envelopes. It is intended that trophies be awarded in both Senior and Junior Sections to the leading stations in VK-ZL and abroad, and also to the Division whose five best scores aggregate the most. The latter should provide an added incentive to those who otherwise would take only a casual interest in the contest.

STATION REPORTS

VK2EO back in Sydney and will be chasing the rare ones. Has worked 100 countries in 36 zones.

VK2HZ now has his 830B running in the new rig. During the contest worked Europeans on 28 mc.

VK2NO has new 56 mc receiver working very nicely—956 TRF, 954 det, 41 adio (and EBC3 optional interrupter). Has heard JNJ's harmonic.

2RA. Using 808 final and McMurdo Silver 9 tube super on all bands. Needs Europe for 28 mc WAC, having worked the others in one afternoon.

2HV. Uses 14 mc rotary beam with good results, although on low power.

2TA. Experimenting with antennas on 14 and 28 mc, and has been working some DX on 28 mc. 802's final and superhet receiver.

2UD. Also experimenting with antennas on 28 mc and has worked some nice DX there, including G5QY and PAOPN.

2WH. Moving to new location and hopes to be on again at the end of the year.

2ZJ. Using a single '10 final, and endeavouring to get receiver going

on 28 mc. Mainly interested in 14 mc at present.

THE WAVERLEY RADIO CLUB

Publicity Notes

Under the supervision of our President, Mr. Wells, work is progressing very favourably on our new transmitter, which will use a pair of type 807 tubes in the final stage. It looks as though our faithful TC04/10, which has served the Club for the last ten years, will be pensioned off at last.

A very interesting lecture was delivered by Mr. T. Brownlee (VK2XB) entitled "Therapy Apparatus." Many hams present at the lecture almost broke down and wept after discovering that the usual Therapy Machine consists of a pair of 806's in push-pull with about 500 watts input—it seems almost like sacrilege! We could put 500 watts to a better use than curing somebody's bunion.

A field day has been arranged to take place amongst Club members shortly, and considerable discussion has taken place regarding the most suitable operating frequency. The boys seem divided into two camps—one favours five metres and the other fancies 80 metres, so it was eventually agreed that both these bands should be used, and the results should prove very interesting. Providing the lads with the 5 metre receivers can hear the harmonies from the 80 metre rigs and vice versa with the 5 metre overtones, all should go well!

2AFG now uses a 6L6 E.C. oscillator driving a 45 P.A. and will soon be using an AL3 as a modulator for fone. Has migrated to 80 MX to dodge the terrific QRM on 40.

2AHJ has had some very fine results using .375 watts input (believe it or not) to a single 30 TNT, but is now shattering the ether with a 6L6 E.C. oscillator with 24.98 watts input. Good luck, George!

2AHB worked a ZU on 10 metres recently—not a bad start for a new ham. Keep up the good work, Arthur, but please throw away that bug, your ordinary key sounds about 500% better.

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2AFZ has been heard quite often at week-ends. Is contemplating building up a superhet receiver now that 2YF lives so near, in fact can hear 2YF in his diode fone monitor—some economy, Eric!

2EG still bagging large quantities of DX. Someone once said, "Doesn't that guy ever sleep? Every time I turn on the receiver I hear 'CQ DX DE VK2EG.'"

2ABS also dodging QRM on 80 metres, but gets QRN instead—we wonder which is the worst.

ZONE NOTES.

Zone 5, VK2IG.

Firstly, thanks to VK2AEO for his share of the notes this time. At least one ham doing his job. Good work, o.m. Ain't there any more who know anything? Come in, chaps.

2QE doing fairly in contest, but conditions against him. Has 5 mx receiver, but no sigs!

2OJ blew condenser in modulator and nearly ruined one of his trannies, and the bad language nearly ruined the rest of the outfit!

2EU wants any literature on doubblers! Wants to double to 20 mx, but his 46 doesn't.

2VK.—Husbands of the dusky ones in New Hebrides deported him. Now back here and with T.N.T. Is working DX without antenna! Ask the locals!

2IG.—Don't clean your shacks, fellers. IG did, and shied his new xtal out. It's gone, but never went!

2AFD.—GG power plant to drive generator, so look out for QRM.

2AEO—GG nice DX on 40 mx. Has K7 and U8 thr. Fb work. Is on about 8 p.m. every night. Details of rig elsewhere.

2FQ now busy swotting, so qrt.

2AFF doing his bit on forty.

2JA building a super super with plenty of that white R.F. stopper about it.

2YW still putting out their usual good fone, with both Jess and Doug at the mike.

2AEI and 2AEA are two new ones, helping the qrm on forty, but only qrp at present.

2AEA talking of higher power later. Just keep talking, please, o.m., please! !

2AEI, 2AEO, and 2FQ are P.M.G. telegraphists, so don't try to rattle 'em with QRQ.

STATION REPORT.

VK2AEO, O. Polmear, Thorne Street, Wagga, is active on forty meters only at present, and uses a 59 E.C. osc. driving a buffer 46 linked to the final 210. The aerial is a half-wave Zepp for the xmitter es a doublet for the recvr. The recvr. is a seven-tube super. Countries worked lately include K7, U8, J8, VRI, KAI, XU8 and V.E. It is noticeable at this location that there are blackout periods on 40 mx, during which time no sigs at all come thru. This has been commented on by others in Wagga, too.

AUSTRALIA-ENGLAND ON 56 MC.

VK2NO RECEIVES CONFIRMATION

Brief reference was made in the September issue to a report received by D. B. Knock, VK2NO, which indicated that a station signing VK2N(?) had been heard on 56 mc phone by Mr. C. Mellanby, of Pwllheli, North Wales, on November 22nd, 1936.

The station log shows that at the time stated 2NO was working with VK2HL, using a Reinartz rotary beam aimed north-west, the transmitter using a pair of 35T's in the final with an input of 100 watts. In view of this, the detailed report received recently from Mr. Mellanby gives full confirmation of the reception. Mr. Mellanby's log reads as follows:—

22/11/36. Time approx. 2020. VK2N(?) on 56 mc 'phone in QSO with VK (?) (?) L. Fragments of speech—reference to 100 watts . . . pair 35 T's . . . rotary beam antenna . . . Signals lost in noise level. QSA 2/3. R strength various 2/3 and

3/4. Extremely high noise level and static.

Mr. Mellanby says that he heard the signals on several occasions prior to 22/11/36, but it was not until he heard Mr. Knock's voice on 14 mc. phone that he felt certain that it was VK2NO whom he had heard, this accounting for the delay in reporting.

It is thus established beyond doubt that 56 mc signals have been heard in England, and this constitutes a world's record for long distance transmission of UHF signals.

The transmitter at VK2NO uses a pair of 35 T's in push-pull driven by a pair of 801's, with 100 watts input, and various aeriels are tried from time to time. At present a W8JK type beam arranged vertically is being tested and gives quite good directivity. The receiver is a TRF using acorn tubes, and can be used as a super-regen. if desired. With this receiver J.N.J.'s harmonic has been heard and harmonics from 14 mc stations 15 miles away have been heard at R8.

The receiver used by Mr. Mellenby has an R.F. pentode regenerative detector, triode first audio (choke coupled) and pentode output.

Our congratulations go to both the parties to this outstanding U.H.F. performance.

Victorian Division

KEY SECTION NOTES.

(By VK3HK.)

Another well-attended meeting of this section was held at the W.I.A. rooms on the 5th of October, at which a very enjoyable lecture was presented by 3SG on his recent trip into Central Australia. The other main attraction of the two and a half hours of the meeting was details of the W.I.A. dinner, which by the time you read this will have been held at Hotel Federal, i.e., 30th October.

A Few Doings from the Shacks.

3SG.—Now back from VK8 es on the job (EX-8DA hi!)

3SI.—Going to U.S.A. es Europe next December for five months.

3WH.—Just built an 8-toob super.

3SQ.—Working xtal rig after three months S.E.

3XV.—Still T.P.T.G. wid 801 (DX a K7).

3ZY.—Bill spends most of his week-ends climbing his stick to tie up his juice-squirter after every storm.

3KQ.—Doing big DX on 40, so why worry abt 20, hi!

3GB.—Bill is active on 200 mx fones also 40 mx (cw only).

31W.—Now trying to get thru the auto qrm on ten mx.

3RD.—Fighting a super-gainer of the "Chief Little Wolf" variety, and it's winning, hi!

3TU/3DF.—Hrd operating on 28 mc, using call 3TU, but says has truble in hearing dx.

3EX.—3HK finds a new ham only two doors up road. Eric is, we believe, the youngest ham in Victoria. Anyhow, he has started off well by wkg W's with a 59 tri-tet C.O. es 40 mx xtal on 14 mc, fb eh (I mean the dx!).

3ZF.—Also finds his new gra only 100 yds off another nice Zepp in Barkly St., Elwood, but he hasn't broke the news yet.

3XL.—Re-built rig, using Jones exciter 6L6 g's link coupled to 210 link coupled to $\frac{1}{2}$ wave Zepp, xtal freq 3564 kc.

3BQ.—Still trying to get some more sticks up.

3UK.—Had a torrid time during the recent gales; a top guy broke, followed by the cross arm on one of the masts. It was safely pulled down tho es re-erected the following week-end.

3YP.—Intends using a W8JK flat top beam for Europe on 28 mc in place of the present two half-waves in phase. Still using H type array for U.S.A. es South Africa.

3YK.—At present without a power supply es off the air, but occasionally operates the key at 3HK.

3HK.—Mainly active on 28 mc, es getting plenty a dx. Chaps, why not come down and join us; the whole world can be wkd when condx are "all set."

Well, gang, this seems like the end of our rag-chew this time; don't forget, think up some more "meat" for these notes before our next meeting, so 73 cul.

SHORT WAVE GROUP NOTES.

(By O. E. Davies.)

The members of the Group are showing an increasing interest in developmental and investigational experiments.

At the meeting on 22nd September the members present spent a very pleasant and profitable evening with the "G.R." Wheatstone Capacity Bridge. Much informative and educational data was gleaned from the evening's experiments.

At the meeting on 13th October, the Victorian Division held the Quarterly General Meeting. The Group were responsible for the procuring of a lecturer for the evening. Our Chairman, Mr. H. Stevens, is to be complimented on obtaining the services of Mr. W. Gronow for the occasion. Mr. Gronow gave a very interesting and instructive address on "Noise Measurements." 'Tis to be hoped that we will hear more of it. (The lecture, not the noise!—Ed.)

Mr. Burdekin doubts the specified value of some variable capacitors he has. So he checks up on the Bridge. His fears were vindicated, too.

Mr. Stevens still active on 5 mx. And still chasing pirates, too.

Mr. Anderson listening hard; doubt if he hears much though.

Mr. Budden also a keen listener. He's given up mo' bikes now; rather rough, eh, George?

Mr. Meallin is off to a new QRA. They tell me the rent was due. That so, Ken?

Mr. Smith still swotting A.O.P.C.

Messrs. Chard and Leonard going to have a go at the next one, so I

hear. My, the place will be full of Ops soon.

Meeting nights for November fall on the 10th and 24th. Don't forget to look us up if you are in town. Interesting and educational lectures are held each meeting night.

UHF SECTION NOTES.

(By 3JO.)

The 56 mc Field Day will definitely be held on 5th December. This is only one of the items discussed at the last meeting of this section, and is perhaps the most interesting at present. Indications are that this day, which is the second day of the National Field Day, will provide opportunities for contacts over districts and distances never before attempted. Stations from many country districts of Victoria have indicated their intention of co-operating, and it is expected that at least three other States will have stations on the job.

With so many stations covering such a large area it is expected that 56 mc records will be broken, and the possibility of an interstate contact or two is not unlikely. No details of transmitting and listening periods have as yet been arranged, but these will be passed on to those interested in due course.

All stations taking part are requested to keep a log of stations heard and contacted, and to send a copy of these to the secretary of this section.

The 56 mc transmitter for 3WI was discussed, and after demonstrations of two types of 56 mc oscillators by members it was decided to carry out further tests to ensure the most satisfactory circuit being obtained. The frequency meter also came in for some criticism, and some further tests are being conducted in this direction.

As anticipated the general activity on the band has improved, and during the month 3VH, 3QJ and 3FH were contacted.

3QJ has been among the missing lately, but came to light with 3FH the other day.

COUNTRY SECTION

3FH, a newcomer to ham radio, is located at St. Kilda, and has to be content with keyed modulation at present.

3VH has been very busy, but has Jones' stabilised oscillator and feedback troubles now.

3LG gave us a surprise when he came on recently, after collecting some dope on the P.M.G.'s 56 mc activities. It seems they have managed contacts over 60 miles with high power, and will be trying to cross Bass Strait shortly. We hope they are favoured with better weather conditions than those which affected our efforts in this direction.

The November meeting is on the 16th, and as it is the last meeting prior to the field day it should be attended by all interested.

(It is with the greatest pleasure that we head the notes of the newly-formed country section, the idea is a sound one and we wish it every success.—Ed.)

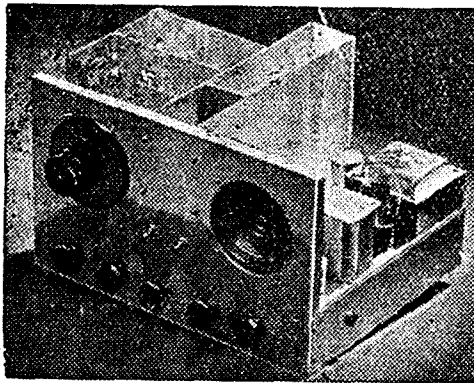
The response to the circular sent to all country members was most gratifying, an expression of opinion being obtained from practically every member. Whilst no definite plans have yet been made, as replies to the circular are still coming in, the broad details along which the new section will run are as follows:—

The State will be divided into three or four districts, each one having its own President and Secretary. There will be one convention at some central point in each district once a year. The inaugural meeting to make definite plans for the Section will probably be held at Ballarat

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early in November, but all members will be circularised with the final details. An endeavour will be made to have the business of the meeting broadcast, so that those members unable to attend will be able to follow the discussion. A regular weekly broadcast of WIA doings will be started shortly afterwards on both 3.5 mc. and 7 mc.

Queensland Division

(Via VK4AW-VK3ZC)

The October meeting was well attended and details were arranged for another inter-zone contest at an early date, similar to the last which was eagerly received by the country men. The lecture on Sound Projection had to be postponed till November meeting owing to Mr. J. Bateman's absence from town. About 20 hams were present at the hamfest arranged at Toowoomba on 16th and 17th October, and several ham shacks were visited, the local BC station inspected and generally a very pleasant time was had by all, including the Brisbane gang who journeyed 90 miles odd by car, running into very heavy rain most of the way. We understand many 5 metre schemes were discussed in addition to the usual DX and ragchew.

During September, the 56 mc gang once more journeyed to their pet 5 metre locations and repeated their performance of contacting over the 110 mile stretch just to prove it was no fluke. This time conditions appeared more favourable as signals generally were stronger and more consistent all round. Almost continuous communication could have been held over the 110 mile circuit from 9 a.m. to 2 p.m. Contact between 4HR, Springbrook and 4UZ Toowoomba, 90 odd miles, was particularly good during the afternoon. What probably constitutes the first 56 mc interstate QSO was carried out from 4HR, Springbrook, to 2GS, Murwillumbah, although only a distance of 15 miles exists between the two locations. 4GU and 4FB at One Tree Hill contacted 4UZ Toowoomba early in the day, but signals faded

after a five-minute contact. Extraordinary how signals behave. At this particular stage of fade-out, 4UZ's signal was R9 at 4HR. Tests carried out between 4WI, 4HR and 4AW definitely proved the superiority of vertical radiators at their respective distances.

The DX contest is keeping the boys busy at the moment. 4BB and 4WH seem to be landing some contacts on 28 mc.

4RY just returned from Sydney and Canberra, from which city hails 2GU, of 10 metre fame, who was at that time in Brisbane meeting a few of the local gang.

4FB.—Well bitten by the 5 metre bug. Contacts 4GU on the other side of town and putting out good quality. 4GU has rebuilt again for the umpteenth time and also has a super-het working nicely.

4LX had a flying visit from his uncle, 2EM. Ted is enthusiastic over his two half waves in phase on 14 mc directed on W. Possibility of 4LX going to Adelaide near future. If so, one very good 5 metre location will go to waste. 4AW has his eye on it.

4NO changed his location in Gladstone and also rebuilt.

Talking of versatility, we hear that the 4WT latest activity is gardening and that the OW has severely reprimanded him for digging up several of her favourite plants. Had a visit again from LA4D operator on Norwegian tanker. Old Bill is going to build up a super-het.

4UX is reported up on 80 metres with the Cuckoo Club. Not sure if this is a wiscrack or not.

4RM is chasing 20 metre DX.

4RX on fone using push-pull fifties in the modulator.

4AW.—Busy with amplifiers and 5 metre rebroadcasts.

4JX shifted QRA and has landed bad QRM location. On CW again for tests.

4RC has a new 5 metre receiver and is anxious to try it out.

Amateur Radio

4UU likely to come back on the air after a spell taken up in motor-cycling.

It is rumoured the U gang are to hold a private hamfest reunion shortly. Location: Casino, 2ADE ex 4US.

4RT on 56 mc working few of the gang, but finds he can't hear most of them. Same here, John.

It is with deep regret this month we record the passing of Vic Herschel, VK4UK, who passed on after a short illness.

Vic will be remembered in connection with his low power efforts for VK4 in the Fisk contest early stages.

Several of the portable section here are looking forward to the National Field Day and intend trying their skill at knocking up a good contest score.

South Australian Division

(By VK5KL, via VK3MR)

All interested in the work of W.I.A. will be pleased to know that Mr. Kilgarraff, VK5JT ex VKZ, has been duly elected president of the South Australian Division until the end of the financial year.

With the VK/ZL DX contest in full swing, 20 metres sounded like battle raging with the ZL's predominating with their raspberry notes. In VK5, Mr Bowman, VK5FM, will have a good score by working 24 countries and 150 contacts. VK5KO put up a nice total by working on ten metres only.

A committee, that includes 5WW and 5ZX, have arrangements in hand for the field day to be held on 15th November. Come on, chaps, get that DF and portable gear in order, remember the success of the last field day? Well, let this one be, also.

The student class has been completed, and so by next exam Mr. Bournes should be rewarded by VK5 being provided with some more new calls, Best of luck, chaps.

The number of country stations is on the increase, and it's remarkable the strength and consistency some of these chaps are received in the city on Sunday afternoons. The best heard are:— 5RE (of Renmark), 5GF, 5LC, 5GR, 5WG and 5WJ (of Port Lincoln).

VK4 must be congratulated on their obtaining the Australasia 5-metre record in August. Activity on this band here is at a low ebb, although 5HD has a real super going and it is a beaut. So he says. On 40 metres, old man static is prevalent now that summer is drawing near. VK5MV's signals are characterised by the very heavy rumble of the trains as they pass the shack, which drowns out George's voice. This station is operated by pressing a button and a bank of relays does the rest. George is getting lazy now that he is married. VK5TX, the QRP king, is getting amongst the DX again and QSO'd a few W1's. Remarkable, considering the power is only about 4 watts.

The first W.A.S. (worked all States) certificate has been issued by Federal Headquarters to Mr. G. Ragless, VK5GR. Congrats., Gordon, an achievement to VK5. Now, chaps, before I close, don't forget the National Field Day.

VK5 COUNTRY NOTES

(By VK5PN)

VK5BF.—A very keen U.H.F. man, Frank is always ready to co-operate with anyone desirous of carrying out serious tests on the ultra-highs. Location: Murray Bridge.

5FB.—Another Frank. A great worker in the interests of country amateurs. Guess he is busy on the QSO contest logs now. Winner should be announced shortly.

5HR.—Bill was in the City recently on a flying visit. Has reappeared on 40 mx with QRP fone, which steps out extremely well.

5LC.—A very active station. QRP fone here also, Les has suggested a spot-frequency State-wide country hams Q.S.O. every Sunday morning.

Amateur Radio

Excellent idea, all that is required to ensure its success is co-operation. Let us know your ideas on the most suitable frequency, chaps.

5LG.—Some news from Iron Knob. Leith reports reception on 20 mx wonderful at his location, but would like to hear less from 4JU and 4JX. Transmitter at 5LG is 42 tritet asc. and E406 p.a. with 2 watts input to p.a. (what do you say to that, Les?—5LC). Receiver 4 tubes T.R.F. using 6D6, 6C6, 76 and 201A.

Leith would like to see a few more articles on battery-operated rigs in the Mag., also something on a really decent Q.R.P. power supply which can be built up at reasonable cost.

5NW.—Rebuilding, hence the long silence. Has tried and heartily recommends the break-in idea as suggested by Roth Jones in a recent issue of the Mag.

5RE.—Extremely busy lately in connection with the Renmark Jubilee celebrations, but even extra work cannot keep Hobby off the air, and he is to be heard on 40 mx every Sunday.

5RJ. — Where there's smoke, there's fire; where there's radio, there's Darce. His contribution is A1 quality fone.

5WG.—Dividing his spare time between QSO and coaching an aspirant for A.O.P.C. honours, Wally is also going to get busy on the ultra-highs.

5YL.—Betty recently heard with fone on 40 mx. Good quality, too.

Our newest country member is Mr. Colin Battrall, of Port Pirie. Will be taking the exam very soon. Best of luck, O.M.

Deep silence from the following:—5PB, 5AT, 5QR, 5MP, 5YM, 5GW and 5XR. What are you doing, chaps.

Tasmanian Division

(By 7KV, via 7DH and 3MR)

I regret that the notes for the October issue were received too late

by the editor for publication. Please don't blame 3MR this time! These notes will cover our September and October meetings (condensed).

At the September meeting the attendance was considerably greater than previously, due to, no doubt, the publicity given to the lectures by Mr. G. Miles, VK7KQ. Among our members were several visitors who came to hear 7KQ tell us all about what is doing on the U.H.F.'s. His subject for the evening dealt with 5 metres. It is expected that this band will get more attention after we have the pleasure of seeing the gear used by 7KQ.

A committee, comprising A. Allen (7PA), T. Allen (7AL) and T. Conner (7CT), has been appointed, with power to add, to commence preliminary arrangements for the proposed radio and experimental engineering exhibition to be held in Hobart early in the new year. This is our first attempt with such a scheme and we expect the full support of every member.

The Council has decided to offer very attractive trophies to competitors exhibiting the best gear. The National Field Day, which will take place on December 4th and 5th, proves to give VK7 a chance to show what can be achieved with portable gear. Rules for the contest appear in the October issue of "Amateur Radio."

SCANDAL

VK7YL.—Heard now and again. But say, Joy, who is the tall boy with the mo-bike??? And where did you get that stamp for the magazines???

VK7JB.—Has been suffering with a sore throat. Is it through talking to the BCL's on Sundays???

VK7DW.—Bunny was too lazy to build a mitter, so friend 7DH (noble man) had to come to his rescue. Now he is working a few VK's.

VK7AB.—Going in for fone in a big way. 6L6G's in modulator. Moaning about no DX in test!

VK7HY.—Henry is very QRL with service work.

Amateur Radio

VK7BQ. — Still entertains the BCL's on 200 metres on Sundays. Heard occasionally on 40 metre fone.

VK7RK.—The antenna king. Our best customer for the wire manufacturers. Would make a good sailor by the way he handles the aerial ropes.

VK7LC.—A very busy man judging by the QSL cards that pass through the QSL bureau. Keep up the good work, Lloyd.

VK7AR.—Cannot find time for radio as busy chasing BCL radio pirates and power leaks.

VK7DH.—Works the traffic when 7KV is not on his usual weekly holiday and too QRL to prepare the notes and missed the mail. We wonder what 3MR has to say about this?

VK7NG.—Gone bush somewhere in the Scottsdial district.

VK7AL.—Very busy building mitters and receivers. Expects to be on the air soon.

VK7PA.—Still keeps 200 metres going to entertain the BCL's. Why don't you send a QSL card when the BCL asks for one, even though they don't send a stamp?

VK7HM. — Too busy building a country mansion. Reported to have donated three tubes from his receiver to a worthy cause.

VK7AH.—Our G.O.M. of radio looking well again, and also occupies the chair at the meetings.

VK7CT.—Has QYL-itis very severe. Who cleaned up the shack, Henry, and mislaid your transmitter? You shouldn't leave it lying about!

VK7CM.—Very quiet, probably studying for the intermediate exam or something.

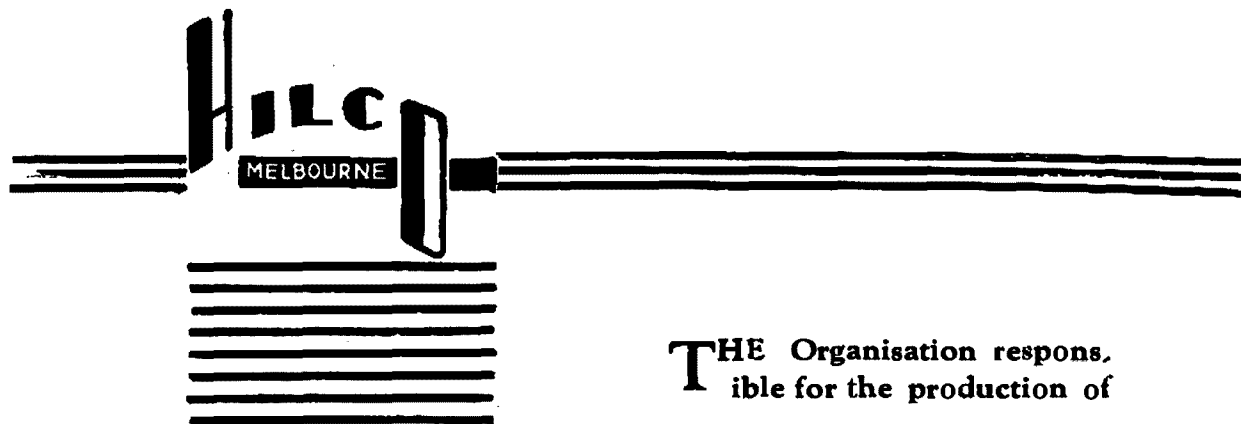
VK7LZ.—Building up a junk box receiver. A super I'm told. Scrapped his mighty atom two-tuber.

VK7CL.—Has migrated to some north coast town.

VK7JH.—Dodging between Shannon and Waddanana. So the Shannon is a good place for DX, Jack!

VK7RZ.—At Devonport, seems to be very active. A lot of cards have been posted to him, so it is evident that 7RZ has been busy.

CK7LJ.—Lon, the last one on the list, but he was one of the first VK7's on the air, and now he entertains the BCL's on Sundays. Keeps a SKED with Snowy Harrison Friday nights.



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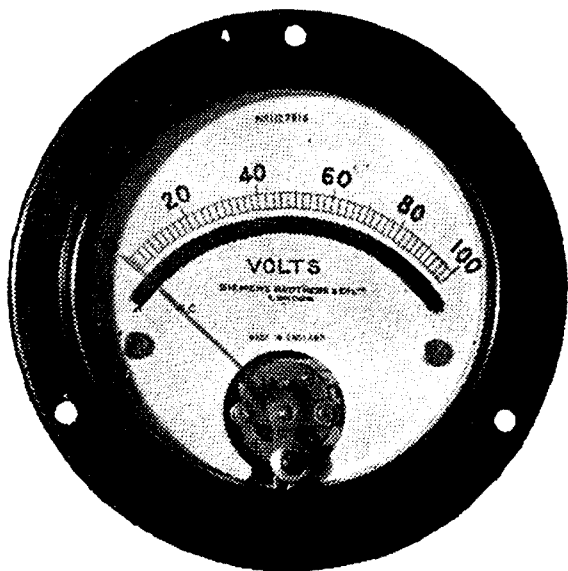
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R.A.A.F. Wireless Reserve Notes

Officer Commanding: Flying Officer R. H. Cunningham, 397 High Street, Glen Iris, S.E.6, Victoria (VK3ML).

District Commanders—

Second District, N.S.W.—A. G. Henry, Clareville Avenue, Sandringham (VK2ZK).

Third District, Victoria—Pilot Officer V. E. Marshall, 75 Argyle Road, Kew, E.4 (VK3UK).

Fourth District, Queensland—A. E. Walz, Sandgate Road, Nundah (VK4AW).

Fifth District, South Australia—F. M. Gray, 52 Ormond Grove, Toorak Gardens (VK5SU).

Sixth District, West Australia— 6ZI-VK6JE.—J. Elsbury, 24 Addis Street, Kalgoorlie.

Seventh District, Tasmania—R. Cannon, Goldie Street, Wynyard (VK7RC).

Federal Notes by the O/C.

With the establishment of new Squadrons in Queensland and West Australia, it is very likely that the control of the Reserve will be decentralised and placed in the hands of the local squadron. The matter is now being discussed and plans for an interesting and intensive training course are being drawn up. The same proposal will be brought into effect in N.S.W., and thus all Districts with the exception of South Australia and Tasmania will be under a local command. However, an Air Force district is not bound by State boundaries and may be made to encircle any area desired. Thus, these two Districts will more than likely be included in the Victorian Squadron scope of activities.

The idea of the decentralisation appeals very much, especially in the case of VMF and VMD where headquarters supervision is far away. It is expected that recruits for the citizen air force W/T section will be drawn from the Reserve thus leaving us with fewer members. Those who do not become members of the C.A.F. will form a reserve of operators who will be trained by those in the squadron. The great advantage being that the exercises and co-operation will be carried out by chaps who know the Reserve and its position through their past associations.

In order to get members' views on the proposal, a circular letter is to be sent out from the Air Board asking for opinions. This may have

been done by the time these notes are in print.

3rd DISTRICT (VK3UK-3ZI)

VMC has recommenced schedules again after the holiday period and is following a syllabus that will complete a thorough revision of the Procedure Manuals by the end of the year. We expect the new plan of attachment to 21 Squadron will take place early in January, thus our revision of the Manuals will be completed just prior to that event. The Squadron has already shown its desire to co-operate by offering five positions within the Squadron itself to members of VMC. Whilst we will be sorry to lose any members from the Reserve, a transfer to the Squadron ranks will tighten the bonds between the two.

3D3 will be the first member transferred, we imagine.

3B5 is having a particularly busy time at the present, and is finding it hard to spare the time each Sunday to be on Reserve schedules.

3C1 is back on regular schedules again.

3C4 will be down in VIM for the WIA Dinner.

3C5 is still having a bad time with his new transmitter, and has his 808 in Melbourne now for checkover. 3D4 will be up in Nathalia early next month and will be able to give him a hand to put things right.

3C6 has his receiver temporarily out of action.

3D4, as mentioned above, will be away early in November in Nathalia and Numurkah.

3Z1 has maintained his run of bad luck over his masts. Following the broken back guy and cross-arm last month, the bolt holding the pulley on the other mast rusted through last week and so another mast taking down and putting up again is imminent. All available spare time is being devoted to organising the WIA Dinner and testing and building gear for the National Field Day.

1A1 will be over in VIS next week. As his trip is a rush one, we don't anticipate he will have much time for any ham visits.

6TA DISTRICT

Affairs in this District are progressing as well as can be expected. 6A1 and 6A6 are now in possession of the long-awaited manuals and are preparing for intensive training. Unfortunately 6A6 is stationed out of town for the time being, but hopes to make his presence felt in the near future. 6A5 is still holding down his part of Reserve affairs at Geraldton and is very enthusiastic. The District headquarters is at a temporary disadvantage owing to absence of reserve channel coils for the FBXA receiver; consequently full co-operation is impossible until they arrive from U.S.A. The distance from the District Capital makes news gathering for these notes quite a formidable task. Members over here have expressed disappointment at the absence of District news from other than VMC. The notes fill in the niche in the Reserve scheme of things and are greatly missed. Surely there is some activity in those Districts that we Westerners would like to hear

about. 6Z1 was the only member in this District to compete in the CW contest and had a perfectly punk time. The only really active band being ten metres where all States were heard, but not one station could be raised, although 3D1 was called several times.

(Continued from Page 13)

tune from. VS7RP, 7MB and 7RF very active in test, all T9, typical G fists, key as if the reputation of old England depended on them like some of the G's (ok Clary).

Several XZ's were on instead of defending their country! Our old pal VP5PZ on the job again about 14,260 kc, an example of picking a station by his note and fist! Worked here the long way round about 7.15 a.m., also heard at 10 p.m. on, especially when the W's are weak KA1AX and 1FM very active, both shift all over the band. XE1CM out at the HF end about T2 or so, being qrm'd by several zls and GMR. XE1AM about 14,370kc. tunes from HF end, easy money. Worked NY4AC who was only using 5 watts. R4/5, about 14,300kc. 11 p.m. Another rare one is ST2LR from Khartoum in the Sudan, T9 about 14,360kc. after mid-night most days during the week. Others heard but not worked were VS6, who called cq, worked a VK2 heard about the test and beat a hasty retreat, hi. CM, HK, CN8, HH, 5PA fone. VP2 calling 3EG for 30 mins! the long way round and out of band too (hi) UZ, K6, VS2.

Some scores, 5FM. 24 countries. 150 qsos, 7YL, 13,900 pts. Joy picked up a few new countries too, too bad about the qrm from GMR Joy! The writer was not in the test but only snooping and worked 33 countries to keep in form for the junior test. Having a wager with 7YL. Not much on 40 meters, about 5 a.m., ZS2X, CR7AU, ZE1JO and J8CD were worked while
(Continued on cover 3.)

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(Continued from Page 28)

condx lasted. This band was hardly
used. 28mc seemed full of Californian
KW's calling 5KO, 3CP and 3YP.
Altogether there was not much interest
taken in the test but more is ex-
pected in the junior, which is more
of a novelty, many yanks have been
worked who have been trying out the
grp and are tickled pink with the
results obtained. Will try and dig
up something more interesting for
next month. All band cw test proved
to be a great success as predicted last
month, 7AB seems to be leading with
1618 points. He had more contacts
than any other station known. 133?
Working same number of states per
band as 3MR and others. This test is
one of the best tests ever held,
because no one can moan about not
working all VK! owing to low power,
etc. Its great fun. Who heard 4JU
calling cq test on CW! After these
48,000 qso's Frank your fist has suf-
fered somewhat! Wonder what scores
3EG, 3KX are, also 2HF, 2ADE and
the other VK2 Gang who seemed to
be going flat out.

W8BTI scored 5193. 102 contacts,
reports lack of ZL4's. VK3CX reports
South Americans coming in like locals.
Xtal rigs are no good for raising dx
I am told!

VK4BB, 41 countries,	51,000 pts.
4HJ	21,000 pts.
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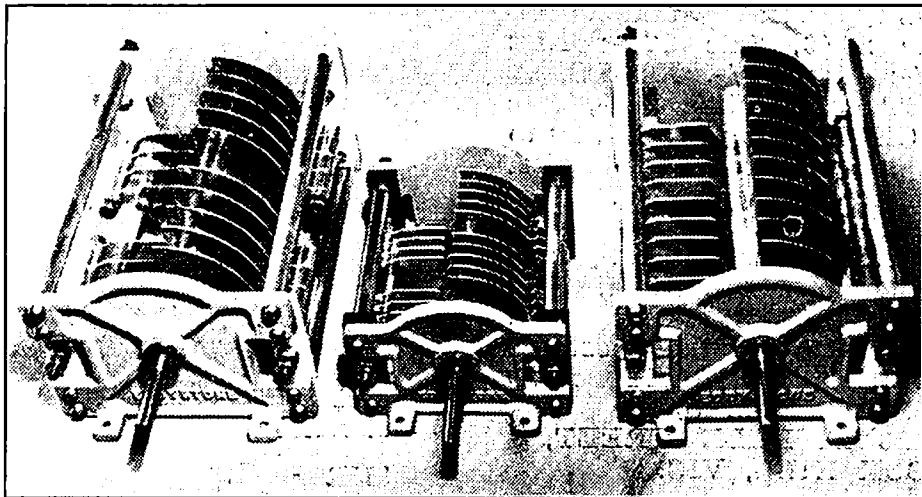
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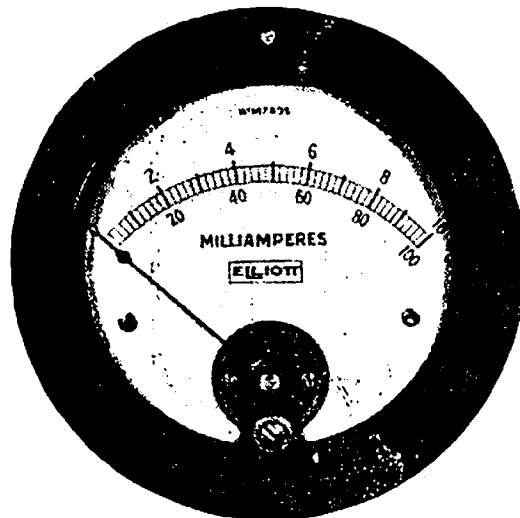
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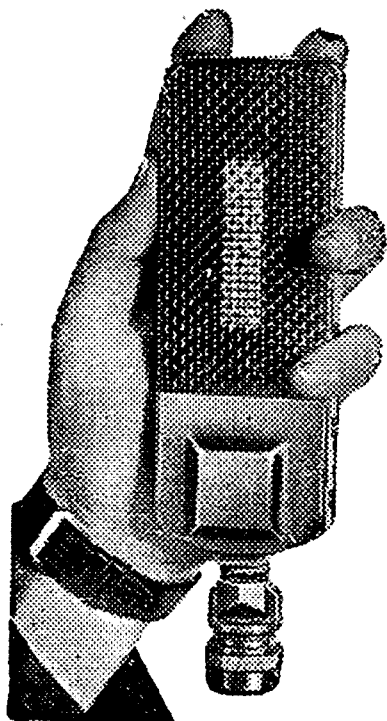
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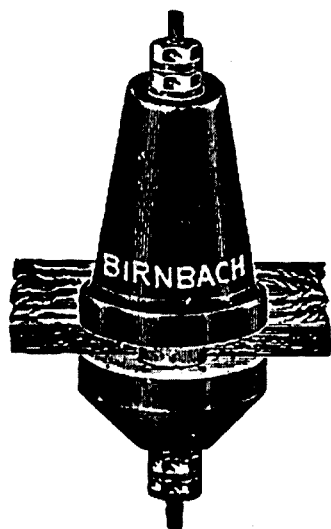
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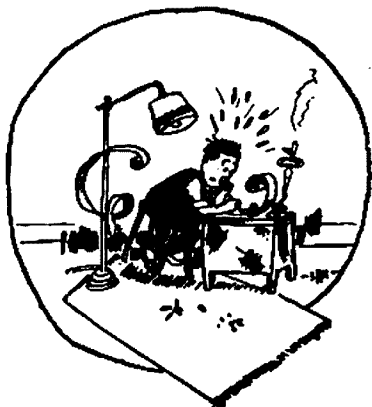
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EDITORIAL



Our little magazine, known under various titles, such as "Ham Radio," "A.R.," "The Mag.," and probably many other less polite names, has been plodding along for four years and a bit now. We feel that it is some sort of an achievement, and, in spite of much opposition, we may say that the standard, for a country with comparatively few hams, is rather high. A magazine is what its supporters make it, and if anyone should feel that it is not up to scratch then he himself is to blame. After all, there is only one editor, one technical editor, one notes editor, one compilation man, and one of each of the other vital office-bearers running the mag., but every member of the W.I.A. is an assistant to these men. The greater the assistance we get the better is our magazine. Looking back through past years we must frankly admit that some of our assistants have not pulled their weight. Maybe they have not been able to for certain reasons, but surely out of some 2,000 hams in Australia these few are a small minority? We always did loathe the idea of appealing for support and yelling out for technical and other contributions, but necessity is the mother of invention, and we few members of the magazine committee are not born inventors! It should not be necessary for us to do more than our share of work in giving you this magazine, and we know you would not expect it; but just let us say that it is a hard row we are hoeing. Why not push the pedal a while, so that we may take a turn at free wheeling?

What do you think of our three new sections—the DX, Country, and the Question Box? We may have had a couple of dozen comments since their inception, but not enough to let us clearly see the result of the innovations. Maybe you can suggest improvements?

When we first thought of this magazine, it was never intended that it should be a world's leading technical authority, but just a publication that would provide the missing link between our members—the link of unity. It has proved itself to be a collecting medium for lots of experimental work, the publication of which has been of great value to many. Thus, why not concentrate on such an object? There is a host of discoveries yet to be made on 56 mcs, and it is only by united efforts that we can succeed. Maybe you don't think this band will be any good for DX, or, then again, you may be very optimistic about such a prospect? No two hams think quite alike, and we see no reason why each should not express his views on paper for others to comment on, for or against, and, at the same time, express their opinion. This is the reason for the opening of the "What do you think?" section this month. It is meant purely for 56 mcs discussion. Are you of the opinion that the secret of this band lies in the transmitter, aerial or receiver? We invite you to contribute your thoughts on the matter, and maybe we will get something out of the issue. What do you think? Oh! We nearly forgot—Merriest of Xmas'es, gang.

An Ultra High Frequency Portable Transmitter

(Extracts from the winning entry for the Gadsden Trophy Contest, 1937.)
(By Vaughan Marshall, VK3UK.)

The object of the Transmitter portion of the entry was to design a simple and efficient portable transmitter that would, at the same time, be economical in power supply, compact and stable.

Experiments were made with various types of circuits in use on the U.H.F.'s, including the TNT, Oscillator-Doubler, MOPA, High C type, etc. The standard of comparison was a push-pull transmitter using parallel grid and plate lines. The outcome of these tests showed that the High C type, whilst being as simple in design as the TNT, gave a measure of stability approximating that of the known stable types, provided certain precautions are taken. In fact, later tests with the final design, correctly adjusted, in collaboration with VK3ML, whose super is far and away the best of its type in VK3, showed practically no noticeable frequency modulation. Whilst it is admitted that in accepted phone practice modulation of an oscillator is taboo, this High C type is no ordinary oscillator, and also it must be remembered that the requirements of portable gear demand different treatment to that designed for home working. Here the endeavour is to attain the maximum possible stability and output from the minimum amount of gear and power drain, so as to be able to put out a phone signal from a field location that would be perfectly readable on a reasonably selective super-het receiver.

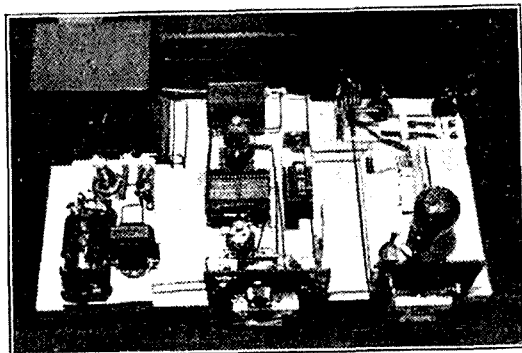
The outfit described, in addition to fulfilling the requirements mentioned above, has no tuning controls, merely an ON OFF filament switch and a modulator gain control to be touched on location, only requires a 6-volt accumulator to be plugged in one end and the antenna feed line at the other, measures only 20" x 10" x 7", and weighs only 20 lbs.

complete with modulator, audio oscillator and the heavy duty vibrator unit.

Oscillator Considerations.

An E408N valve proved the best oscillator of types '45, 2A3, '71a, '01a, E408 tried.

The condensers C1 and C2 are made up in a similar manner to those described in "Radio." Two pieces of 14# aluminium, 3" x 3½", and one



piece 2" x 3½" are each bent to provide a ½" flange, which is slotted near each end so that about 3-16th inch play is possible when the plates are mounted on midget stand off insulators. The two larger pieces constitute the plate condenser, and are mounted about ¼" apart. The smaller piece is mounted about ⅓" away from the "floating" or middle plate to form the grid condenser. About 2½" is cut out of the centre of the flange of this "floating" plate so that the grid plate will fit snugly in place.

Adjusting the circuit for maximum output inevitably leads to frequency instability, and the RF grid excitation must be controlled with due regard to BOTH stability and output. By that it must not be inferred that the grid excitation must be cut so far back that poor output results, for, on the contrary, adjusted for stable operation the output is com-

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DX Notes

by "Snow" Campbell, VK3MR

Introduction.

These notes leave on the 16th of each month, as they have to be in the hands of the printer by the 18th, therefore all notes are gathered over a period between the 16th of each month. All times are in Eastern Australian Standard time (10 hours ahead G.M.T.). Although this page is mainly devoted to DX notes, conditions, contest scores, and hints or advice on how to improve in those departments, I feel that to drive home certain points I must appoint myself as censor of ham band morals as well as be T.O.M. and Uncle Tom all rolled together. So look out, someone!

Fortunately, I am not writing these notes straight after the Junior VK/ZL contest, while everything is still fresh in my mind, because I am afraid it would shock the editor as tough as he is! The tortures I had in mind for certain stations would have made T.O.M. turn in his grave. I have cooled off now, and look back with a sigh, and just hope for some improvement in the future. More later.

Fan Mail.

My plea in last month's notes was not in vain, as I have received many letters from hams interested. I cannot answer them all personally, as much as I would like to, so I take this opportunity of thanking them. Write again, chaps. Several very interesting questions have been asked, one being, "What IS DX?" and the other, more involved, "What is the best spot in the band?" I will answer the second one later, as it would fill up the whole page, but cheer up, as there is a BEST spot and spots! The first question boils down to this, "What is DX to one ham is local to another," and any success or otherwise is due to your aerial and the geographical situation in respect to the other countries (also more later). "DX" is any station outside Australia (even ZL is

DX on 5 mx). Anyone who can work a W1 is putting out a signal as there are not many countries further than that, yet we do not rave about working a W1. It seems to be the rarer countries where there are only a few stations active, and where there is a sole representative. The nearer stations are the hardest to work, especially during a contest. As South American stations are the hardest to contact, especially from VK6, they are considered real good DX. Also South Africa for the benefit of VK7's. Of course, W1 is good DX, with extra qrp.

VK/ZL Junior Contest.

Conditions were bad enough the first week of the junior test, but were at their worst during the second week. Despite the poor conditions some real good DX was heard and worked, the most sort after being HC1JW and OA4J. Both were coming in solid for hours on end, commencing about 4 p.m., and fading out about 7.30. OA4J.T9 on 14410kc. HC1JW was hard to find by many, and no wonder, as he was about 50kc out at the HF end of 14 mc. T9.R6/7. Both tune from the HF end of the band, and actually tune from about 50kc out. Before they really listened in the band they worked dozens of VK and ZL's. Some who were worked before listen-in the band were VK2XT, VK3ZR, VK3NS, ZL2QA, and many others. VK4GJ won the race to 28 mc, last heard of passing by 19 metres, and I suppose he will get a mention in the 28 mc notes by 3CP! LY1X, R7.T8 also out about 144070kc. The most consistent station heard out of band being ZL2QA.R8/9.rac ripply. Heard him after the test on same freq. with pure T9XV. That part of the spectrum above 14400kc is a wonderful hunting ground for rare stations. I know we shouldn't work these stations that are out of the band, as it is the only cure not to work them but, what to do in a contest? J8CD both ends of the phone band. J8, a new country,

not Japan, but Chosen Is. Japan proper is J 1 to 7, and J9 is Formosa. SV1RX, floating around the HF end, tunes from the end-variety of notes, some approaching T6. He is good op, and uses all hands. Conditions for Europe were NG last day, as none were even heard, but they were found later on 28 mc from 7 p.m. on to 11 p.m. Most every European country was on the job. After going through the qrp test, when conditions were at their worst, I have as much confidence in the 25 watts as in 200. So there is still chance for the qrp man, even if he uses zepp feeders, as I have been getting good reports from W8, using half watt 100 volts at 5ma, so you can see that the big loss in zepp feeders can't be so bad after all in practice. Only junior score known is 3 MR, 33,000.

General Notes.

VK3FF getting amongst the DX now. Worked YM4AA at LF, end 14 mc; heard HO2U (ho to u), gave his qra as China. Anyone else hear him? Might be one of those chaps like DX4U or DX2U. 3CX now worked 108 countries. Any better? Fone? 3CX wants to know how to get cards from stations like VP7NS, VP9R and ZK1AB. Who said work them? Sit down, Allan! Keep an ear on HF end of 14 mc for CX1CG, watery sig. on most nights, but every Sunday up to 9 p.m. 3KX has worked 28 (only) South Americans on fone and 100 Europeans since 1st Oct. Likes the Two half waves in phase better than the popular W8JK ant. VK5 chaps made merry with LU8EN on last night of senior test. T9 14070kc to 9.30 p.m. It's worth losing a bit of sleep early Sunday morn if you want to get dozens of European stations who are not as a rule on at any other time, and it is Saturday afternoon over there. Monday morning is better, as it is Sunday afternoon in Europe and the band is most active. One rare station heard most a.m. is YI2BA in the phone band, T5. From midnight to daylight all Africa, Asia, and Europe can be worked with the greatest of ease. Try it.

Conclusion.

Conditions generally are not the best on 14 mc, but many good bags are obtainable by sacrificing a few hours of sleep. 7 mc will be coming

to its own after sunrise. The type of information I require for these notes is the stations heard, time, freq, and any tit-bits about them.

(Continued from page 5)

the variable grid leak. The constants shown gave a clear, crisp, penetrating note that would "pierce" super regenerative hiss excellently, but individual bulbs may possibly vary.

The output is fed through a transformer to the grid of the 6C6. A SPDT switch throws in either the microphone or the audio oscillator, and the modulator gain control can be used to adjust the audio oscillator output to the desired level.

The three units, the oscillator, the modulator, and the audio oscillator are mounted on a base board 20" x 10" x 7", together with the vibrator unit, which is heavily cushioned with Dunlopillo. The unit has been laid out breadboard fashion because all operating is done on field days from the car, using the car battery for the primary supply. The breadboard used fits snugly on to the bag rack at the rear of the front seat of the V8, and as the battery cable is permanently available there the only job to be done when arriving at the site selected is to hoist the antenna and plug in the 600 ohm line. An Eddystone telescopic aerial is carried, and can be screwed on to the back bumper for short distance contacts, but despite the fact that it is in no wise a portable aerial no comparable type to the Bruce has yet been tried if record breaking is the object of the test.

This outfit provides a really efficient portable that is compact, light and rugged, and whilst being very economical in its power supply requirements, gives a signal of a quality and power output that compares more than favourably with the average home UHF transmitter in use to-day.

.....

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The Wireless Institute of Australia Federal Executive

The I.R.E. Trophy Contest.
Organised and Managed by F.H.Q.

Following on the success and popularity of the recent "All Band CW Contest," and in view of the forthcoming 150th Anniversary of Australia Celebrations, the Federal Executive of the Wireless Institute of Australia has arranged a further contest, which will take place during the last two week-ends of January, 1938.

This contest will be open to every amateur in Australia, to all of whom, on receipt of their logs by this Executive, will be forwarded an attractive certificate. The winner of the contest will be presented with a very fine trophy (value twenty guineas), which has been very kindly donated by the Institution of Radio Engineers.

In this contest there are two sections, one of which may be called the "Qualifying Section," and the other the "Contest Proper." For those amateurs desiring to compete for the trophy it will be necessary for them to send the message given below to at least ten different overseas countries. When this has been done, they become eligible to compete for the "Trophy" in the second section of the contest. Plaques symbolizing the 150th Anniversary of Australia will be presented to the three overseas amateurs who receive the greatest number of these messages from Australian stations. Australian amateurs who are not able to send the message to ten different countries are not barred from entering the contest, but will not be eligible for the I.R.E. Trophy.

In order to minimise the number of operating hours in the contest, and at the same time give the equivalent of twenty-four hour operation, the two operating week-ends are being run in the opposite sectors of the day. This should be appreciated by entrants using 160 metres. Every amateur is urged to enter and make this contest the most successful of

its kind ever held in the Commonwealth.

RULES.

Qualifying Section.

1. To become eligible to compete for the I.R.E. Trophy, participants must send the message given below to at least 10 (ten) different overseas countries during the period commencing 0001 E.S.T. December 1st, 1937, and ending at 2400 E.S.T. January 20th, 1938.

The Message.

2. "Australia's 150th Anniversary Celebrations commence at Sydney, January 26th, and continue to April 25th. Spectacular and varied programme for overseas visitors. World Radio Convention, during Celebrations, commences April 4th. Those interested cordially invited to attend. Please relay and publish.

(Signed)

LYONS, Prime Minister of Australia;
STEVENS, Premier of New South Wales."

3. Entrants must forward a log giving the following particulars:—
 - (a) Call sign of overseas stations receiving the messages.
 - (b) Time and date of each message handled.

Contest Proper.

1. The Contest is open to all licensed amateurs in Australia, but only those amateurs who have handled messages in accordance with Rule 1 of the qualifying section will be eligible for the I.R.E. Trophy.

Amateur Radio

2. The times of the contest are as follow:—From 12 midnight, Saturday, 22nd, till 12 noon Eastern Standard Time Sunday, January 23rd, and again from 12 noon E.S.T. Saturday, January 29th, till 12 midnight E.S.T. Sunday, January 30th, 1938.
3. The test is of a contact nature, and with each contact a 10-letter cypher must be exchanged before a point is scored.
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. If there is no exchange of cypher, no point may be claimed.
5. Any station may be contacted once on each band each week-end.
6. States are as follow:—VK2, VK3, VK4, VK5, VK6, VK7, and VK8/9.
7. Licensed power must not be exceeded, and infringements of the P.M.G. regulations will mean disqualification.
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).
9. Bonuses will be added to the score after multiplying (Rule 8), as follows:—
 - Contacts on 160 MX—50 points for each State worked.
 - Contacts on 80 MX—20 points for each State worked.
 - Contacts on 40 MX—20 points for each State worked.
 - Contacts on 20 MX—30 points for each State worked.
 - Contacts on 10 MX—100 points for each State worked.
 - Contacts on 5 MX—500 points for each State worked.The sum of bonuses plus those points scored as in Rule 8 will constitute the grand total score.
10. The cypher to be exchanged consists of 10 letters, the first five being chosen by the entrant, and 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., RADIO-AAAAA.
11. All logs must reach the Federal Executive of the Wireless Institute of Australia, Box 2127L, G.P.O., Sydney, by February 28, 1938. 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.
12. Certificates will be sent to each participant who forwards a log, whilst the Australian-wide winner will receive the I.R.E. Trophy.
13. The decision of the Federal Headquarters executive of the W.I.A. will be final and binding in all matters.

The scoring may be a trifle complicated, so a formula has been arranged which should clear up any misunderstanding.

The grand total score equals:— $(A \times B)$, plus (50C plus 20D plus 20E plus 30F plus 100G plus 500H).
Where A equals number of contacts.
B equals number of States worked.
C equals number of States contacted on 160 MX.
D equals number of States contacted on 80 MX.
E equals number of States contacted on 40 MX.
F equals number of States contacted on 20 MX.
G equals number of States contacted on 10 MX.
H equals number of States contacted on 5 MX.The above formula will give the score claimed by any station in the contest.

E. L. COLYER, VK2EL,
Federal Publicity Officer,
Wireless Institute of Australia.

5 MX FIELD DAY.

Details of VK3 arrangements for the 5 mx Field Day, which coincides with the National Field Day contest, will be found in the UHF Section Notes.



Federal and Victorian Bureau

(R. E. Jones, VK3RJ, Qsl Manager.)

VK3NP is keeping most of the Malvern and Glen Iris gang off the air these days. BCL repercussions are bound to follow very soon.

Another old-timer to stage a re-appearance is Val Petruchina, VK3DT, with a note and fist as of yore.

Quite a budget of news from Roger Greene, VR1AM, of Ocean Island, who is active again on 40 metres after a year's cessation. Roger will soon be heard on the LF end of the 14 mc band. Next year his fur-lough is again due, and he expects to arrive in Melbourne around August. Says 40 mx not so hot over there, but 20 mx excellent. Adds that it is difficult to keep cool over there, and sends his regards to VK3WG.

John Mills, VK3QB, of Maffra, has been transferred to Moe, from which locality his signals now reach R9 in Melbourne.

OZ4B, E. Chr. Anderson, Fredericiagade 88 (2), Kobenhavn K., Denmark, requests me to publish the fact that he will exchange postage stamps with any Australian ham.

Will someone please send VK3CX a Delaware card. He needs one so badly that he brought a bodyguard consisting of VK3IW and VK3CB to the QSL Bureau on Cup day, to obtain one by fair means or otherwise. The QSL Manager was away at "the Sunday school picnic"!

I regret the injustice done to the N.S.W. State Council in a previous issue of "Amateur Radio," by stating that F.H.Q. was staging a big DX contest in 1938. It transpires that the State Council has the control of this mammoth contest.

QSL Managers please note the new Bureau address for the Dutch East Indies—QSL Bureau, N.I.V.I.R.A., Post Box 64, Bandoeng, N.E.1, Java.

Will the pirate using VK3BG as a call sign please visit Bendigo to receive the kick in the pants which Roth Jones has awaiting for him.

W9EF, Bill Short, of 104 157th St., Calumet City, Ill., U.S.A., moans about the poor response to his QSL's from VK stations. Claims that he has sent 100 for a meagre 27 in return.

Cards for the undermentioned may be had on application at this Bureau, 23 Landale Street, Box Hill, Victoria:—VK3AP, AQ, BJ, BE, BX, BS, CA, CU, CV, CX, DI, DK, DS, DU, EA, EH, ES, EZ, FA, FM, FS, FT, GB, GJ, GM, GP, JN, JR, KG, KP, KT, LV, LQ, NC, NG, NI, NP, RE, SF, SS, SO, ST, TB, TG, TQ, TW, TY, UJ, UO, UF, WB, WH, WR, WW, XD, XE, XG, XJ, XU, XZ, YA, YM, YG, ZG, ZP, Ashman, Webb.

Qra of following is needed:—VK3EE, QO, TT, WU.

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517 LOWER MALVERN RD., GLEN IRIS, S.E.6, VIC.
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Plug In Dust Proof Holders 7/6 each
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56 MC! What do you Think?

VK2NO's ideas on the subject are as follows:—

"The main trouble with the speedy development of communication on this relatively neglected band (in VK) is the lack of incentive it holds for any than the genuine experimenter, to whom obstacles are made to be overcome. This band will not readily attract the dabbler, at least not in its early stages, although in years to come when more is known about its behaviour, one may correctly assume that it will become more populated. To most dabblers the 56 mc band is a solid wall of doubt, fraught with what appear to be difficult technical problems in the way of getting results. Because one cannot pick up a mike and yarn away at once with W's on phone, the more recent initiate into amateur radio thinks, 'What's the use?' It appears to be all wrapped up in the matter of DX working, but there is much more to the 56 mc band than that, attractive as the ultimate DX problem is. To the experimenter there is the sheer joy of making things work well at the frequency, and the joy of making things work in amateur radio is, or should be, nine-tenths of the interest in the game. Before DX is attempted on 56 mc, there is the question of building apparatus that at least conforms with lower frequency standards. Nobody in their senses would dream of using a modulated oscillator and squegger receiver on 40 or 20 metres in these times, and there is no technical reason why these inflictions should be applied to 5 metres. It is just as easy to build a stable MOPA for 5 as it is for lower frequencies, and a TRF receiver is also no problem at all. Neither for that matter is a superhet. The first thing, then, is to tackle this TX and RX business from the barrier, and not to plug along with ancient gear even temporarily. Such practice will get the user nowhere, except locally, and relatively unsatisfactorily at that. If you have a TX capable of radiating a stable C.W. carrier, it can be keyed for C.W. communication, which is the

first important step. Applying modulation for speech is the same thing as with any other TX. If the RX will handle C.W. well, it will receive weak phone into the bargain, but just try to copy a distant 56 mc phone on an R3 carrier with the average super-regen! It can't be done. Modern valves make even a crystal TX readily accessible on 56 mc, and if you can't run to acorns in the signal circuit of the RX, well, there are metal valves of the 6K7 and 6J7 variety which are about on a par up to 70 mc. Aerials! Here lies a wealth of pasture to graze in. A lot is known about directive systems, but relatively little is known about the useful angle of radiation for extreme DX under favourable ionosphere conditions. But it will become known eventually. The progressive station should have a good vertically polarised directive system with reflector for local work up to 100 miles or more, and an experimental horizontally polarised system for angles between 3 and 20 degrees for DX tests. If the latter can be moved around also, so much the better. The all-important factor, having the previous considerations established, is co-operation. If tests are organised between States or countries, don't promise to take part unless you will definitely be ON THE JOB at the arranged periods. Remember that 10 metres was a closed book for years, and that it was only due to the constant and at times disheartening work of those who stuck to their guns and kept stations on the air that the DX periods for the band became known. Once they were established consistent DX followed. It is a certainty that there are DX periods for 5 metres, but they will only be known after stations break down the silence in various directions. Automatic CW or ICW senders are not hard to make and well worth installation. You can keep your station going for 15 minutes, then listen. If nothing eventuates, don't lose heart, but put the TX on again,

(Continued on page 9.)

Wireless Questions

2. WHAT IS THE FUNCTION OF THE "BRUCE" AERIAL ?

- (a) The Bruce aerial is said to possess the property of radiating strongly in a direction at right angles to the plane of the antenna. Why is this so?
- (b) If such an aerial were erected for operation on 20 metres, what would be resulting wave pattern when used on 40, 10 and 5 metres? It is assumed that the method of feeding the aerial will be by a matched impedance line to the centre of the aerial. At the same time what will be the current distribution in the wire at the wavelengths stated above?
- (c) What is the function of the eighth wavelength sections at the ends of the array?

Answer to Problem Two

(a) The principle upon which all types of directive antennas operate is that it is possible to arrange a series of half-wave antennas in such a physical relation to each other that the fields they produce when excited combine in some direction, and cancel each other in other directions. This process of combination and cancellation depends both on the distance apart of the half-wave wires and the phase relations of the current in them.

The Bruce antenna is so designed that the exciting currents are in phase in the vertical sections and

out of phase in the horizontal sections. This relationship can hold good only if the antenna is excited at the frequency for which it is designed. Hence, at this frequency specified, the phasing of currents in the vertical sections results in strong broadside radiation from the antenna and a virtual cancellation of radiation from the ends.

(b) At multiples or sub-multiples of the fundamental frequency of the antenna, the field would in general consist of a complex series of lobes in both horizontal and vertical planes, and no effective concentration would be achieved. The current distribution in the antenna at multiples and sub-multiples of the fundamental frequency can be ascertained by drawing the antenna to scale and drawing upon the wires a series of sine wave patterns (also to scale) corresponding with each frequency.

(c) The eighth wave-length sections on either end of the antenna are placed upon it to provide that each half of the antenna on each side of the point of excitation (the stub in the case you cite) is an exact number of quarter wave-length. It is necessary that each side of the antenna should contain an exact number of quarter wave-lengths, partly to achieve the desired phasing of currents in the wires, and partly to ensure that the antenna will be resonant on the wave-length of operation.

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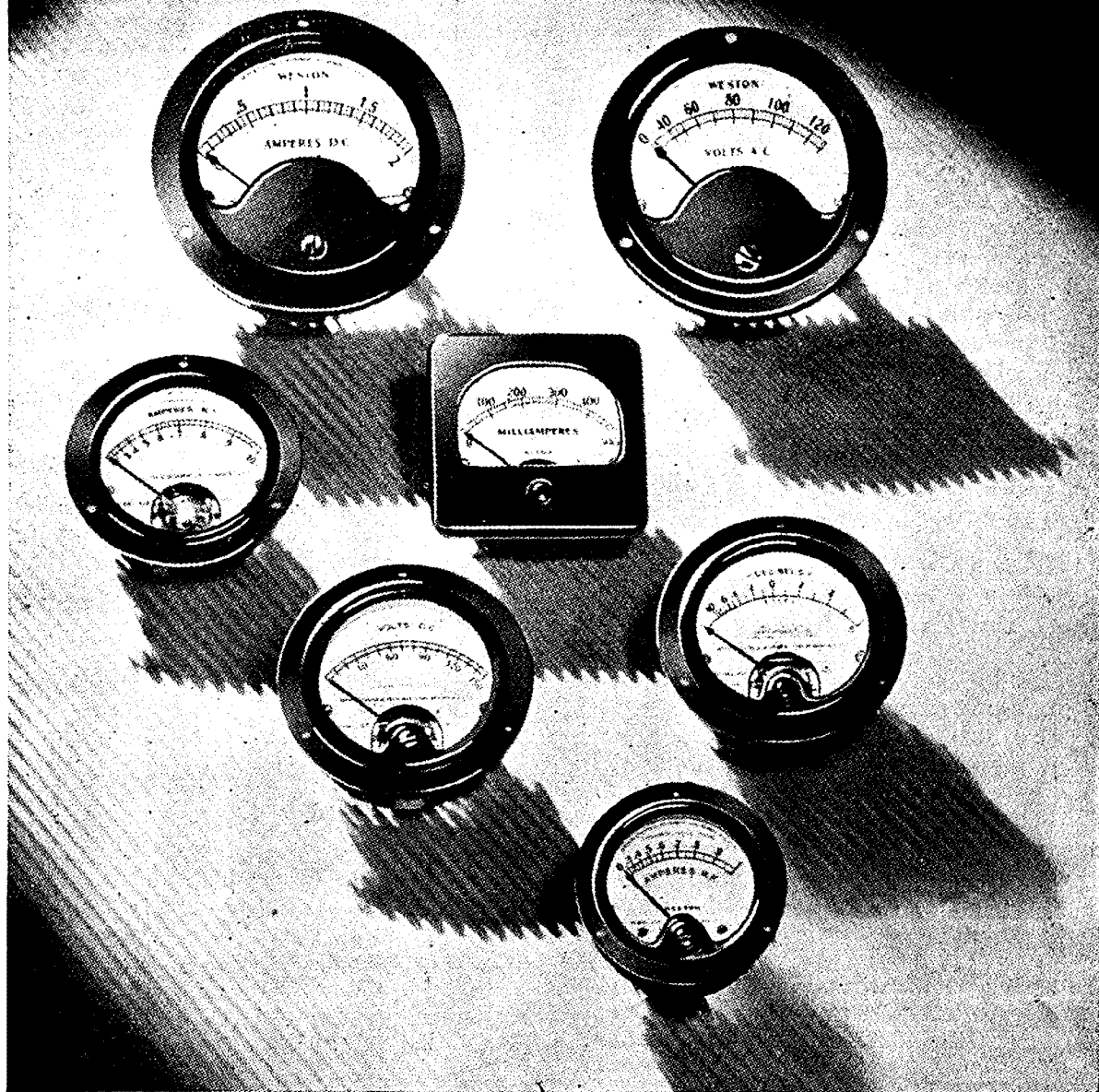
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28 and 56 M.C. Notes

(A. Pritchard, VK3CP.)

Conditions on ten metres have been excellent for all continents, and signals from varied distances have been similar strengths for many hours at a time. Skip distance effects seem to indicate many angles of reflection and refraction; for instance, VK2UC's phone is r7 at 2 p.m., with many W7's the same strength. We hear many Europeans r7/8 qso W's. At 3 p.m. on Sunday, 31st October, VK3YP contacted LU3DH on r8 phone for a half-hour contact. TI2FG, in Costa Rica, contacted 3MR, 3BQ, 3YP and 3CP the same afternoon at 2 p.m.; TI2FG phone was r8, and gave us similar reports. He is using a Collins 30 FXC rig having a 201 tube (Collins) in the final with 150 watts modulated by Class B '03A's. VK3YP has a W8JK beam on Europe and South America; the results are all that could be desired, the LU3DH contact proving this. This beam has four half waves in phase, spaced only an eighth wave length, horizontally erected (giving only vertical radiation), fed with a $\frac{1}{4}$ -wave stub and matched feeders. There are many W sigs at good strength around 7.30 a.m., the best being W3CDT, 8QLK, 8NK, 2AOG, all r8 phones. One of the best cw stations is W6GCX; he is using power, 150T final, 1kw input, and a vertical antenna. At VK3BQ Max has good contacts with Europe, the best being OK1FF, G2CX, ON4NC, G6iR, G5HZ, GM6NX, PA0WL. W6LLA is using two Taylor T20's in PP in his final; he had his first contact with 3BO. This T20 has been given a thorough try out at 3BQ; compared to the Eimac 50T, there is little difference, apart from re-neutralizing, with power output and over all efficiency, using 900 volts on the plate! Many European sigs have been at their best from 11 p.m. until 1.30 a.m., although OH2NB qso'd VK5HW on the 20th October, giving him 579x at 8.45 p.m.; G6DH, G2iT, F8EO, G2PL, G5QY, 58MS are also heard between 7 and 9.30 p.m. At the later time, i.e., 11 p.m. till 1.30 a.m., OZ3DJ, G2TK, G2iT, F8RR, SV1RX, G2YL,

ON4NC, ON4QX, G6iR, D4QEB, have good strength on cw, G6LK, G6DL, F8Ti, r7 phones. OK2RM is the loudest European here at 3CP, usually r8/9, although his rig is very small, 59 ECO, 6L6G doub., RK 10 final, 35 w, 80 mx Zepp antenna, 2 tube rx. VK2's, 2Ti, HZ, VN, JX, have been working many Europeans. VK2HZ qso'd OA4J, completing his WAC on 10. VK2RA also has completed his WAC on 10 with OH2NB. His rig has a 6L6 with 40 xtal, 6A6 push-push, a pair of 6L6G's in push-push, doublers, 808 final amp. VK4AW and 4WH are doing excellent work for VK4; the former's rig has a 2A5 co tritet, 80 xtal, 2 46's doublers, 807 final, 20 watts modulated by a pair of 50's, Zepp antenna does a good job; he has qso'd all States on all bands now. VK2UC has also been doing well; his rig has 59 tritet, 46 doub., 6L6 doub., t20 final with 20 w modulated by class ab 2A5's. This phone was f8 during a qso here at 3CP at 2 p.m. Sunday, 14th November, during a very short skip. VK7AB has fb sigs. VK3iW has a nice output on 10, and is receiving many DX contacts; the RK20 final, with 100 w input, is driven by a 6P6 tritet, 6L6 doub. The Jones all band antenna drawing well on 10 (single wire feed). SM6WL's phone was r5 at 3BQ during a qso with 2GU on 14th November. We are becoming accustomed to hearing many W's after midnight. W2BQK, qso SM5ZF, W2AiF qso Ei5F, W3GAU qso PA0WL, at app. 1 a.m. Sunday, 30th October. W1iY phone r6 at 1.45 a.m., W2GMM r5 1.55 a.m.! on 14th November. An interesting contact for VK is from KA1YL on the yacht "Latitude," in the China Sea. He has a wonderful portable rig, with plenty of power from a pair of 100 TH's in the final, another pair in class B as modulators. He had a good contact with VK2ADT, who is using a 801 fully modulated. The most consistent K6 station is Smitty, of K6MHY, who has PP 42's and 40

(Continued on Page 28)

Divisional Notes

To ensure insertion all copy must be in the hands of the Editor not later than the 18th of the month preceding publication.

N.S.W. Division

W. G. Ryan, Secretary, VK2TI,
Box 1734 JJ, G.P.O., Sydney.

Country Zone Officers.

Zone 1 (Far West).—J. Perooz,
VK2PE, Hope Street, Bourke.

Zone 2 (North-West).—H. Hutton,
VK2HV, Byron Street, Inverell.

Zone 3 (North Coast).—R. J.
Berry, VK2NY, 54 Bacon Street,
Grafton.

Zone 4 (Hunter River and Coal-
fields).—R. W. Best, VK2TY, 57 Hunter
Street, Newcastle.

Zone 5 (South Coast and South-
West).—R. Ross, VK2IG, 673 David
Street, Albury.

Members of the Division are taking great interest in the National Field Day, and at least ten VK2 stations will be operating from portable locations. Most stations will have two or more operators, so that 30 or more members will be participating, and all are looking forward to an enjoyable week-end.

At the October general meeting Mr. D. B. Knock gave an interesting talk on Aerials, and pointed out the usefulness of the doublet type of aerial for reception and also for transmission. He discussed also some types of directional aerial applicable to amateur work on the H.F. and U.H.F. bands.

Some additional results are to hand for the senior VK-ZL contest, those most worthy of note being 2ADE, 83,000 points; 2DG, 33,170; 2ZC, 31,512; 2XT, 23,976.

Information concerning the junior section is very meagre, but it is believed that 2DG, 2HV, 2NY, 2PX, 2XT, and 2ADE put up good scores.

On 23rd October VK2NO was logged on 56 mc CW in Wellington, N.Z., by Mr. P. A. Morrison, who reported his signals QSA4 R4-5. This would seem to confirm the extraordinary results obtained in the northern hemisphere during May, 1936 and 1937, and the Division has organised 56 mc schedules with N.Z. amateurs in the hope that contact may soon be established.

The regularity with which European stations have been coming through during the evenings on 28 mc has encouraged quite a lot of activity on that band lately. 2UD is most consistent, and 2TI and 2ABC are also achieving fine results. Other stations using the band frequently are 2AHB, 2AZ, 2ED, 2HZ, 2JX, 2RA, 2VN, and, of course, 2GU, whose activities on this band are well known.

Members have been issued with attractive "stickers" commemorating Australia's 150th Anniversary next year, and drawing attention to the various contests to be held by the Institute during 1938. These "stickers" will be distributed to all Divisions for use on QSL's, and correspondence with amateurs overseas.

2TI had a phone QSO on 28 mc with PK3GD, who claims it as the first 28 mc phone QSO between PK and VK2.

The Division extends to all the best wishes for the festive season, with "bigger and better" DX for 1938.

STATION REPORTS.

2HV, with a rotary beam for 14 mc, is making a good showing in the Junior DX contest.

2PF.—On the air now in Sydney. Using cw and series modulated phone on his 210.

LAKEMBA RADIO CLUB—VK2LR. (By 2DL.)

At the meeting of the above Club, held at the Club rooms, "Sunrise Hall," Canterbury, on Tuesday, November 9th, the 50th licensed amateur was accepted as a member. Mr. C. Luckman, 2JT, a foundation member, was asked to take the chair for the evening. In outlining the history of the Club Mr. Luckman mentioned that it was very gratifying to have watched the Club grow from an original membership of 8 to its present strength of about 80. The low fees were one of the chief factors which helped to retain the membership, he continued, but unfortunately many members had dropped out owing to moving out of the district. From time to time the Club had been criticised for meeting at Canterbury, but as many members had several miles to travel each meeting a central position was necessary. The evening concluded with the serving of coffee and light refreshments.

ZONE 4 NOTES.

The first duty that confronts me is to wish all and sundry a Merry Xmas and oodles of DX in the New Year.

Now with that off my chest, here's the doings.

Another contest is in progress in the Newcastle district for members of the N.A.R.C., and judging by current reports there seems to be quite keen competition between about five men for the honor and the prize.

Due to a complicated and what seems to me unnecessary system of multipliers, the points to date amount to some half million or so "per person per trip," etc.

Had a visit recently from Bob Cunningham, 3ML, and walked him half round Newcastle, due to the poor tram service. Ask him about it! He bailed 2ZW and myself up in the shack of ZW for an hour or so telling us the worries of getting articles for "Amateur Radio." Poor chap, I pity him his job.

2XT and 2DG managed to dig up approximately 33,000 odd points each for the recent sections of the VK-ZL contests, and seemed highly pleased.

2LZ, from VIS, has come into our district, working at one of our local

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"B" class stations, but apparently his old "Lazy Lizzie" won't bring him as far as Newcastle. We never see him.

Hope to scrounge a couple of technical articles out of the local gang, but no promises. They're either as dumb as doorposts or as lazy as loafers. Well, cheerio for the present es. 73.

From TY.

ZONE 5 NOTES. (By VK2IG.)

VK2QE.—Put up fair total in test notwithstanding poor condx and good qrm from power leak. Got a few new countries, including V.O.

20J.—Not heard much. Too much business and holidays!

2AFD.—Contemplates moving to Junee; is just waiting for a call.

2VK.—Struggling with a 6L6G, out of which he gets a T.3 note. Is keen on borrowing power supplies to test it on hi!!

2IG.—Now has 6A6 S.E. osc. driving single 45 to a doublet. With 12 watts got three new ones—F.A.8, F.I.8, C.R.7—all T.9 xtal. reports!

2EU.—Worked some nice DX on 20, including H.O., but got tired and went back to 40. (The qrm there made us tired!)

2DN.—Mainly interested in five, and uses P.P. 45's there, but is also heard on 40.

VK2BW —Was tendered an fb farewell on the South Wagga Tennis Courts, and commenced "duplex work" shortly after. He will be QRT till study has been completed. The old brigade wonders how married life is, Alf?

VK2YW.—Is still on the hill, and may be occasionally heard on 40 mx fone, and is said to be rebuilding.

VK2JA.—Hasn't yet finished his receiver. In one fortnight Athol worked 40 Yanx on 20 mx fone. What's going to happen when he gets the new rx going, we wonder?

VK2AFF.—Didn't last long on the new rig. It's been rebuilt, and on chassis, too. Is it anything like 2WG, Phil?

VK2AEA.—Has been far too busy to be active at all.

VK2RH.—Well, well, well! After five years of silence Harry has got

going again, also on 40 mx. The final stage got damp during a severe rainstorm recently, and things happened when Harry unsuspectingly turned it on.

VK2FQ.—Has found that a 59 tritet doubling to 40 (80 mx rock) isn't sufficient drive for two 46's straight, so decided to build a buffer. By this Doc's log book ought to be nearly as large as his light bills.

VK2TH.—Faded quietly away from Wagga and landed in VIS. Roy has been heard starting up at his new abode.

VK2AEI.—Has been very ill, an operation was ordered and now after convalescing is on annual leave. By the bye, the "AEI" on fone sometimes heard on 40 is definitely a pirate, because Mo hasn't finished building his cw rig yet.

VK2AF.—Is building now that he is settled in Wagga, and indications point to Allen also starting on 40 mx. What a nice little 40 mx family Wagga is acquiring.

VK2AEO. — Still considering higher frequencies; expects to be on 20 mx soon. Has been too busy coaching Allen Wells and Stan Mitchell in code for recent exam., in which both appear to have done well.

VK2UO.—Hi Hi! But someone said that it's definitely to be revived, and Wagga's Club again put on the air. Whose move next, boys?

STATION REPORTS. (By VK2IG.)

VK2AEO.—Still using 59 EC 46 buffer and 210 PA., and has worked XU, VE, K7, FB8 and W on 40, using cw es T9, too! The antenna used being half wave Zepp.

Special for 56 M.C. Enthusiasts.

VK2DN, of Deniliquin, is using 45 osc. to a PP 45 PA on 56 mc. The antenna is a twin dipole. Special test transmissions take place on Saturdays at 2400 EST and on Sunday afternoons at 1500 EST, and the schedule is transmission for 10 minutes, then 5 minutes listening. This is repeated till 2DN drops off to sleep, hi! He wants others interested to listen for him and/or get in touch with him for skeds. He finds that the P.P. PA is much superior regarding stability than a single-ended job. Apparatus at this station includes E.C. fre-

quency meter and monitor signal generator and V.T. voltmeter. The receiver is 3 V super regen for 56 mc and 57 EC detector, and 1 audio for 40Q.

TASMAN CROSSED ON 56 M.C. VK2NO Makes Further Record.

Since receiving the report from North Wales of reception there of 56 M.C. telephony from VK2NO, Mr. D. B. Knock has been operating almost continuously in various directions with different types of beam arrays on C.W. telegraphy with automatic transmission.

His tests have at last borne fruit from New Zealand in the shape of a letter from Mr. P. A. Morrison, of 7 Essex Street, Wellington. Mr. Morrison is a S.W.L. with 21 years' experience in receiver design and use, and with a keen interest in ultra-shorts. He logged the C.W. transmissions from VK2NO on October 23rd last between 3.30 p.m. and 5 p.m. New Zealand time. Signal strength was Q4 R5 "CQ Five DX DE VK2NO." The report checks with the log and activity at the Sydney end. VK2NO was using a W8JK flat-top beam cut for 57 M.C. and used vertically, aimed North-West and South-East. Often is the S.W.L. decried for his persistency in sending along reports by the shoal, but here is a case where an S.W.L. has proved of immense value once again. Both the North Wales and New Zealand reception of 56 M.C. transmission from Australia come from S.W.L.'s. If listeners can do this, what about Hams? Surely two-way QSO's would be possible if the right kind of gear is in action at both ends during these DX periods on 56 M.C.? VK2NO has been making observations on skip conditions on 28 and 14 M.C., and considers that at the present time conditions should be very favourable, for up to 1,000-mile contacts on 56 M.C. The observations of W9FM in October "Radio" are worth perusing in this respect. It is significant that when VK2NO was heard in North Wales he was transmitting on a Reinartz type circular aerial, and that Mr. Morrison, in New Zealand, was using a similar aerial for reception. Evidently this type has the property of taking advantage of favourable angles owing to its circular shape.

Victorian Division

At the Council meeting held 9/11/37 there was an attendance of twelve. After accounts amounting to £35 14s. 9d. had been passed for payment, a comprehensive report was received from the newly re-organised Technical Development Section, and this section was authorised to purchase four new books for the technical library. After a general discussion on station equipment, it was decided that the 2KVA converter should be advertised for sale.

A report on the annual dinner was received from Mr. Marshall, who was thanked for the tremendous amount of work he had put into the organising of the dinner.

Mr. Thompson was appointed as manager of the coming A.O.P.C. class. Lastly, it was decided that a short report of Council activities should be published in "Amateur Radio"—hence the above effusion.

R. ANDERSON, Hon. Sec.

PHONE SECTION NOTES.

(By A. L. Johnson, VK3FL.)

On the 26th October the fone section held its meeting at the rooms of the W.I.A., and although rather poorly attended there were some interesting discussions on apparatus used in modulated transmitters. It was decided that the activities of the 200 metre section may be of interest and assistance to other members of the short wave fone section of the Institute, so that a series of lectures or demonstrations is to be held at future meetings on the last Tuesday in the month, excepting, of course, December. The first of these is to be a demonstration by 3HK of his Cathode Ray tube, on November 30th. This should prove very interesting, as many members are not as accustomed to these tubes as they may be.

The fone section was well represented at the recent dinner held by the W.I.A., and several members were lucky in receiving some of the gifts kindly donated by various firms and members of the Institute. Even our worthy friend, 3TH, came home with

a very decent trannie for his power supply. Altogether we had a very enjoyable evening. At the function just mentioned we had the good news from Mr. Malone that the Department had granted an increase of power from 25 watts to 50 watts, so most of the transmitters have been adjusted for the increased rating, and quite an improvement in quality and signal strength is noticeable.

As 3DH has been back in Melbourne some weeks his gear is almost ready to be put on the air once more, judging from the description the quality of his previous gear will be retained in the present and more up-to-date transmitter.

SHORT WAVE GROUP NOTES. (By O. E. Davies.)

Meetings held during October and November drew the usual attendances. A feature of the recent meetings has been the introduction of Morse Code Practice. This new departure has been very well received by the members.

At a recent meeting of the Group an interesting lecturette was given on the Fundamental Operation of the "Marconi Echo Depth Sounding System." This was well received by those who had the opportunity of being present.

It is felt that the presentation of lecturettes and debates does a great deal to stimulate active interest and experimentation within the Group. Remember, more of these talks and discussions are to be held; one on each meeting night is the arranged programme.

As regards the actual doings of the individual members, little can be said beyond the fact that those who are not studying for their A.O.P.C. are actively engaged in Receiver development.

The article on the 3WI Superhet, that has been promised for so long, is now well under way, and is in fact only waiting for a couple of photos, when it will be complete. You can definitely expect it next month, chaps.

Well, it is not my intention to take up any more space in this section of the mag., OM's, as it is my firm belief that the space so occupied could be put to better use for the

publication of technical articles. So in future these notes may be pruned a little finer each month.

UHF NOTES. (By 3JO.)

The Field Day to be held on 5th December is the most important item of news at present, and the arrangements governing activities are as follows:—In order to allow portable stations time to get their gear erected and tested, the starting time has been fixed at 1100 hours Eastern Australian time. However, all stations are requested to make every effort to have their gear in operation at 1030, when 3PS will call cq for ten minutes and will listen for replies at 1040.

Times for transmitting and listening periods are:—

1100-1110. — Country stations CALL Melbourne.

1110-1120.—Country stations LISTEN for Melbourne.

1120-1130.—Period for general contacting.

1130-1140.—All Victorian stations CALL Tasmania.

1140-1150.—All Victorian stations LISTEN for Tasmania.

1150-1200.—Period for general contacting.

These operations are repeated every hour until 1700.

Intending portable stations and locations are:—

3OT.—Mt. Tarrangower, near Maldon.

3OF.—Fyshe Creek or Foster, near Corner Inlet.

3DH.—On Great Divide, near Wollan.

3VH-JO.—You Yangs Mts., near Geelong.

3QJ.—On boat in Port Phillip Bay.

3UK.—Olinda.

Country stations likely to be taking part are:—3HZ, 3RS, 3PR, 3DI, 3HL, 3RH, 3OW, 3HG, 3WE, and several stations in Melbourne, whilst in Tasmania 7KQ, at Mt. Wellington, and 7AB, at Launceston, will be keeping things alive over there.

Of the Melbourne stations 3PS will be the central control station, with dual transmissions on 7 and 56 mc. These 7 mc transmissions will provide a valuable link with country and interstate stations, and will enable them to keep in touch with

Amateur Radio

activity in the metropolitan area should the 56 mc channel be unsatisfactory. Other uses of this channel (7 mc) will be apparent, and need no mention here; suffice it to say that with this channel available there will be more chance of breaking records. In order to facilitate working over long distances, it is suggested that contacts, unless over 100 miles, should last no longer than 30 minutes. Given favourable weather conditions, 5th December should provide an interesting and enjoyable time for all stations participating in this Field Day.

All stations are requested to keep a log of stations heard and worked, and to send a copy of same to the secretary of UHF. Section, Victorian Division, W.I.A.

Activity on the 56 mc band has been improving, and during the last month stations 3VH, 3PS, 3LG, 3OJ, 3QJ, 3CC, and 3OT were contacted, and 3FH and 3XM heard only. This improvement is due largely to the

Field Day, and, as this is still more than two weeks ahead, it seems likely that 56 mc will shortly be the most popular band we have!

An exceptionally interesting time is assured for all who attend the December meeting of this section on Tuesday, 21st, so come along and hear just how these 56 mc Field Day records are smashed.

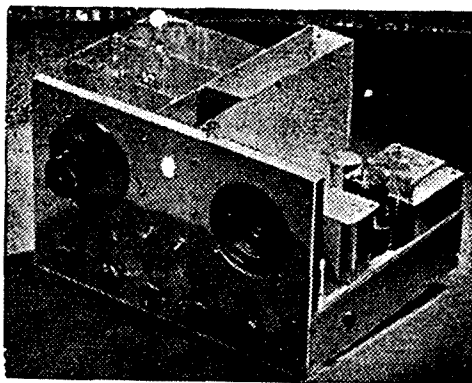
COUNTRY SECTION. (By VK3UK.)

We were delighted to see so many of the country men down for the W.I.A. Dinner, as it provided the opportunity to discuss the new section with some of them on the Sunday. From all that was said it seems that it would be a mistake to arrange any sort of gathering for the month of November or December, as so many of the boys in the Western and Northern Districts would be possibly too busy on their properties to attend. So it was felt best to arrange

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for a Hamfest at such a spot as Ballarat for about mid-January. That place would be reasonably central for both the Western and Northern fellows, and from the remarks heard many of them would be able to be present. Until we have had a meeting that is thoroughly representative of the country men it is impossible to finalise the definite lines of the Section Organisation, but it is felt better to hold the matter up for the few extra weeks so that a time that is convenient to all can be made.

Now for the Gippsland men. You fellows present a more difficult problem to get you together, as you are fairly few in number and are well scattered. I would like you to write to me and tell me where you consider would be a suitable place to have a meeting so that you can all attend without having to travel half way across the State. Would a place like Sale or, say, a spot nearer Melbourne, such as Warragul, be a good situation? And when would you like such a meeting? I can promise that our President and at least five members of the Council will accompany me to wherever you fellows agree would be a good meeting place. So drop me a line as soon as you can, giving me your views, so that we can have the matter in hand as soon as possible, for obviously the sooner the Section is under weigh the sooner you chaps will derive benefit from it.

SOME COUNTRY NOTES. (By VK3BG.)

Though the general opinion by many is that the country chaps of VK3 are a lot of phone hounds who interest themselves by talking over the back fence and acting the fool with each other, we have quite a few who are interested in the grand old "DX," and below are a few of the doings.

VK3HG.—Neil still as active as of old. Has a beam erected, and doing quite well. Worked several Europeans on phone, and did excellent in the contest, though, like many others, was unable to make WAC.

VK3OW.—Of late not so active, as he has taken up servicing now the AC has come to Coleraine. The DX is waiting for you, OM.

VK3KX.—Active as ever was. There seems always to be someone calling Ron, and glad to see you keep up the old tradition.

VK3GQ.—Interested mainly in phone these days. His limit seems to be the Yanks, as there is always one or more Yanks calling him.

VK3AL.—Another old-timer, and with plenty of power, his phone signals seem to get out swell. Hear you are contemplating the reserve, Alf!

VK3WW.—Wal still active on the DX, and many is the distant country worked by this comparatively old-timer.

VK3SE.—Not doing as much as you could these days, Stan! With your power, and two half waves in phase, you should be able to get out.

VK3FF.—Jock, like yours truly, passed the same exam. but twelve months back, and though for a while on qrp has now a bit of power and getting his share.

MALLEE AND NORTHERN DISTRICT. (3ZK—3HX.)

Well, gang, please accept our apologies for the absence of these notes for some time, because what with trips to VIM and er YLitis we're little bit hazy if the notes were ever sent.

However, the high light of last month was the visit to Vim by some of the Northern boys, mainly for the W.I.A. dinner, and well—er—well?

Conditions, taking them all round, are not bad, but it looks like 80 mx has closed down for the summer months, and already practically everybody has migrated, although there are a few diehards, and the ZL's can still be heard. 40 mx has gained a few new members, while 20 mx appears to be opening up well. South Africans coming in very well, the Yanks being rather weak.

3EP is very QRL with Xmas shoppers, besides being kept busy by the gang grinding Xtals, 3BM particularly.

3TS -3FF are all band experts. It was rather a coincidence that the coils belonging to Tom's xmitter fit Jock's rig.

Amateur Radio

3OR got home safely from the city, and has not been very active since. Succeeded in getting a 6L6 tritet going, but the 40 mx rock didn't like it. Tough luck, Murray!

3KR also got home from VIM without mishap. Ken now has an 807 in place of the little old 210, but he can't understand why the plate doesn't get RED like the 10 used to.

3TL is another who arrived home from VIM but in this case we believe that Treb was loaded up with Xformers and one thing and another. Treb has installed a pair of 801's in PP as modulators, with excellent results.

3BM has had 3HK staying with him, and we believe that Keith put Bruce's oscilloscope in order and built his super.

3EC, Ernie Cook, of Swan Hill, is active on 80 mx.

3ZK still puts in an appearance occasionally.

3CE is not very active, getting near harvest time, and Roy chases DX from the seat of a tractor.

3WN is also more or less inactive, but Jack puts in an appearance on Sunday mornings.

3HR.—Charlie has just completed a new speech amp with 2a3's in the output, and the quality is rather good.

3K1 suffered a visit from 3BM, KR. HK. and TL, so we don't know if he can still get on the air.

3IH has rebuilt the rig, semi-base-board style, which looks very nice. Fenton has a CL4 give up the ghost, but now has another. The 2nd of May is becoming very proficient.

3HX is another who arrived home in good order and condition from Vim, and has since blown some filter, rebuilt the buffer stage, re-arranged the power supplies, and is now contemplating building another xmitter.

Queensland Division

(Via VK4AW-VK3ZC.)

Members at the November meeting had the pleasure of listening to a talk on Sound Picture Projection, very ably given by Mr. J. Bateman, of R.C.A. and Raycophone fame. The lecture at the December meeting is eagerly looked forward to, as Mr. V. F. Kenna is to talk on the Oscilloscope. It is hoped to hold a Hamfest

at some future date at Tweed Heads, with some VK2 hams from the Northern Rivers participating. Not for a few months yet though. Several of the gang will take part in the National Field Day, 4WI 4GU, 4RY, 4HR, and 4AW being listed.

Another DX contest has been and gone, leaving several bleak-eyed hams in its wake, notably 4JX, 4UR and 4UL.

4XN paid a visit to V1B, and talked 56 mc at great length. Using long line oscillator at present, but Eric says no DX.

Likewise among the visitors for the month was 3ML, but Bob's visits are all too short, and golfing seems to have an attraction.

Heard 4NO working VUL? Lady Elliott Island, on the Barrier Reef, on telephony. What's the dope, Norm? 4LX has closed down and shifted to temporary quarters, and does not expect to be on the air for quite a time.

4AP is back on after a long silence, and did a little in the contest, although only a revival.

4CW is a new ham from Warwick, up on the Downs, and not a pirate, as some might have thought.

4GU has the new super working nicely after a spot of bother with the BFO.

4FB on a 6L6 modulator unit, although a little audio oscillation trouble is worrying Fred at the moment.

4HR quiet at the moment, but will break out at any time. Has his claim pegged out for the National Field Day already.

4EL still ill-treats the 45 tube with the hefty input.

4RF's pet pastime seems to be working Yanks on 14 mc by the number contacted.

Willie, of 4WT, has the 52 perking on all six working Europeans on 28 mc in great style. The line-up is 6A6, 6A6 push-push, 807 buffer, 852 final.

4AW reports working all VK districts on all bands and VK9 on 20 and 40.

4RY doing a little on 10 metres when time permits and the weather is not too hot. Expects to be in Sydney and Canberra with 4AW at Xmas.

4AX getting out on 40 and 20 fone, and uses CL6 tubes and 801 final,

and crystal mike ending with a pair of 6L6's in modulator.

4PX sticks to CW solely, and puts out a hefty signal, while 4YJ, nearby, is giving fone a flutter, using two 6L6's in parallel in final.

4BB seldom heard in V1B, but is on 20 nowadays, as hear other stations working him quite a lot.

QRN has been rather bad during November. 80 metres has gone by the board, and 40 has been slack during QRN periods. 20 seems to be the battle ground at the moment, and one might say slightly overcrowded at peak periods. Perhaps it is just as well that skip distance exists to lessen the QRM problem.

Most of the gang here view with favour the increased power permission, and quite a number have already taken advantage and increased accordingly.

South Australian Division

(By VK5KL, VIA VK3MR.)

Once again the majority of hams in this State were drawn together with that good spirit that prevails on such an occasion as the annual Field Day held in November. Manoora was the selected spot for this year, and the outing was enjoyed by all and sundry who journeyed to the northern town. More details in next month's notes regarding the transmitter hunt, etc. On Wednesday, 10th November, Mr. De Cure, VK5KO, of 10-metre fame, and possibly known better as VK3WL, gave a most interesting lecture on radio interference and ways of reducing it. At the meeting of October 27th a talk on his experiences in the Pacific was given by Mr. Bill Sawyer, ex-VP1WS. This was given in his best style, though one needed a big imagination to see in reality some of the feats accomplished by those daring the pacified waters of the mighty Pacific Ocean and its hundreds of islands. An outing has been arranged for January 12th for a visit to the model aeroplane club rooms, which should, as in the past, prove very interesting. Conditions on 20 metres does not seem to be as good as in the past during the spring months, though now the Yanks are fading out on fone, while the European DX is audible at the accustomed time of

around midnight, and then onwards. Several chaps have been gaining that elusive South American country during the evening on 20 metres, and many sighs of relief have been heard after having done so! Now that the festive season is drawing near, on behalf of VK5 I wish everyone a Merry Xmas, good hunting, and may the ham spirit flow forever free.—5KL.

VK5 COUNTRY NOTES. (By VK5PN.)

VK5BF.—Signaller in the Army during the war, Frank is one of those chaps who can work at radio all day (he controls a B-class relay station at Murray Bridge), and then find enjoyment in amateur radio as a hobby.

5HR.—Not yet quite satisfied with his Telefunken "fone." Although he gets out quite well, Bill is after results like unto those enjoyed by VK2DQ, with the same system.

5RE.—"Hobby" visited northern towns recently in capacity of delegate to a conference. Judging by his activities in various ham shacks, he must have neglected somewhat the real business of the conference.

5LC.—Won the Country Q.S.O. Contest with a total of 549 points. Congratulations, Les., you certainly worked hard to make the contest a real success.

5RJ.—Got away with the second prize. Guess Darcy now knows something about the taste of "ham-spirit."

5WJ.—Bill has been rather quiet for some time, but is now active again. I believe he could talk about antennae all day. He has tried all types, and although he admits that the Zepp is not renowned for its efficiency, he obtains real results with it at his Port Lincoln location.

5LG.—I received a most interesting letter from Leith recently, setting forth his delvings into the mysteries of our art. His old batteries have at last given up the unequal struggle, and before he could acquire (he did not commit himself as to the method!) new batts. he experimented with fair success with a Ford coil. Filtering the output, however, proved to be something of a problem. Leith has rebuilt his big transmitter in preparation for the advent of A.C. mains, which should eventuate shortly. The line-up is: TCO35/I.CO,

Amateur Radio

46 FD and a pair of E406's in parallel for operation on 7142 kc and 14284 kc. He will use the T.C.O. as a T.N.T. osc. on the 3.5 mc band. When fone is used the modulation will be of the grid bias type. Leith is a keen Rifle Club man, and would like to hear of other radio amateurs who are interested in rifle shooting.

5FB.—Haven't heard Frank lately. Possibly relaxing after his work in connection with the Q.S.O. Contest. He was assisted in the judging by 5NW and 2DQ.

Two new country stations have appeared in Mount Gambier. They are 5CJ (Mr. C. Ferguson) and 5BN (Mr. G. Barton). Both are on very low power, about four watts. Watch for them, please, chaps, and let them know how you receive them.

By the time these notes appear in print the big event of the year (I almost said "of all time"), the Field Day gathering at Manoora will have been held. On this day amateurs from all parts of South Australia, and doubtless some from other States, will have met and exchanged ideas. Chaps who have become acquainted

over the air will meet in the flesh and life-long friendships formed. City men will learn something of the country man's difficulties in regard to low power, lack of facilities for obtaining replacements, etc.; the country chaps will gain some idea of the tremendous difficulty of copying weak signals to the accompaniment of QRM, originating a hundred yards or so away in city shacks. Thus city and country will be brought closer together, and all will benefit from the greater appreciation of the trials and tribulations of fellows in all parts of the land.

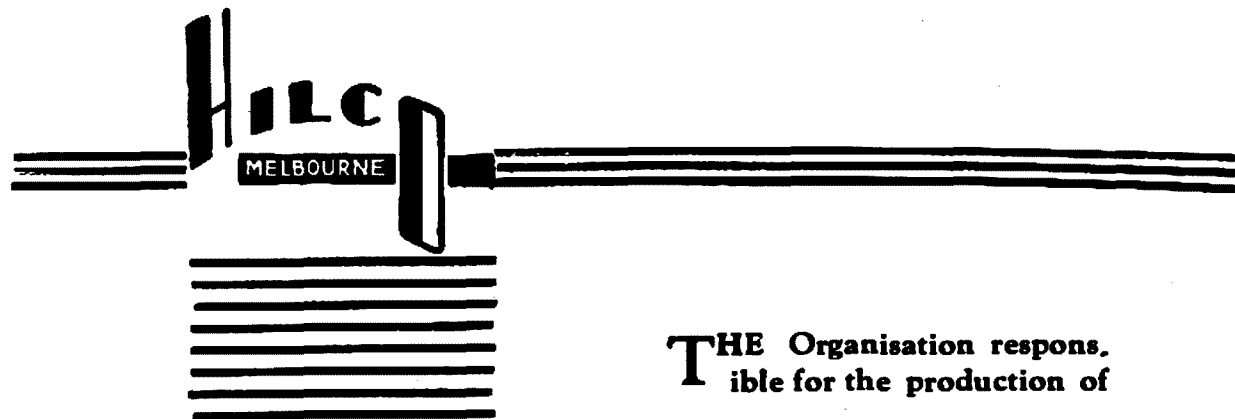
Apart from any other outcome from the gathering such as this, anything which tends to prevent the development of a purely parochial outlook must be regarded as a most important result of a meeting of hams from far and wide.

W. L. PEARN.

Tasmanian Division

(By VK7DH, VIA VK3MR.)

The attendance at the November meeting did not come up to expecta-



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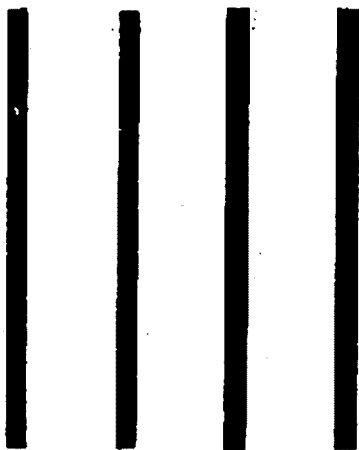
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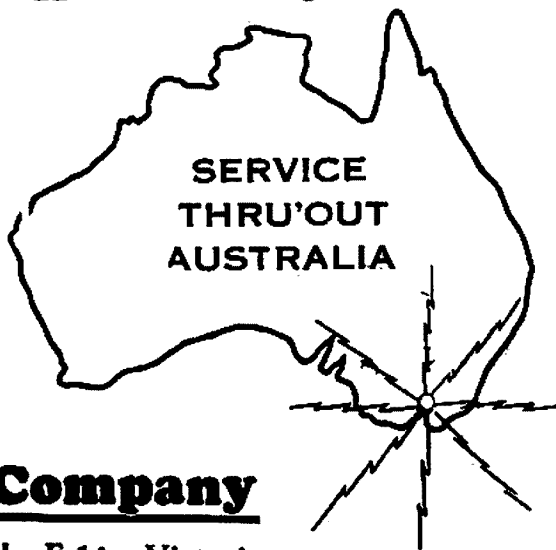
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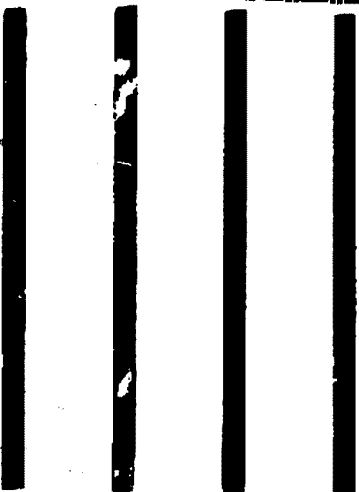
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R.A.A.F. Wireless Reserve Notes

Officer Commanding: Flying Officer R. H. Cunningham, 397 High Street, Glen Iris, S.E.6, Victoria (VK3ML).

District Commanders—

Second District, N.S.W.—A. G. Henry, Clareville Avenue, Sandringham (VK2ZK).

Third District, Victoria—Pilot Officer V. E. Marshall, 75 Argyle Road, Kew, E.4 (VK3UK).

Fourth District, Queensland—A. E. Walz, Sandgate Road, Nundah (VK4AW).

Fifth District, South Australia—F. M. Gray, 52 Ormond Grove, Toorak Gardens (VK5SU).

Sixth District, West Australia— 6ZI-VK6JE.—J. Elsbury, 24 Addis Street, Kalgoorlie.

Seventh District, Tasmania—R. Cannon, Goldie Street, Wynyard (VK7RC).

3rd District.

(3Z1—VK3UK.)

This month has seen a great deal of activity in many different directions. In the first place, we were delighted to have 3C4 and 3B4 down in Melbourne for the W.I.A. dinner, and to be able to take them around a few shacks on the Sunday morning. 3B4 came down with 3KX, and they had to return to Colac on the Sunday afternoon, so had to fill in as much as possible on the Sunday morning. 3C4, with a wife to look after now, did not have as much time as usual for radio, but we had the pleasure of a great yarn with him, as well as 3TL, 3AG, etc. The close approach of the National Field Day means that the testing of gear by the various competitors is becoming more energetic. 3B4, 3B2, 3Z1, and 1A1 are the known competitors amongst the Reserve members of this State, but there may be a few dark horses. 3B2, who will be working with 3B5, has a great location picked out on the highest hill near Coleraine, and 3B4, with 3KX, will be going across to Alvie. 1A1 will be going down the beach direction, probably to Frankston, and 3Z1 will be up in the hills at Olinda. No details of the gear of any of the others is to hand, each preserving close secrecy at the moment, but 3Z1 will be using a three-tube TRF receiver with 1C4, 32 and 30 tubes. The transmitter will be an 807 fed by a 6V6G. Operation will be on five bands. The aerials used will be an end fed one, three waves on eighty, as well as two twenty metre beams for 20 and 10.

By the time this appears in print

all members will have received the circular from the Air Board dealing with the suggested modification to the Reserve organisation. That is just the first leg of the new scheme that we have been awaiting with so much interest. Working with a Squadron, as we will, will provide just the variety that our present organisation cannot give, no matter how hard we try.

1A1 is hack from his Interstate trip, and seems to have been dogged by floods wherever he went. He had a thoroughly good time, so that is the main thing. We missed him from the W.I.A. dinner, though.

3D1 is hack on the job after a spell of illness. He finished up with German measles. Too much DX?

One very noticeable thing this year is that with conditions steadily getting worse on 80, the signals of 3C4 have remained at a good level all the time. Probably the change to the new house can account for an alteration to his antenna. Every now and then, though, conditions pick up remarkably for a short time. On 14/11/37, for instance, 3C1, who is never strong at 3Z1, worked up to R7/8 for about 15 minutes. 3B5 signals always are consistently strong, although often trouble is experienced in copying him and 3C4 on towards noon, because of the high noise level and QRM at 3Z1 location.

The trip of 3D4 up Nathalla way has been successful as far as 3C5 is concerned, for together they seem to have been able to eliminate most of the bugs in the latter's transmitter at last. 3C5 was hack on the job on the 14th with a good strong signal.

(Continued on Page 13.)

tions, and to those members who did not attend we can only say that they missed a treat in the lecture delivered by Mr. F. W. Medhurst, dealing with his experiences in radio in the old days.

As this is the last issue of the mag. before Xmas, we take this opportunity of extending to all our heartiest wishes for a happy Xmas and a success in the coming New Year.

SCANDAL, VK7YL.—Heard on 20 metres now and again. Believe Joy had the hard luck to have a stick part in two while in the middle of hoisting it up!

VK7NG.—Putting out a wobbly signal on 40 metres from somewhere up near Waddamanna.

VK7JB.—Not heard on at all these days except when amusing bcls on 200 metres. Did I hear someone say that the love bug will bite you if you don't watch out?

VK7KV.—Never heard on either. Spouse he will blow the dust off the ole rig and start pounding one of these days.

VK7XA.—Making whoopee with a TPTG. Worked 7DW, and had ole Bunny thinking. Thought he was a pirate! Good on you, Charlie!

VK7DH.—Hero of VK7! Makes skeds with 3MR to put through VK7 mag, notes. No notes, so Dave writes them himself!

VK7JH.—Believe Jack was down in Hobart on the 11th November. Heard him punching the key at 7XA. When are you going to get your rig going again, Jack?

VK3TS.—But 100 yards away gives Jock some QRM! Tom has now some rig, plenty of power on cw, and uses pair of 6L6's in his modulator. Let's know when you get WAC on phone, Tom.

VK3BG.—Active with a vengeance. Benn on qrp for the last six months, WAC and some rare countries to his credit. Thinking very seriously of building four-stage rig with pair of

Taylor T20's in P.A. Intends to meet VK7RC during holidays. Could not WAC in test. Who did? (3MR, several times Editor!) Hi Roth. tnx.

(Continued from Page 12)

with possibly a change of aerial direction. The fact that VK2NO was recently logged in ZL was due solely to auto-sending throughout an afternoon. Why not determine that yours will be one of the pioneer stations to open the two-way 56 mc oyster? And, finally, don't forget that for cross city QSO's, nothing can hold a candle to 5 metres. Get that pal with whom you are in the habit of yarning to on 80, 40, or 20 a few miles away, to do likewise and get to 5 metres. It is worth it from the viewpoint of absence of static alone, and with a good directional aerial you will get a much stronger signal both ways, minus fading, than you can ever do at lower frequencies. Australia is an isolated country, far from the rest of the world, excepting ZL. Any DX records put up on 56 mc will go down in radio history. VK's have held a good reputation in U.S.A. for working wonders on 20 metre DX with 25 watts. Let us buckle to and show those overseas that we are on the job on 56 mc as well."

(Continued from Page 15.)

watts mod, by another pair of 42's. He is on the lookout for VK around 1.30 p.m. (has been heard here at 6.30 p.m., r6) during the week-ends. VU2AU and VU2SQ are heard often, although the former is the best, and usually on at 6.30 p.m. or 10.30 p.m. VK3ZZ has many w phones qso'd; we cannot hear him here in the city. VK2ADE had good contacts with G5BJ and ON4FB on Sunday, 14th November; VK2ABC has been heard calling cq 10. W6QG reports W6XOA on 54300 KC cc, television sound carrier.

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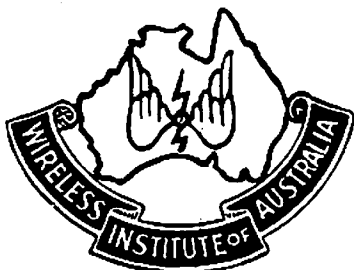
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